THE HYBRIDIZATION OF HIGHER EDUCATION: CROSS-NATIONAL PERSPECTIVES

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EDITORIAL

The worldwide landscape of higher distance education is undergoing a major transformation. As open and distance learning is moving from the margins to the mainstream, single mode distance education provider institutions designed from the start to offer distance education programs are attaining new levels of legitimacy. At the same time, conventional campus-based higher education institutions are adopting information and communication technologies (ICT) both to enhance their on-campus instruction and to create new distance education courses and programs. Driven by such factors as declining traditional student numbers, reduced government allocations, proliferation of ICT applications for delivery of education programs, incursions into their traditional service areas by burgeoning institutional competitors, and the prospect of significant savings and revenues, campus-based institutions in many countries are thus becoming *dual mode* (both face-to-face and distance education mode) institutions.

This issue of *International Review of Research in Open and Distance Learning* focuses on this worldwide phenomenon of "hybridization of higher education." The refereed section features recent higher education experiences in 13 countries. Eight case studies describe the impact of hybridization on higher education in Brazil, Canada, China, Germany, Israel, Norway, Taiwan, and the UK. Another six case studies describe the experience of specific universities in Australia (University of South Australia), Colombia (Universidad Pontifical Javeriana), Spain (Universitat Oberta de Catalunya), Ukraine (Open International University for Human Development), and the USA (Brigham Young University and the University of Texas).

All eight national case studies and four of the six institutional case studies provide descriptive analysis of issues that arise when conventional universities create and/or expand open and distance learning programs. Although the Open International University for Human Development and the Universitat Oberta de Catalunya are unique in that they were designed at inception as unimodal distance education universities, they have been included in this issue because they illustrate contextual and organizational issues similar to those encountered by campus-based institutions engaged in the hybridization process.

As they prepared to write their national or institutional case studies, authors were invited to adhere, as much as seemed appropriate, to an outline based on systems thinking. The idea behind this common structure was to set the stage for subsequent fruitful secondary comparative analysis. Thus, this theme issue is intended to provide useful insights not only to our current 3,000-plus distance educator subscribers in more than 70 countries, but also to higher education administrators whose universities are redefining themselves as dual mode institutions so as to serve students whose space and/or time constraints prevent their participation in traditional campus-based programming.

The 14 articles in this issue illustrate how difficult and complex the process of hybridization can be. The national case studies suggest answers to the following questions:

1. How does the nature of the various stakeholders' demands for higher education influence hybridization of higher education?

2. What impact do central and state government policies and imperatives have on the expansion of distance education programming in campus-based universities?

3. How do the legacies of primary, secondary, tertiary, and distance education affect expansion of distance education programming in campus-based universities?

4. How much latitude do individual institutions have to create and expand distance education initiatives?

5. How do institutions differ in the ways in which the various (course, student, regulatory, logistical, and technological) subsystems operate?

6. To what extent has the growth of distance education been stimulated by pressures emanating from government policy, information and communication technologies, characteristics of the population, and other societal and cultural aspects?

7. To what extent has the hybridization of higher education been an impetus for inter-institutional cooperation and collaboration?

8. How well do distance education programs fare vis-à-vis more established campus-based programs?

9. What are the discernible long-term trends related to distance education organization and delivery within dual mode institutions?

10. What are the most pressing issues encountered by institutions undergoing hybridization?

The institutional case studies suggest answers to the following questions:

1. What are the distinctive features of distance education in the various institutions?

2. How do the mission and history of institutions shape the hybridization process?

3. To what extent have distance education and campus-based instructional programs mutually influenced each other?

4. What are the institutional influences on hybridization of campus-based institutions?

5. What national and international influences affect the hybridization of campus-based institutions?

6. How has the emergence of distance education operations within each institution been influenced by higher education policy and practice?

7. What have been the critical incidents for each institution that have led up to attainment of dual mode status?

8. What have been the major issues marking the institutions' progress to dual mode status?

9. What lessons do the institutional case studies offer for other campus-teaching universities aspiring to attain dual mode status?

10. How have governments assisted or hindered the process of hybridization?

11. How has the administrative and organizational structure of the institution shaped the hybridization process?

12. Regarding the way the university organizes and administers its distance education provision vis-à-vis non-distance education functions – what impact does it have on the hybridization process?

13. What is the impact of technology on the hybridization process?

14. What institutional interventions appear to have spurred and/or deterred the hybridization process?

15. How have distance education programs affected campus-based programs and vice-versa?

16. What has been the role of "leading personalities" in the hybridization process?

Careful reading of these case studies will reveal both similarities and differences arising from the experiences of campus-teaching institutions around the world. An awareness of the various sets of experiences can enable both higher education and distance education administrators to increase the range of their options in determining strategies to build and expand distance education programs within their respective institutions.

The Hybridization of Distance Learning in Brazil – An Approach Imposed by Culture

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Abstract

Institutions of higher education in Brazil are seriously behind in their development of approaches which make use of distance education techniques, in part due to widespread lack of credibility of these approaches both inside and outside academic communities, but even more so because of the highly centralized control over all aspects of higher education on the part of the country's Ministry of Education. Despite the country's capacity and need to do so, the rigid and pedagogically conservative attitude of this Ministry over the last three decades, combined with the equally intransigent and politically-motivated decisions of the National Congress, have discouraged practically all attempts by educational institutions, public and private, to invest significantly in the development of innovative and far-reaching initiatives employing distance learning methods. Hybridization, or the combination, in the same course, of face-to-face situations for learning with those carried out using distance learning techniques, represents in Brazil is *not* an option motivated by pedagogical choice, but rather the *only* avenue legally permitted in the field of formal, degree-granting higher education.
Key Terms: distance learning, face-to-face learning, online learning, university course planning, regulation of distance education, resistance to change in education, education in Brazil, Brazil-educational policy.

Introduction

When James Taylor of the University of Southern Queensland, Australia, announced in his keynote address, "Fifth Generation Distance Education", at the 20th ICDE World Conference in Düsseldorf in April of 2001, that his University had for several years been maintaining fully-automated online degree-granting programs, it was clear to all present that distance learning had reached a new plateau. Everyone had suspected in years past that totally automated self-learning on a global scale would one day show its face; but most interested parties assumed it was still decades off. The very idea of total automation, with intervention by an instructor *only when the student so requests*, extends the envelope of possible action in distance learning, augmenting outreach by lowering

costs per student, and including all those who are wanting to attempt higher education, as long as they are able to adapt to the pedagogical model offered.[1]

In Brazil, one of the world's most populous and economically important countries, cultural factors operating in the last three decades have held back the development of distance learning in higher education. And as incredible as it may seem, the advent of totally automated distance learning, as proposed by Australia, may actually help bring about the modernization needed by revealing the serious gap separating education in Brazil from the rest of the world. It is possible to foresee, in the not-too-distant future, a building-up of pressure within the academic community and society in general to release the arrested energy of those anxious to extend or to receive the benefits from distance learning. But when this happens, we may be forced to suffer many "worst practices" along with the "best."

Societal and Institutional Contexts2

The Federal Republic of Brazil is the fifth largest country in the world, exceeded in size only by Russia, Canada, China and the United States. It covers an area of 3,300,171 square miles (8,547,404 square kilometres), occupies about half of South America, and shares its border with all other countries on the continent except Chile and Ecuador. It is also the most populous country in the region and the fifth most populous in the world, with about 172 million inhabitants. The majority of Brazilians live in the south-central area, which includes the states of São Paulo (36.6 million), Minas Gerais (17.9 million), and Rio de Janeiro (14.3 million).

Brazil has the tenth largest economy in the world, with Gross National Product (GNP) of US\$ 555 billion in 1999, outweighing that of all other South American countries. Although highly diversified, the country is characterized by wide variations in levels of development. Brazil's economy reveals the simultaneous existence of the three "waves": Subsistence farming, labor-intensive industry, and aspects of a sophisticated information-society (e.g., in 2001, 90 percent of the national income tax declarations were delivered by citizens to government through the Internet).

Life expectancy in Brazil is only 70 years as compared with 86 years in the United States. Income distribution is, likewise, one of the worst in the world, according to data of UNESCO and OCDE: Ten percent richest possess practically half of the national wealth (37.9 percent), while ten percent poorest possess only 0.8 percent of the nation's wealth. UNESCO data show that there are 35 million illiterates over 15 years of age. Ninety-four percent of the population is served by electricity at home, 90 percent have radio, 87 percent have television and 32 percent have telephone service.

In 2000, there were in Brazil – from nursery schools to secondary education – 48,924,730 students (89.1 percent in public institutions), and 2,464,515 students enrolled in tertiary-level studies (36 percent in public institutions). The numbers of those successfully concluding formal education leaves much to be desired: in the period 1994-1999, only 58 percent of those of 14 years of age completed their primary school education; only 38 percent of those of 17 years of age completed their secondary school education. The percentage of the population 21 years of age who completed university-level studies was only 9 percent. On the other hand, women have a far better record than men in completing their studies: in 1998 they represented 56 percent of those enrolled in secondary schools and 54 percent of those in higher education; in that same year they comprised 53.6 percent of those completing primary education, 58.5 percent of those completing secondary education, and 61.4 percent of those completing tertiary education.

One of the major problems in primary and secondary education is the high level of repetition of the academic year by poorly prepared and poorly motivated students, exceeding 20 percent each year. This condition resulted, in the period 1996-1999, in the statistic that 23.2 percent of primary school enrollees were aged 15 years or older, and 38.7 percent of secondary school student enrollees aged 18 years or more.

According to the Ministry of Education, in 1999 only 7,695 primary and secondary schools (3.5 percent of the total) had access to the global computer network, and 67.2 percent of these were private schools. This should not be surprising considering that 64,000 schools (29.6 percent of the total) do not have electricity, less than 25 percent have school libraries, and only 11 percent have equipment for learning activities (e.g., science labs and the like).

The universe of institutions of higher education in Brazil totals 1,097, public and private, with approximately 2.5 million students and 173,000 professors. In 1999, half of the teaching faculty in the country possessed the Master's degree and 20 percent the Doctoral degree. There were 56,900 students studying for their Master's and 29,900 studying for their Doctorate. In 1999, 4,800 Doctorates were awarded in the country with 40 percent of the doctoral programs of study located in the three state universities of São Paulo, illustrating the concentration of research institutions, major libraries and other centers of knowledge in the southern area of the country.

Highly significant for the purposes of this study, is the fact that in the period 1994 to 1999, the increase in demand for secondary school education grew 57 percent, and that for higher education grew 57.6 percent, indicating that the general population had become aware of the necessity of obtaining the greatest amount of schooling possible in order to survive in the new world of economic competition. As examples, in 2000, 140,000 candidates sat for the entrance exams (for 8,000 openings) for the tuition-free state-run University of São Paulo; 56,000 sat for the 6,000 openings of the Federal University of Rio de Janeiro; and 32,000 sat for the 2,000 openings at the state-run University of the West of

Paraná (effectively blocking admittance to 93 percent of the candidates). With the public sector unable to provide classrooms, instructors, or funds to accommodate greater numbers of students, the repercussions for increased demand for higher education have not been lost on the private sector, which is investing heavily to meet the demand. The option of using distance education to remedy this problem has been discussed in some quarters, but concrete measures have yet to be taken. As an example of the repressed demand in society for higher education, early in 2001 the State Government of Amazonas created a tuition-free public institution for higher learning, announced cost-free entrance exams for 1,600 placements, and found itself submerged by 190,000 registrants, or 10 percent of the entire population of the State.

Perhaps the overriding influence determining the steadily increasing gap between Brazilian education and world-class examples elsewhere, is the contribution of Portuguese colonialist culture still permeating many sectors of Brazilian life. Although the Portuguese "discovered" Brazil in 1500 and immediately began colonizing activities, it was not until 1808 that the crown permitted domestic publication of Brazilian books, newspapers and periodicals. Likewise, from 1808 to 1934, the only institutions of higher learning were isolated faculties of medicine, law and mining in a mere three or four cities. True multi-faculty universities only began in 1934. With the exception of one or two institutions connected with the public health studies, there was little scientific achievement until the 1970s. Public instruction began, modestly, only in the early part of the twentieth century. The free distribution of books to public school students started only in the 1960s. The Portuguese also left behind a highly bureaucratic, highly centralized organization of society, the heritage of an aristocratic tradition, which maintained and still maintains power in the hands of the very rich, and tolerates only certain kinds of democratic structures and processes which do not threaten their basic social architecture.

With the Constitution of 1988, the Ministry of Education became the supreme authority for higher education, responsible for maintaining quality through processes of prior approval and posterior punishment. Its highly centralizing power over both public and private institutions has created an environment in which educators and institutions hesitate to innovate or invest in new learning initiatives for fear of being struck down by unimaginative technicians of the Ministry or by their conservative external advisors. More seriously, the top/down model of control over education makes for a passive teaching community, initiating changes only in response to orders from above. In the same Constitution, states of Brazil are charged with supervision of secondary education, and municipalities with primary and nursery school education. But, in fact, the Ministry, contradictory to the Constitution, through regulations and recommendations having the equivalence of the force of law, and financial incentives, intervenes and dominates all levels of education.

This, of course, has become problematic for the country as a whole. As quali-

tative and quantitative outputs in education have been unsatisfactory in recent decades, it has also become clear that the highly concentrated centralizing power of the Ministry of Education, is no longer capable of dealing promptly with the increasing growth and complexity in the form of more students, more subjects, more professions, and more materials. But the question is even more crucial in the case of distance education at the tertiary level, which in Brazil has suffered arrested growth due to the myopic vision of the future, and a nostalgic view of past educational practices, particularly on the part of those in power.

Brazil is not a newcomer to distance education having witnessed the rise of correspondence courses in the early 1900's (many such courses are still popular with certain segments of the population), educational radio starting in 1923, and instructional television in the 1960s.[3] Studies on distance education around the world in the 1970s placed Brazil among leaders like India, Spain and the United Kingdom; but governmental discontinuity destroyed this head start. Although Portugal itself has pushed forward with a new mentality, even having its own Open University, Brazil continues its colonial heritage of suspicion of change, and only reluctant shifts to new educational paradigms.

The Portuguese traditions of tutorship or trusteeship and the necessity of credentials have made Brazilian education, and society in general, a curious hodge-podge of regulations and customs. For example, to be employed by a newspaper, one must hold an undergraduate degree in journalism; to be a librarian, a Doctorate in library science is not sufficient – one must have the appropriate Bachelor's degree; and academic degrees from abroad in all fields must be approved before they can have validity in the country, and those degrees completed through distance education institutions, whether they are Brazilian or foreign, are automatically disregarded.

Although the Constitution of 1988 (Article 209) clearly states that universities have autonomy over curricula and administration, the Ministry ignores that fact and authorizes the opening of new graduate and undergraduate courses, which, in essence, homogenizes all efforts – thereby creating a one size must fit all.[4] And even though the celebrated Article 80 "*Lei de Diretrizes e Bases*" (1996), an important document regulating all education in the country, declares that all university courses completed through distance learning and face-to-face approaches to be of equal validity, in reality the Ministry ignores this dictum and effectively does all it can to strangle nearly all attempts to establish distance learning. In the two years that it has officially received requests for approval of new distance education initiatives, the Ministry has approved only seven institutional projects, leaving 4,000 requests waiting in the wings for approval. Early in 2001, the Ministry announced it would receive no more requests, thereby giving privilege to those already in line, and unjustly disqualifying those institutions that wish to start distance learning activities.

It should be made clear, at this point, that the restrictions against distance learning on the part of the Ministry hold only for "formal" programs of graduate

and undergraduate studies leading to diplomas, which grant the right to practice a profession. Extension courses and other non-degree programs do not fall into the highly restricted category. Likewise, state authorities must approve all distance education courses designed for primary and secondary school students of any age, although these, too, are often quite conservative.

Certainly the most disheartening fact is that in the last three decades, 30 different attempts to create an "Open University" in Brazil have met with failure, primarily brought down by a combination of conservative thinking in the Ministry and lobbying influences in the National Congress (where many Federal Deputies and Senators are also the owners of private universities throughout the country, and not at all pleased with competition in their spheres of geographic monopoly).[5] In 1996, the Ministry issued a ruling (Portaria No. 228 of 15 March) prohibiting the validation in Brazil of any post-graduate degrees awarded by foreign institutions for studies partially or totally conducted through distance learning, even when degrees are awarded in association with accredited Brazilian institutions. In late 2000, the Ministry announced that it would prosecute national or foreign institutions, which took out advertisements in local newspapers offering enrollments in distance education courses leading to academic degrees.

To anyone willing to stop and analyze the situation, it becomes clear that the very Ministry of Education, authorized by law to coordinate activities of higher education in the country, is, consciously or not, creating a situation for civil disobedience, for if potential students interested in pursuing university degrees characterized by "any time, any place learning," and are both willing and capable of so doing, then it behooves them to do so. And when we consider that few occupations in society require diplomas authenticated by the Ministry (the entire world of commerce and industry, for example, seeks competent workers, with or without credentials), then both future workers and their employers can simply ignore the Ministry and carry out advanced studies either in or outside the country, using distance learning techniques.

There seems to be little hope for improvement of the situation before 2003, when a new government will take office, hopefully with forward-looking education professionals. Until that time, Brazilian distance educators must content themselves with the smallest bits of evidence that the bureaucrats in *Brasília* do have an ear to the ground and are not totally unresponsive to society's call for redress. Two recent articles in the public press strongly criticizing the Ministry for its mishandling of the question of distance education seem to have had an effect, for on October 18, 2001, the Ministry issued a new ruling (Portaria No. 2,253), which now permits the use of "non-presence" methods (a euphemism for distance education) as a *part* of courses already accredited for conventional purposes, but "not to exceed 20 percent of the time expected for the completion of the entire course program."[6] The ruling further says that students may opt to participate or not in the distance part of learning, and that, in any case, all

final exams *must* be face-to-face. Finally, it requires that all modifications or new proposals *must* have prior authorization of their plan of instruction by the Ministry, or suffer intervention.

So the issues involved in this curious situation are:

1. Brazil badly needs distance education at the university level (a) to qualify the 44 percent of primary school teachers who have only high school diplomas or equivalents and who by law must have university degrees by 2007; (b) to meet the exploding demand for high school diplomas and university degrees; (c) to broaden the offerings of local universities through the presence in the country of distance education courses offered by foreign universities; and (d) to permit local universities to serve ever larger and more widespread segments of society.

2. The governmental authorities fail to recognize the potential benefits of distance education at the university level, or in the capacity of local educators to successfully execute programs involving distance learning. While waiting for significant changes, the hybridization of education, or the mixture of distance and face-to-face techniques, appears to be the only path possible for those institutions wishing to gain experience, consolidate the work of professional teams, and create a growing clientele for courses at a distance. Instead of its being an option in the arsenal of pedagogical arms, it is the sole path open at this time. Instead of allowing the option of placing the greater emphasis on the distance part of any course, and thereby facilitating the life of students who must work and who have families to care for, the rules require just the opposite.

The efficacy of face-to-face learning, which the Ministry of Education seems to hold paramount in spite of the poor overall results in all Brazilian education, presents new problems, as was observed by an American professor of law who complained that with his classroom full of students working on their laptops while he lectured, he had the distinct impression that though "present," the students were most likely "surfing" on the Web, involved in videogames, or mentally "checked out."[7] Likewise, in a recent study of benchmarks for online higher education, no mention was made among the 24 items, of hybridization and its place in distance learning.[8] And finally, it must be noted that Brazil has no tradition of the residential liberal arts college and its humanistic tradition. The author knows of only one institution in the country, in a rural area, that has residential facilities, and none that has a curriculum in any way similar to the North-American liberal arts model. Hence, the arguments against courses featuring hybridization, at least those that emphasize distance learning, such as are found in the Kenyon College manifesto, "Proximity Learning," cannot be understood in the Brazilian educational context.[9]

In order to determine how institutions accommodate themselves to this reality,

an informal questionnaire was sent to 67 institutions of higher learning that were on record, as having some distance learning activities. Since it was anticipated that comparisons would be difficult given the wide variety of cases, the questionnaire sought essentially qualitative information. Only ten questionnaires were returned within the allotted timeframe and their responses will be coalesced into the following section. In accordance with a promise of confidentiality so as to elicit honest responses, the identities of the institutions will not be revealed. All of the responses came from institutions in the South-Center and South of the country operating at the graduate and undergraduate levels: four were large research universities funded by the Federal Government; two were large Catholic Universities with a research tradition; one was a Federal institution for technological education; one was a private but not-for-profit institution for technological education; one was a large state university with a strong research tradition; and the last was a small private university without a research tradition, located in the interior of the country. One began its distance learning activities in 1995; two began in 1996; one began in 1997; four began in 1999; and one began in 2000. One stated that its courses were only offered for its own teaching staff; one said that the majority of students in its courses participated from a great distance; while the rest noted that their students in distance learning were a mixture of local and distance enrollees.

Subsystems of the Distance Learning Universe

Course Subsystem

Almost all respondents admitted that a principal motive for initiating distance learning courses was the desire to innovate, either on the part of the administration or on the part of the teaching staff. Most admitted to having encountered preconceived, negative ideas about distance learning among their colleagues or administrators, which hampered their work. Several reported that their work was motivated more by idealism than by any other motive. Some were motivated by the desire to reach out to working professionals who had no opportunity to participate in frequent conventional face-to-face sessions, but could do so infrequently, staying with the course through distance techniques. Only one emphasized belief in the necessity of requiring face-to-face meetings so as to better "socialize, motivate and stimulate" the students. Almost half admitted to choosing hybridization due to the Ministry's stance on the question. Half considered that there was as yet "not the proper culture" in Brazil for "total" distance education. One university, whose work had originally been financed by the Ministry had to stop its activities due to "discontinuity" of their financing. Most noted that a major difficulty was the preparation of production teams to develop the learning materials, frequently done by professionals "improvised" for the occasion. On the positive side, almost all agreed that their major achieve-

ment was the "didactic" success of the courses, and the consequent change of opinion in the environment about the efficacy of distance learning, especially with a high-rate of satisfaction on the part of students. One institution used only self-evaluation of their students, and was satisfied with the results. Several revealed enormous satisfaction in having successfully "democratized" access to higher learning for non-conventional students, and all were satisfied that the experience gained made all the efforts worthwhile.

Students Subsystem

Some complained that student participants were not yet ready for distance learning, abandoning courses when it became clear that they required as much or more effort than conventional courses. One admitted that having as students adults who had been away from formal learning for many years created a number of problems of motivation. Another observed that even with a low tuition rate, payment was a hardship for many students. Three reported no problem whatever with regard to students. On the positive side, one reported satisfaction in having maintained a drop-out rate of less than 5 percent with 300 students over a three year period. Another was overjoyed at having been able to recruit and retain students from the furthest reaches of the country (particularly the distant Amazon region). Overall, the greatest satisfaction was in building the confidence of students in the workings of distance education, even though all courses included elements of face-to-face learning.

Regulatory Subsystem

Only two respondents declared having no problems with regulatory issues. All the rest, admitted to having enormous problems in obtaining approval from internal committees of their institutions, one saying that his institution "was incapable of understanding the new paradigm of distance learning." Incomprehension, long delays in gaining approval from institutional authorities were common sources of complaint. Two respondents complained of the lack of orientation on the part of the Ministry of Education as a major source of frustration. For six of the institutions, it was still too early to offer opinion on the achievements in this area, but four admitted that despite regulatory restrictions, they had plans to expand the number and level of their courses.

Logistical Subsystem

Half of the respondents observed that their principal problem in this area was the training of production staff, since most had no prior experience with distance learning. Preparing instructors to be content providers was another on-going

problem for some. One respondent said that his institution had still not accepted the idea that multi-talented staff is needed to produce quality distance learning courses. Various commentaries were offered citing the precariousness of the classrooms used, and the fact that institutions still think only of the face-to-face paradigm and are thus unprepared for new approaches. On the positive side, six responded that their greatest achievement was managing to train their staff adequately enough to get the job done, and one was pleased that he had recruited ex-students of the distance education course to serve as volunteer monitors in new courses. Another said that the greatest achievement in this area was managing to integrate software and hardware for distance learning with the general structure of informatics of his institution.

Technological Subsystem

Complaints with respect to the technological subsystem focused on costs of acquiring and maintaining the technologies for connectivity and the precariousness of telecommunications services in the country. Temperamental servers and unsatisfactory results with software acquired to manage online education were also noted. Five noted they had successfully developed their own software interfaces for distance learning; two were delighted that after a long waiting period their hardware had arrived, making it possible to upgrade their technological platform.

Unintended Consequences

The author earnestly believes that it is likely that one of the unintended consequences of the Ministry of Education's severity with regard to the development of distance learning in higher education is that it will eventually create such a backup, a log-jam, if you will, of requests to initiate new programs (there are already 4,000 requests pending), that responding to public outcry, a higher governmental authority will bring about a blanket amnesty, approving without any criteria whatsoever, all requests, good and bad.[10]

When asked about unintended consequences experienced in their pioneering work, respondents to the questionnaire stressed unexpected disappointments suffered while attempting to construct their projects. Most revealed profound dismay at the degree of non-support from departmental colleagues; one admitted deception at the fact that Ministerial funds had been promised to permit project continuity, but were never forthcoming. Two others complained of "exaggerated governmental bureacracy, which impedes amplifying successful experience," and another was disheartened by the lack of support from industry, which stands to benefit from better-qualified workers trained through distance education.

Implications

When asked what final advice they could give to newcomers beginning work in distance education, respondents answered: "Be persistent, demonstrate reliability, credibility and quality," "concern yourself first with financial matters, then with training your staff;" "always take full advantage of the face-to-face parts of courses – they are more important than the distance part, but not always possible to use well;" "always use the face-to-face part to build integration and motivation among the students and maximize the use of audio-visual material because it augments the sense of personal contact among students." These statements reveal an optimistic desire to forge ahead with efforts in distance learning opportunities, despite the legal restraints currently in place. The respondents, as a group, demonstrated a particularly Brazilian quality of going forward against adverse conditions, of improvisation and native ingenuity to reach one's goal, be they personal or institutional. The lesson to be learned here is that it should be the role of the state to lead society to new levels of productivity and collective well being, rather than to hold valid initiatives. Although distance education around the world is making great strides in employing both newer and older technologies to expand greater access to learning to ever-larger segments of society, in some quarters, either due to deep-seated skepticism within the culture, or due to hidden agendas on the part of those in power, those social advances are still ignored.

Conclusions

We have seen that highly centralized power and decision making in the educational sector runs counter to society's need for flexibility and agility. The augmenting of complexity in human affairs, and respect for the tenet that "one size does not fit all," makes it impossible for society to accept, on the part of the state, immobility and reactionary behavior. With its discontinuous experience with distance learning, Brazil is woefully behind other nations in using new pedagogically sound solutions to benefit its large population. While Brazil's population has demonstrated learning needs and structural constraints that all point to the necessary and massive use of distance education, its Ministry of Education resists permitting the healthy and normal expansion of distance learning in the area of higher education, and more conservative members of the academic community hamper as best they can local, regional and national attempts to extend distance education to all sectors of higher learning. The employment of hybridization in distance learning activities constitutes not only the only path that can legally be chosen today and in the foreseeable future, but also a "comfort zone" approach in a somewhat hostile environment. It remains to be seen, however, how long it will take for pressure to build up calling for change, relaxation of the restraints, and the consequences, which may not be able to

exclude exactly those "bad practices" which the Ministry and other educational conservatives are presently claiming they are trying to avoid.

Endnotes

1. [Retrieved August 3, 2001: http: //wwwfernuni-hagen.de /ICDE/ D- 2001/ final/keynote_speeches/ Wednesday/taylor_keynote .pdf.]

2. The factual data is this section is a composite of information retrieved from the following sources, all retrieved July 15, 2001: http://wwwbritannica.com. ; http: //www.ibge.gov.br /ibge/populacao. ; http:// www.socinfo.org.br /livro_verde/ capitulo_4. htm. ; http:// www.mec.gov.br /home/legislacao/default.shtm. ; http:// www.inep.gov.br /censo/censo2000/sinopse2000. htm. ; http:// www.inep.gov.br /noticias/news_344. htm. ; http:// www.fnde.gov.br/ institu-icao/indicadores. htm. ; http:// www.unesco.org /iau/cd-data/ br.rtf. ; http:// www.capes. gov.br. ;] The author admits to having some doubts about data furnished by governmental authorities, especially when it is very favorable, and feels more comfortable when it is not favorable. As M.K. Bacchus of the University of Alberta, Canada, noted some years ago in a book review concerning ministries of education in small states, "we must be careful in accepting reports of 'successful administrative practices" offered by civil servants currently employed." "Though close to the scene, they may be far from objective." "They sometimes conceal the major weaknesses of their administrative structures, or conveniently attribute these failings to the problem of size." Everything looks fine when discordant voices are excluded. See M.K. Bacchus (1992) , Review of M. Bray, ed., Ministries of Education in Small States: Case Studies of Organization and Management, in Canadian and International Education (Calgary), Vol. 21, No. 1, 91-95.

3. Distance Education in the E-9 CountriesThe Development and Future of Distance Education Programmes in the Nine High-Population Countries. Paris: UNESCO, 2001; on Brazil, 18-21.

4. Alves,, João Roberto Moreira (1994). A Educação a Distância no Brasil: Sintese Histórica e Perspectivas. Rio de Janeiro: Instituto de Pesquisas Avançadas em Educação.

5. As Bases Legais da Educação a Distância no Brasil. Revista Estudos (ABMES, Brasília), Ano 17, No. 26 (novembro). [Retrieved July 10, 2001] http://www.abmes.org.br/abmes/publica/Revista/estud26/joao.htm.

6. Litto, Fredric M. (2001). "Educação Inflexível e Tutelada", Correio Brasilense (Brasília), August 15; p.2; "O MEC é um Obstáculo Formidável para a Educação à Distância no País", O Globo (Rio de Janeiro), October 8, 2001.

7. Ayres, Ian (2001) "Lectures vs. Laptops", The New York Times, March 20, Opinion Page. [Retrieved July 6, 2001] http://www.nytimes.com/2001/03/20/opinion/20ayre.html.

8. Quality on the LineBenchmarks for Success in Internet-Based Distance Ed-

ucation. Washington, D.C.: Institute for Higher Education Policy, 2000. [Retrieved July 8, 2001] http://www.ihep.com/PUBs/PDF/Quality.pdf. .

9. "Proximity Learning", Kenyon College [Retrieved July 8, 2001] http://enhanced-learningorg

10. (For a recent sampler of unintended consequences, see Gillon, Steven M2001). "Unintended Consequences – Why Our Plans Don't Go According to Plan", The Futurist, March-April, 49-55.

Citation Format

The Hybridisation of Higher Education in Canada

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Abstract

Canada's postsecondary institutions are becoming increasingly involved with technology enhanced learning, generally under the rubric of distance education. Growth and activity in distance education stems from rapid developments in communication and information technologies such as video-conferencing and the Internet. This case study focuses on the use of new technologies, primarily within the context of higher education institutions operating in Canada's English speaking provinces. Capitalising on the interactive capabilities of "new" learning technologies, some distance education providers are starting to behave more like conventional educational institutions in terms of forming study groups and student cohorts. Conversely, new telecommunications technologies are having a reverse impact on traditional classroom settings, and as a result conventional universities are beginning to establish administrative structures reflective of those used by distance education providers. When viewed in tandem, these trends reflect growing convergence between conventional and distance learning modes, leading to the hybridisation of higher education in Canada.

More and more postsecondary institutions in Canada have become involved with technology enhanced learning, generally under the rubric of distance education. Undoubtedly, a major reason for the growth of interest and activity in distance education is a result of rapid developments in what Agre (2000, pg 5) calls "radically improved technologies of information" – essentially computer based telecommunications technologies (in particular, the Web/ Internet and to a lesser extent, interactive video-conferencing).

In the case of the Web /Internet, the appeal of the technology is its ubiquity, affordability, ease of use and vast capacity for accessing and facilitating the flow of information. In the case of interactive video-conferencing, the apparent similarity to the traditional lecture format undoubtedly facilitates the involvement of teaching faculty (Shale and Kirek, 1997). In addition to extending access to geographically or circumstantially isolated students, the real-time interactive capabilities of the new technologies allow for increased interaction between teachers and students – a widely recognised limitation to the older distance delivery modes, such as correspondence.

Interestingly, capitalising effectively on this kind of inter-active capability in the "new" learning technologies is leading some distance education providers

to behave more like conventional educational institutions. For example, the three newest universities in British Columbia have incorporated mechanisms for creating cohorts of students to act as study groups – and for ensuring that group inter-action can indeed occur. This implies set start and completion times for assignments, as well as for the course. Sometimes the group learning activity occurs through online sessions that occur at set times. However, such social aspects of learning will often take the form of some kind of face-to-face contact on a campus. This, of course, is contrary to the early philosophy of open learning systems that sought, *inter alia*, to minimise constraints of time and place.

The capabilities of the new telecommunications technologies to support multi-mediated learning are also having a reverse impact on classroom instruction (Newman and Scurry, 2001). Traditional approaches to using traditional forms of multi-media in classrooms often required specialised skills in the various technologies and specialised, expensive equipment. They were also generally so labour intensive that the time and effort required to use them, limited their use. It is comparatively much easier to use the Web/ Internet and the related software that supports word processing, desktop publishing and so on – and to make the results available to students. Moreover, classrooms are increasingly being equipped to support multi-mediated displays and Internet based information resources.

So, one aspect of the hybridisation of conventional institutions of higher education has been an increase in distance education programming (Shale, 1999). Another aspect is the developmental convergence of face-to-face instructional methods (through multi-mediated delivery) and computer based interactive delivery technologies (through the Web, interactive video-conferencing and so on) (Newman and Scurry, 2001). As one result of these developments, higher education institutions also have to develop new structures in budgeting, instructional support, governance, and organisation – features which are analogous to what one finds in dedicated distance education providers.

However, there are other ways in which the conventional higher education institutions are responding to the open learning ethos created by distance education. One of these is through participation in virtual universities. Although the concept of the virtual university has often been quite vague, in many instances it involves a coming together of providers of distance education courses and programs for purposes of leveraging the "offering power" of any single provider through an association of some sort with the others.

Generally this banding together provides a sort of portal effect (in the Web sense) where students can access a full range of educational programs provided by the institutions in aggregate – whereas any given institution would be constrained by the range of distance education programming each does. To the extent that the virtual university umbrella works in this way, a given conventional institution stands to become a more active and effective participant in distance education. The Open University Consortium of British Columbia (Open

University Planning Council, 1995) has been an example of this kind of approach. More recently we have the example of the Canadian Virtual University (http://www.cvu-uvc.ca/english.html.).

However, in other instances there have been concerted attempts to develop "shared" programming in the sense of facilitated transfer of course credits and formalised articulation of programs – especially to bridge the college/technical institute and university gap. The Canadian "open universities", Athabasca University, the Open Learning Agency, and the Tele-universite have long had mechanisms in place to support this kind of activity. The University of Northern British Columbia, although essentially campus based, regionally as well as centrally, is an example of the conventional style of distance education provision derived from on-campus operations, but with strategic efforts to facilitate the transfer of previously earned credits and to articulate programs with colleges in the northern British Columbia region.

Finally, it needs to be said that there is a strong current of reactionary bandwagonism and financial opportunism that explicitly and implicitly underlay the interest of higher education institutions in alternative delivery methods. One apocalyptic view has the conventional institutions on the road to obsolescence and put out of business by the "new" technologically based educational enterprises. For example, Katz, 1999, pg 15, states, "Some colleges and universities might disappear. Some might actually acquire other institutions. One might even imagine a Darwinian process emerging with some institutions devouring their competition in hostile takeovers."

There are many reasons to regard this kind of rhetoric as far-fetched, even self-serving. However, this particular quote was taken up verbatim in the report of The Advisory Committee for Online Learning, a joint creation of the Consortium on Public Expectations for Postsecondary Education of the Ministers of Education, Canada, (CMEC) and Industry Canada. The position of the Advisory Committee is not atypical and resonance of their position can be heard in the recent (March, 2000) Report from the Task Force on Learning Technologies, which was an initiative of the Council of Ontario Universities.

Others take the view that there is money to be made from the unbounded markets that purportedly are opened up by the remote delivery technologies. As we will see in a later section of the article, these sorts of expectations have lead to some interesting "unintended consequences" for institutions attempting to capitalize on these perceived benefits.

The discussion presented here assumes a pedagogic view of the hybridisation of higher education. It should, perhaps, be acknowledged that technology is also substantially affecting the administrative and student support functions available to distant and on-campus students. For example, online access to course and program calendars, course descriptions, online registration, online library/ information services, and so on, are features valued whatever the modality of

instructional delivery.

The Societal and Institutional Context

The Canadian constitution assigns responsibility for educational matters to the provinces – and, in the case of higher education, the institutions (within the context of their statutory missions) are free to choose how they will discharge their educational mandates. The federal government of Canada has only an indirect influence on educational matters through grants and the transfer of tax points – as well as by supporting a number of research granting agencies and some student financial support (although the provinces also do this). Funding is provided by each respective provincial government to the postsecondary institutions through the bureaucracy established by each province.

In turn, the educational institutions are autonomous with respect to how they fulfill their statutory mandates. Each respective institution through the particular governance and budgetary processes they have put in place, determines priorities within each institution and their associated budget allocations. With some exceptions, these processes are bicameral in nature, with financial matters the responsibility of a Board of Governors, many of whom are appointees drawn from the general public – and academic matters, responsibility for which is vested in a committee comprised of ex-officio administration representatives and members elected from the wider academic community.

Historically, universities have essentially been differentiated from other kinds of postsecondary institutions by virtue of their statutory authority to grant degrees. However, there has been a recent trend for provincial governments to authorise colleges and technical institutes to offer what are usually referred to as "applied degrees." In addition, a number of colleges, particularly (but not exclusively) in British Columbia, have been designated as "university colleges," which allows them to grant some baccalaureate degrees equivalent to those granted by the respective provincial universities.

Most postsecondary institutions in Canada are publicly funded and are accountable through duly constituted boards. As a result, postsecondary programming is of a uniform good quality and there has been no need for the kind of accreditation process and associated bodies that one sees in the United States. However, several provinces are now permitting private institutions (largely faith-based institutions) and business enterprises (such as DeVry) to offer similar kinds of programs and credentials. Generally there is some kind of licensing review (which may involve a form of quality appraisal) to ensure that there is some credibility to the programs offered and to provide some guarantee that students will receive what they pay for.

Historically, the long established universities have chosen to address their public

service responsibilities for outreach through extension services. Distance education courses and programs were typically added later and on an ad hoc basis. Some distance education initiatives did relatively well and have come to be well known (for example, at Queens University and the University of Waterloo). Although it is difficult to say conclusively, it would seem that in no case did distance education emerge as a part of a strategic institutional initiative within the longer standing higher education institutions.

This ad hoc approach has generally resulted in an awkward fitting of distance education within conventional institutional organisational frameworks – and especially within the universities. Academic regulations and approvals have been restrictive, funding and staffing commitment (i.e., teaching faculty) was problematic, often tenuous. As a result any concerted distance education enterprise of the sort mounted by, say, Simon Fraser University and Waterloo, has relied on some form of protective organisational and budgeting mechanisms to support their development and continuation. Some institutions were better or more fortunate in how they set up such arrangements. As a result, some have developed more extensive and longer-lived distance education operations than have others. In any event, hybridisation in this context was an almost subversive activity. It was an "add-on" to the traditional institutional mandates and existed as a function separate from the core institutional business of on-campus teaching.

Hybrids With A Difference

Of course, the statutory missions of any postsecondary institution over a decade or so old, would have been formulated in the absence of a full appreciation of the capabilities of the "new" computer based telecommunications technologies. In the relatively recent past, however, four new universities have come on the scene in Canada that have deliberately shaped their mandates to incorporate technology supported delivery of education. Interestingly their strategic views of technology-supported learning are quite different. As a collective, they represent quite different faces of the hybridisation of higher education.

Perhaps the most unique of these is the Technical University of British Columbia (TechBC). There are many aspects to this uniqueness – all of them related to Tech BC's strategic view of technology-supported learning. One of these is the unicameral governance structure adopted by Tech BC. Another is its use of term definite appointments in lieu of tenured academic appointments. Tech BC is also unique in its pedagogic philosophy, which takes the view that technology should be used in those teaching/learning circumstances where it is warranted. This view does not force a distinction between distance education and traditional on-campus education. If the pedagogic requirement is compatible with technologically supported delivery, then that is the determining consideration. If there is a pedagogic requirement for students to work collectively (either supported

by technology or face to face meetings), then that requirement is addressed through the instructional design of the course and students accommodate to it. Notwithstanding this epistemological seamless-ness, Tech BC applies a guideline that fifty per cent of each course be available on the Web.

In a sense, at the other end of the continuum is the University of Northern British Columbia (UNBC). Technology supported learning is a strategic consideration for UNBC, but within their over-arching mandate of educational delivery to the northern British Columbia region (UNBC, Planning for Growth, 1997). Distance education is just one of the means they use to reach their geographically dispersed target population – but within a pedagogical view that face-to-face instruction is the preferred instructional format. As a result, distance education at UNBC is quite similar to the external studies format so commonplace in conventional institutions. Notwithstanding UNBC's institutional commitment through its mandate to distance delivery, UNBC experiences the same kinds of tensions that can be observed in the classical "external studies" style of distance delivery. In particular, there is the usual competition that naturally arises when there are the two educational delivery modalities to support. Historically, the institutional politics and budgetary structures of bi-modal institutions have resulted in a systemic biasing to the conventional on-campus operations – and a concomitant organisational mechanism to address this imbalance of emphasis and power.

The third institution in British Columbia is Royal Roads University, which is also distinctive in a variety of ways. It, too, has adopted a unicameral governance structure and largely term definite academic appointments (i.e., no tenure). Moreover, the university is meant to be self-sufficient with respect to funding. Programmatically, Royal Roads University "specializes in degree programs aimed at mid-career professionals who want to advance their careers, while balancing the commitments of work and family" (*www.royalroads.ca).* Royal Roads uses distance delivery in different ways and to different extents depending on the program involved. Some programs require students to be on-site for instruction – other programs are essentially web delivered. At the Masters level, all programs require some "residencies" to be spent on-campus.

Canada's newest university, The Ontario Institute of Technology, is still starting up and has yet to take on an operational persona. However, the language around its establishment speaks of being "on the leading edge of e-learning" through "the most advanced learning technology solutions in the country." Exactly what this implies is yet to be made clear. On the basis of the stated expectations, it would sound as though The Ontario Institute of Technology is positioned to be like the Technical University of British Columbia.

Intended and Unintended Consequences

Intentions and perceived consequences are very much in the eyes of the beholder – and it is usually very difficult to identify a beholder in the bureaucratic world of educational institutions. If one can imagine a collectivity of administrators or a Board of Governors being the beholder, then there are different kinds of responses that one sees. Any amount of distance education can be touted as a success – but often the public affairs effect is amplified if the effort can be viewed as collaborative – as, for example, would be the case if a course were team taught as a way of sharing expertise among different institutions (or if a program was jointly delivered with one institution providing some courses and another institution providing others thus making up a full program). However, when the expectations have been inclined towards rhetoric of "transforming" the educational experience, "opening new markets of learners," making money from distance education and teaching more students more cheaply – then the experience over-all to date has been a substantial disappointment.

Other, associated unintended consequences have been: a covert and overt resistance to any attempts to force the implementation of technology-based learning in support of making education cheaper while solving the dilemma of growing demand, and as a money making proposition. The *cause celeb* in this regard has been the case of York University, where the faculty negotiated a provision in their contract with the university that faculty members would not be forced to teach through the mediation of technology. This has been an issue elsewhere (i.e., Acadia University), so it is more than just a local idiosyncratic development. An issue somewhat related to this is the matter of intellectual ownership/copyright of courses and associated materials – particularly in the context of making a business out of distance education. Distance education is proving to be far more expensive and labour intensive than most people imagined and this has had substantial implications for what programming is offered and for whatever cost recoveries are aimed for.

From the point of view of the teaching faculty, the informal consensus has been: (1) It is a much more effective mode of teaching and learning than most instructors would have acknowledged before becoming involved – to the extent that many become active advocates of distance education. (2) Distance teaching requires far more work and advance planning than classroom lecturing. (3) The ease of interaction supported by computers and telecommunications technologies and the apparent immediacy of communication has resulted in a volume of email difficult to cope with and expectations with respect to responding that simply cannot be met in practice. (4) Individual instructors interested in "doing" distance education are finding it difficult to obtain requisite infrastructure support from their institutions, whether it be computers, software or high speed internet access – moreover, services such as instructional design, media production, and technical support are typically not made available to teaching faculty.

Perhaps the most surprising unintended consequence – if only because it is typically felt to be so mundane and even boring – has been the matter of copyright and intellectual ownership. Although this fire has always smoldered in the background, the prospect of making money from courseware has fuelled the fire. A large part of the debate concerns the legitimacy of the concept of commercialisation in higher education and its subverting effects. In addition, there is the matter of who gets paid what for courses and material developed by faculty members.

Implications

As with consequences, implications depend on the lens through which one views the situation. If we are to believe the futurists, then the implications of not becoming hybridised quickly enough, is that the conventional higher education institutions as we know them will become "obsolete" – their functions having been taken over and discharged more responsively and effectively by those institutions that have adopted technological bases for teaching and learning. Effectively virtual universities would supplant conventional campus based institutions. Millions, if not billions, of dollars are to be made, and are being made by proprietary operations such as the University of Phoenix – the unstated implication being, again, that these kinds of enterprises will eventually put the conventional institutions out of business.

As the bandwagon of technologically based teaching learning has rolled along, it has become apparent that there is an important niche market for distance education – and the successful enterprises are effectively creaming this off – the University of Phoenix operation is an organisational example. One can also regard the burgeoning of moneymaking Executive MBA programs as another manifestation. However, it seems more than a little hyperbolic to claim that conventional higher education institutions will cease to exist or will be so transformed as not to be recognizable. Certainly there is no evidence of this in the current state of affairs – and the "dot.com" transformational view has been touted for at least the past half decade.

At the level of the teacher and student, the new technologies can only improve the prospects of both distance delivered teaching and on-campus teaching – distance delivery because of the enhancement of the quality of interaction between teacher and student and among students, on-campus teaching because a multimediated, systematic approach can only improve classroom teaching (and some would argue that the facilitation of electronic interaction among on-campus students also makes instruction more effective).

However, the conventional institutions are going to have to change the way they currently organise themselves to deliver distance education, the way the

function is budgeted, the quality of the infrastructure support provided, the advisory and instructional support made available, the reward structures offered to faculty – as well as resolving the very substantial issues of technology adoption and intellectual property rights. Historically, this has proven to be very difficult because, as noted above, the governance and budgeting structures (as well as faculty reward systems) in conventional institutions are stacked against alternative delivery. To some degree Tech BC and Royal Roads University have attempted to address this tension through their particular approaches to statutory authority and governance structures.

Another aspect to the organisational challenges faced by conventional institutions is the administrative framework needed to contend with the kind of integration required by technology-based teaching. In dedicated distance providers one finds subsystems dealing with: courses and course production; students; a regulatory subsystem; a logistical subsystem (which remains critical even though more material is being put online and distributed electronically. All of this is this is a substantial problem for the conventional institutions – especially if they do not have a strategic view of the use of technology in education, as is the case for almost all of them – because without an appropriate supporting technological framework, the institutions and their faculty will be substantially constrained in the extent to which they can implement seamless multi-mediated instruction or even stand alone distance delivered programs.

The issue of intellectual ownership is difficult and many faceted. In almost every issue of the Canadian Association of University Teachers Bulletin and The Chronicle of Higher Education there are one or more items pertaining to this matter. Where unionised or union-like associations are involved in terms and conditions of employment, ownership of intellectual property can be negotiated. To the extent that ownership is wholly or partly vested in the faculty member, the institution is potentially highly constrained in the extent to which it can offer technology-based education. For example, revision of course materials would require permission of the original author – failing this permission, a course would have to developed *de novo* based on a different faculty member but with the same prospect to follow after that. This is a very difficult basis on which to build an abiding program – let alone one that would be cost effective or a revenue generator.

Limitations to Hybridisation?

One could argue that the logical extension of the kind of hybridisation mentioned here would be a complete merging of the two worlds of distance delivered and on-campus education – in essence, a "goodbye distance education, hello distributed learning." This may be possible in carefully configured environments like that created by Tech BC. However, it would take an entirely unrealistic amount of

change (whether attitudinal, organisational, strategic, financial or whatever) to fully convert a traditionally styled institution. What seems more likely is that we will see more of the same kind of adaptation that we have had to date. Some institutions will continue to have good reason to offer conventionally configured distance education – even though technology may be used more often and more effectively in the delivery. In other cases, we will see more examples of certain programs and/ or courses that are fully hybridised.

Moreover, the issue of intellectual ownership of courses and programs, as noted above, has the potential for being the ultimate limiting condition.

Finally, change of all kinds and all levels is almost always of an incremental type. Very few innovations of any kind have resulted in fundamental, revolutionary change. There are those proponents who would maintain that in fact, the advent of the telecommunications based technologies is having a revolutionary impact on society. Perhaps in some sense that is true. However, the educational process remains much as it has been for centuries. The easy access to "all the information in the world" should not be confused with a general advancement of individuals' education. As Katz (2001) argues, we should not confuse a tool for technology for a goal. As useful as the technology can be, institutions of higher education must realise that their critical role is to provide for the basic things that all learners need: "access to communities where information can be shared and knowledge created, resources for access to local and distance communities, and widely accepted system for warranting the learner" (Brown and Duguid, 2000). At the end of it all, education is a social activity and not just a matter of information and its manipulation.

Bibliography

Agre, Philip E. (2001). Commodity and community: institutional design for the networked university; *Planning for Higher Education*; Vol. 29, No. 2, Winter 2000-2001.

Brown, John Seely and Paul Duguid (2000). *The Social Life of Information.* Boston MA: Harvard Business School Press

Canadian Information Centre for International Credentials (2001). *Postsecondary Education Systems in Canada: Overview.* Found at: *http://www.cicic.ca/*

Council of Ontario Universities (2000). A time to sow: report from the task force on learning technologies. Toronto, Ontario.

Farquhar, Robin (1998). Implications of the Virtual University for Academic Leadership. *University Manager*, Summer, pp 30-33.

Katz, Stanley N. (2001). In information technology, don't mistake a tool for a

goal. *The Chronicle of Higher Education*, June 15, 2001, B7-B9.

Newman, Frank and Jamie Scurry (2001). Online technology pushes pedagogy to the front. *The Chronicle of Higher Education.* July 13, 2001; pp. B7 - B10.

Open University Planning Council (1995). *The British Columbia University Learning System, 1994-95.* Report prepared by the Open University Planning Council, Vancouver, B.C.

Shale, Douglas (1999). University distance education in Canada. In Keith Harry (Ed.), *World review of distance education and open learning: Volume 1.* London, New York: The Commonwealth of Learning and Routledge.

The Advisory Committee for Online Learning (2001). *The e-learning e-volution in colleges and universities: a pan-Canadian challenge.* Information Distribution Centre, Communications Branch, Industry Canada; Ottawa. Found at: http://www.schoolnet.ca/mlg/sites/acol-ccael. .

University of Northern British Columbia (1997). *Planning for Growth: The Report of the University Planning Committee* Found at: http://www.unbc.ca/reports/. .

Web-Based Education at Conventional Universities in China: A Case Study

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Abstract

With advances in information and communication technology (ICT), Web-based education has become an increasingly popular instructional mode all over the world. In recent years, the Chinese government has authorized a total of 45 universities to offer Web-based educational programs. One is China Central Radio and Television University, the Open University in China. The other 44 universities are all leading conventional universities. This case study is intended to provide a descriptive analysis of Web-based educational practices at the 44 leading conventional universities, by focusing on the current state of Web-based education in China and its discernible trends for the future. It is hoped this analysis of Web-based educational efforts in China will provide some insight for other countries.

Introduction

Regarded by many as a major form of advanced distance learning, the Chinese government has taken various measures to boost Web-based education. The Ministry of Education has launched a special project to achieve this particular purpose, the *Modern Distance Education Project*, and has provided the authority to a total of 45 universities to offer Web-based higher education programs nationwide. Among them is China Central Radio and Television University (CCRTVU), the Open University in China; the other 44 universities are all leading conventional universities.

Each of the 44 conventional universities has established a special Institute of Online Education to take exclusive charge of their Web-based higher education programs. The programs offered are primarily degree or diploma based and they are delivered via the Internet or the Web in conjunction with other media.

Students are normally admitted based on a mixed system of free admission and entrance exam admission. They are also given a flexible time span for their course study.

Generally, Web-based education at the 44 leading conventional universities in China has been conducted smoothly. But as with other innovations, it has encountered problems and difficulties. In this article, the following issues will be examined: What are the major problems and difficulties encountered by students in accessing the Internet? What cost considerations are involved? How about the shortage of online instructional resources? Can the infrastructure in different universities be integrated to achieve economies of scale? Are external online learning support centers managed effectively? What training is needed to help instructors teach online courses effectively? Is web-based education extended to remote and poor areas? How about the accreditation of web-based education and the assurance of the quality of its graduates?

With the aim of providing a holistic and descriptive analysis of Web-based educational practices at the 44 leading conventional universities in China, this paper will start with a brief introduction to the societal and institutional contexts. It will then focus on the actual Web-based educational practices at the 44 conventional universities in terms of their course, student, regulatory, logistical, and the technological subsystems. The paper will then discuss some of the intended and unintended consequences of Web-based educational initiatives and examine future trends. Finally, the implications of Web-based education and its effect on higher education students, teachers, university administrators, and government policy makers will be discussed.

Societal and Institutional Contexts

Country profile

The People's Republic of China is situated in eastern Asia, and is bounded by the Pacific Ocean in the east. Being the third largest country in the world, it has an area of 9.6 million square kilometers, or one-fifteenth of the world's landmass. China has diverse types of land resources. There are more mountains than plains, with cultivated land and forests constituting only small portions. The land formation consists of 33 percent mountains, 26 percent plateaus, 19 percent basins, 12 percent plains, and 10 percent hills (CIIC, 2001). Most of China is in the temperate zone, although geographically it stretches from tropical and subtropical zones in the south, to the frigid-zone in the north.

There are 22 provinces, five autonomous regions, and four municipalities in mainland China. According to the latest results of the fifth national population census conducted by the Chinese government in November 2000, the total pop-

ulation of mainland China is 1.26583 billion, accounting for approximately 22 percent of the world's total population. China's urban population accounts for 36.09 percent, while the rural population make up the remaining 63.91 percent. The average annual population growth rate is 1.07 percent (National Bureau of Statistics, 2001a).

China is a unified, ethnically diverse country, comprising 56 ethnic groups. The Han makes up 91.59 percent of the total population, leaving 8.41 percent for the other 55 ethnic minorities.

Since the late 1970s, when the reform and opening-up drive was initiated, China's economy has been accelerating at a stead pace. This has resulted in significant improvements in China's standard of living. Table 1 and Table 2 provide a general picture of these great changes.

Table 1. GNP and GDP Increase in China, 1980 - 1999 (Unit: RMB100 million*)

Year	GNP (Gross National Product)	GDP (Gross Domestic Product)	GDP per capita
1980	4517.8	4517.8	460
1985	8989.1	8964.4	855
1990	18598.4	18547.9	1634
1995	57494.9	58478.1	4854
1999	80422.8	81910.9	6534

Source: Adapted from *Statistical Yearbook of P.R. China (2000b)*
* 1US$ ≈ 8.2 *yuan* (RMB)

Regarding emerging information and communications technologies (ICT), China has experienced rapid growth in overall communication connectivity during the past two decades. According to the Ministry of Information Industry (MII, 2001a), by the end of 2000, residential telephone users will number 145,122 million, mobile phone users 85,26 million, and Internet users 16,017 million. The number of mobile phones per 1,000 persons was only 10 in 1997 (*China Today*, 2001), rising to 72 in December 2000, and 85 June 2001 (*Ta Kung Pao*, 2001). There were on average, 6 personal computers per 1,000 persons in 1997, (The World Bank, 2000) and 9.5 personal computers in 1999 (*China Today*, 2001).

According to the *White Paper on Population in China*, issued by the Information Office of the State Council in 2000, the population living below the poverty line

in China's rural areas, decreased from over 250 million in the late 1970s, to approximately 34 million in 1999. This reflects a 33 percent drop in rural poverty rates. Today, impoverished people living in rural areas have basically achieved adequate levels in terms of feeding and clothing, and the average life expectancy has increased to 71 years. According to the fifth national population census conducted in November 2000, just over eighty-five million of China's 1.26583 billion citizens living on the mainland are considered illiterate (i.e., adults over 15 years of age who cannot read or can read very little). This can be compared to data collected during forth-national population census conducted in 1990, which reflected an illiteracy rate of 15.88 percent. In the course of ten years, China's illiteracy rate has dropped 9.16 percentage points, to 6.72 percent.

Despite these noteworthy advancements, China is still a developing country. Not only does China have the largest population on Earth, it is supported by a weak economic foundation, as reflected in relatively inadequate resources per-capita. Furthermore, economic development is regionally unbalanced. China's western regions and inland areas are generally less well developed than its eastern regions and coastal areas. These are the basic national conditions of China, and these distinctive features and contexts must be taken into full account when policies concerning China's economic and social development – including education – are made.

General Higher Education

Higher education in China consists of general higher education and adult higher education. General higher education is offered by China's conventional universities and colleges, and caters to senior secondary school graduates. Adult higher education, on the other hand, targets working adults and is offered by conventional universities and colleges and by institutions that specialize in adult higher education such as China Radio and Television Universities (China RTVUs, the Open University system in China), staff training colleges, educational colleges, etc., (Yang, 2001a).

General higher education in China comprises junior college, Bachelor's, Master's and Doctoral degree programs. The duration of junior college programs is two to three years, depending on the subject area studied. Bachelor programs generally last four years (medical and some engineering and technical programs, five years). Graduate degrees, such as Master's degree programs take two to three years additional study, after which Doctoral programs take another three. Students are normally admitted to higher education degree programs, including Masters and Doctorates, by passing relevant national entrance examinations. The average age of students participating in junior college is 18 – 20; the average age of students participating Bachelor degree programs is 21 – 22 years. Entrants are generally senior secondary school graduates. Upon the successful

completion of a junior college program, students are awarded a higher diploma in their related subject areas.

Table 3 below provides some details on the development of general higher education offered by China's conventional universities and colleges in the years 1985 to 2001.

Table 3 above shows that general higher education in China has been developing at a steady pace. The most significant changes, though, took place in 1999 when the Chinese government expanded higher education dramatically. This fact is noted in Table 3, which shows that nearly a half million new higher education students have been admitted since 1999. According to the *Action Scheme for Invigorating Education Towards the 21st Century* (MOE, 1999), drafted by the Ministry of Education in 1998 to officially guide the overall educational development in China (and formally approved by the State Council of People's Republic of China in 1999), one strategic objective is to increase university participation rates by 15 percent by 2010. Thus it is natural to expect considerable growth occurring in China's higher education sector now and in the years to come.

Two primary reasons contributing to the dramatic expansion of higher education in China since 1999 have been identified (Lin, 2001; Yang, 2001). One reason is that the system of higher education in China, due to its historically limited and restrictive features, could no longer keep up with increasing demand. Expansion, therefore, will make it possible for more people (especially senior secondary school graduates) to have access to higher education opportunities. Another reason is that expansion in higher education is expected to stimulate economic growth, as students will be required to pay for their higher education. At a time of global economic downturns, stimulating educational spending is anticipated to help boost China's economy.

Distance Education by Conventional Universities and Colleges

Distance education in China has evolved through three stages: correspondence-based education; broadcasting/television-based education since the 1980s; and advanced distance learning based on information and Internet technologies since the 1990s (CERNET, 2001d). The third stage is still in the embryonic phase, but is experiencing rapid growth and development in China.

Distance education in China, is offered by two types of educational institutions: single-mode open universities and various distance education colleges, schools, departments, and sections found in conventional universities and colleges. An example of a single-mode open type, are China's radio television universities.

The latter type are found in different conventional universities and colleges, and given different names such as adult education college, correspondence education department, institute of online education, etc.

In fact, most of the conventional universities and colleges in China set up distance education colleges, schools, or departments since they were established. In other words, most conventional universities and colleges in China are dual mode institutions offering conventional face-to-face instruction to regular on-campus students, while at the same time offering distance learning programs and courses to off-campus students who are mostly working adults studying part time. The major teaching-learning modes are correspondence instruction and weekend or evening classes. These programs may be degree-based or simply training-oriented.

Web-Based Education at Conventional Universities

Background and a Chronicle of Efforts

As is true elsewhere, the exponential growth in information and communication technologies has had a profound effect on China's higher education system. Web-based education is becoming an increasingly popular instructional mode. As part of its drive to expand higher education to the benefit of its entire population, in recent years the government has engaged in various measures to boost Web-based education, primarily because it is viewed as a major component in the construction of nationwide open education network and lifelong learning system (MOE, 1999). For example, in the *Action Scheme for Invigorating Education Towards the 21st Century*, a new project called the *Modern Distance Education Project* was launched with the objective of making full use of the modern ICT to extend China's limited educational resources outwards to help reach its vast population. The developmental focus of this project is Web-based education.

China's leading conventional universities have responded quickly and enthusiastically to this government initiative. As part of its efforts to implement the *Modern Distance Education Project* and to help promote Web-based education, Hunan University, in cooperation with Hunan Telecom, established China's first online university in 1997. In 1998, Tsinghua University launched an online Master's program. In July 2000, the Ministry of Education released the document, *Provisional Administration Methods for Educational Websites and Online Schools*, thereby enunciating its jurisdiction over educational Websites and Web-based schools. Shortly thereafter, the Ministry granted online learning licenses to 31 universities in China, including the China Central Radio and Tele-

vision University (CCRTU), the academic headquarters of China RTVUs. The Ministry then issued *Several Comments on Supporting Some Universities and Colleges to Set up Institutes of Online Education to Pioneer distance learning*, a document that announced substantial autonomy for the 31 universities pioneering Web-based instruction initiatives. Universities that have been granted licenses are now allowed to establish their admission gateways and determine admission quotas. They are also allowed offer programs both in and outside of the subject catalogues produced by the Ministry of Education. They can also award certificates, diplomas, or degrees formally recognized by the government, plus they are authorized to establish external online learning support centers (CERNET, 2001d).

According to the latest statistics from the Ministry of Education (MOE, 2001b), a total of 45 universities (CCRTVU and 44 leading conventional universities) have been granted online learning licenses by the Ministry of Education. By March 2001, the total number of students enrolled in various programs at these 45 universities reached over 240,000 (180,000 students at CCRTVU and 65,000 students at 44 conventional universities) (Yin and Lu, 2001). By September 2001, this number is expected to reach 400,000 (Fu, 2001). In addition, the first batch of online students graduated in July 2001, when 255 out of the 308 students enrolled in the Bachelor business administration program successfully completed their studies at the Institute of Online Education at Zhejiang University. This number reflects a program completion rate of 82.8 percent (Pan, 2001).

To provide a clearer picture of Web-based education in China today, the discussion that follows will focus on five subsystem of the 44 leading conventional universities: (1) course, (2) student, (3) regulatory, (4) logistical, and (5) technological.

The Course Subsystem

According to Huang (2001), current Web-based educational programs offered by the 44 leading conventional universities in China are either at the diploma or degree level. The programs can be divided into five types. Postgraduate diploma programs cater to Bachelor degree graduates either from conventional universities and colleges, or from adult higher education institutions. So far, only Tsinghua University, Beijing Institute of Technology and Shanghai Jiaotong University offer this type of online learning program. In the Bachelor programs offered by 92 percent of the 45 providing universities (including CCRTVU), students gain admission with a junior college higher diploma. The other three types include a second Bachelor degree program, a Bachelor program starting with a senior secondary school certificate, and a junior college higher diploma program. These five types of Web-based programs have been extended to all 31 provinces, autonomous regions, and municipalities across China's mainland

(Yin and Lu, 2001).

The 45 online learning providers (including CCRTVU) offer a total of 51 specialties in eight subject areas (Yin and Lu, 2001). Computing Science and Technology and Business Administration are most the popular, with 76 percent of the 45 providing universities (including CCRTVU) offering these two specialties. In addition, 60 percent of the 45 providing universities (including CCRTVU) offer Finance programs, and 48 percent offer English and Law. The provision of these popular specialties indicates high demand for professionals in these job areas (Huang, 2001).

In terms of the teaching and learning modes adopted by the 45 online learning providers (including CCRTVU), Huang (2001) broadly classifies them into two kinds. One kind is defined as "distance real-time instruction mode," or simply "live transmission classroom + online self-study courseware + online discussion and problem solving + tutorial support at a study center." This mode has a higher hardware and technical support requirements. Tsinghua University, Shanghai Jiaotong University, South China University of Technology (Guangzhou) and China Central Radio and Television University all engage in this particular teaching and learning mode. The second kind is termed by Huang (2001) as "distance self-study courseware instruction mode," or more simply "self-study courseware + online discussion and problem solving + tutorial support at a study center." This mode requires less hardware and technical support and is used in universities such as Renmin University of China (Beijing), Beijing Foreign Studies University and Southeast University (Nanjing).

In terms of course material provision, most of the 44 leading conventional universities strive to offer a variety of media choices to students. For example, the Institute of Online Education at Beijing Foreign Studies University provides print materials, audiotapes, videocassettes, VCDs and CAI coursewares as an integrated learning package to its Bachelor of English students. Course materials offered by these universities typically include print (textbooks), coursewares (CD-ROM version and/or online version) and online courses. These materials are either specially prepared for Web-based educational programs, or borrowed from regular traditional programs.

In terms of course material delivery, the 44 leading conventional universities normally deliver course materials to online to their learning support centers across the country, where students are then notified to pick them up at a location convenient to them. The other delivery method is to post course materials directly to the students' homes or place of work. As for the materials delivered online, students can access them via their own computer at home or at work, or at computer study labs located at their local learning support centers.

The Student Subsystem

In terms of student admission to different online learning programs, China's 44 leading conventional universities participating in Web-based programming usually employ a mixed measure of free admission and entrance exam admission. Table 4 below summarizes the admission policies of these 44 conventional universities.

Most of the 44 conventional universities adopt a flexible credit system based on different lengths of study, depending on the online learning program pursued by students. Table 5 below provides a summary of the credit system generally followed by these universities.

Students participating in Web-based programs at 44 conventional universities usually pay fees for tuition, course materials, make-up exams, degree applications, certificate production, English exams, and entrance exams. Tuition accounts for the largest percentage of all fees charged. According to Huang and Luo (2001), due to regional differences in economic development, tuition fees vary from university to university. Universities in South China charge the highest fees, universities in Shanghai rank second, and those in Beijing rank third. Tuition fees in Central and Western China are the lowest. For example, total tuition fees for a Web-based Bachelor program starting with a senior secondary school certificate are 36,000 *yuan* in South China, 28,000 *yuan* in Shanghai, 18,000 *yuan* in Beijing, and 10,000 *yuan* in Northwestern China.

The Regulatory Subsystem

China's 44 leading conventional universities have attached great importance to Web-based education ever since they received authority from the Ministry of Education to run online learning programming. All have established within their university's existing organizational structure new departments to take exclusive charge of Web-based educational programming. In most cases, these departments are called: "Institutes of Online Education." Regulatory requirements established by the Ministry of Education, deem that the chief university officer take full charge of their university's online institute. For instance, at Beijing Foreign Studies University, its President is also the Dean of its Institute of Online Education.

Structurally parallel to other academic departments and administrative bodies within the university, these Institutes of Online Education usually are comprised of the following units: General Office, Student Recruitment and Admission Section, Teaching Administration Section, Student Management Section, Course Development Section, Technical Support Section, and Finance Section. In addition, the Institute of Online Education has external online learning support and study centers located across the country.

In terms of the delegation of responsibility, the General Office of the Institute of Online Education provides general clerical support to its staff and students. The Student Recruitment and Admission Section is in charge of student admissions and entrance exams. The Teaching Administration Section is responsible for teaching affairs, including tutorial sessions, and tutor recruitment and management. The Student Management Section is in charge of student affairs, including registration, and student support and counseling. The Course Development Section is accountable for instructional materials, courseware, and online course development. The Technical Support Section provides technical support for course delivery, systems maintenance, and courseware development. The Finance Section oversees the financial affairs of the institute.

There are few full-time staff members in the Institutes of Online Education at the 44 conventional universities, most having been transferred or on loan from other academic departments within the university. In some universities, there are only about 10 full-time staff members working in the Institute of Online Education. As a result, most staff members engaged in Web-based education (and more broadly distance education) are new to teaching online.

The Logistical Subsystem

The Technical Support Sections in the Institutes of Online Education are responsible for the purchase, development, and maintenance of their university's instructional delivery system. The General Office, Student Management Section, Finance Section, and other sections provide logistical support to ensure the smooth operation of the whole institute. The Dean of the institute acts as general coordinator for different departments and sections inside and outside the institute.

The Technological Subsystem

To shorten the distance between tutor and student and to enhance two-way tutor-student communication, most of the 44 conventional universities have strived provide a variety of modern transmission and interactive technologies in conjunction with the Internet. Table 6 illustrates some examples of integrated ICT use at some key conventional universities in China. The data gathered is from the homepages and brochures of the universities listed.

Intended and Unintended Consequences

Intended Consequences

In spite of its rapid growth, advanced distance learning based on emerging information and communication technologies is still in its early stage in China. Now considered a major form of advanced distance learning, Web-based education is becoming popular both at the single-mode distance teaching universities such as China RTVUs, and at the duel-mode conventional universities. Web-based educational modes practiced at China's 44 leading conventional universities, has produced a positive effect on the country's higher education sector. Firstly, Web-based education has provided a new path to people desiring access to higher education, and is thereby seen as contributing to the government's goal of popularizing higher education among its vast population. Secondly, Web-based education has increased and extended the use of the educational resources developed by conventional universities. Quality educational resources are being shared online by staff and students via the Internet, serving a much larger learner cohort than was previously possible in campus-based situations. Thirdly, Web-based education has provided new ways of thinking and new methods of teaching and learning. In the past, conventional universities had been characterized by a combination of textbook learning and "chalk and talk," a dynamic where teachers plays the central role in the classroom while students remain passive learners. With the introduction of the Web-based instructional mode, teachers and students now find the multimedia course materials more interesting and stimulating. Students have more autonomy in their own learning, and teachers play a more significant role as facilitators. At Hunan University, for example, on-campus students are now using Web-based courses and learning materials originally intended for its Institute of Online Education students, thereby creating a greatly amplified benefit. Due to the generally positive outcomes Web-based education has produced for its higher education system, the Ministry of Education has decided that more conventional universities will be authorized to offer online learning programs as part of its lifelong learning system in China (Fu, 2001).

Discernible Trends

Based on the practices at the 44 leading conventional universities, three trends can be identified in the provision of Web-based education in China today. One trend is that Web-based educational programs are usually offered jointly by the providing university and by an external enterprise. The university normally takes charge of instructional affairs, whereas the enterprise contributes in terms of funding, technology, and marketing. For example, Beijing University of Posts and Telecommunications joins hands with China Telecom to offer Web-based

programs. Beijing Foreign Studies University offers a Web-based Bachelor of English program in partnership with Pacific Century Cyberworks (PCCW) in Hong Kong. It is thus evident that Web-based education has promoted, and will continue to promote, integration and cooperation between universities and enterprises.

A second trend, observed in some of the 44 conventional universities (e.g., Tsinghua University and Zhejiang University) is the establishment of external online learning support centers at local China RTVU study centers. Web-based education has thus enhanced cooperation between traditional universities and distance teaching institutions, although it should be admitted that the competition between them is increasing. However, according to Jiang (2001), two major conditions will work to promote increased cooperation over that of competition. First, traditional universities are strong in their access and production of quality educational resources. Secondly, China's RTVUs are strong in their system networking, and learning support and learner management services. Cooperation, therefore, benefits both sides. Another reason is that the higher education market in China is so enormous, it will remain a sellers-market for the foreseeable future.

A third trend involves the design and development of multimedia integrated course delivery packages. There is broad consensus that the Internet is only one medium for instructional delivery. Therefore, where appropriate, Web-based instruction will be supported by other instructional media such as: print materials, audiotapes, videocassettes, radio and TV programs, VCDs, CD-ROM coursewares, etc. It will also be supported, where necessary, by other instructional means such as tutorial sessions, pair work, group work, etc.

Unintended Consequences and Problems Encountered

As with any other innovation, Web-based education in China has encountered problems and difficulties despite its rapid development. A careful analysis shows that six major problems remain and yet to be resolved.

The first problem is that many students simply do not have access to computers or the Internet at home, as is particularly the case for students from poor families. Even if students do have a computer and Internet access at home, bandwidth may be so narrow, and download times so slow, they often lose patience. Cost is another barrier to access. The price for the Internet access is still relatively high in China, therefore many students simply cannot not afford Web-based education as a chief way of completing their years-long program of study. Official charges for a dial-up Internet access in China currently stand at 4 *yuan* per hour for the first 60 hours. If the surfing time stretches beyond 60 hours, charges rise to 8 *yuan* per hour. In addition, students must also pay local calling fees over and above their Internet access fees. Local calling fees

vary in different parts of China. For example, in Beijing the local calling fee is 5.4 *yuan* per hour (see Table 2 for the average annual salary of an employee in China). And while there is 50 percent discount on Internet dial-up charges during non-peak hours (23:00-8:00 on work days and 0:00-24:00 on public holidays and weekends) (MII, 2001b; CNNIC, 2001), it remains prohibitively expensive for many students. Finally, universities that offer Intranet facilities where the students can engage in online learning, (in reality the most popular practice at the moment at all of the 44 leading conventional universities) many students still face problems of access due to time and place constraints on part of both students and providing institutions.

The second problem concerns the shortage of online instructional resources and duplication of online programs. At present, all of the 44 conventional universities are investing heavily in hardware. But there still remains a shortage of appropriate software and courseware resources. Many of the 44 conventional universities offer similar specialties and course offerings, each requiring substantial investments in course research and development. This has led to the duplication of resource materials produced by these universities, thereby creating unnecessary waste in terms of human and financial resources. Coordination, therefore, is necessary to conserve resources and to promote the leveraging and sharing of high-quality educational resources among different universities.

The third problem concerns the effective management of external online learning support centers located both on-campus and at locations across the country. Normally these centers are based in other educational partner institutions. A key issue for expansion of Web-based education, therefore, is determining how best to establish and maintain constructive and mutually beneficial relationships between partner institutions to ensure effective learning and student support.

The fourth problem concerns teacher training at each of the Institutes of Online Education. As mentioned earlier, staff members working at these institutes mostly transfer in, or are on loan, from other academic departments. Because Web-based education, or more broadly distance education, is partially or totally a new thing to many of these teachers, training is an urgent task facing these universities. Without adequate training, it is hard to expect teachers to produce top quality online learning materials and provide top quality learning support to students.

The fifth problem concerns the extension of Web-based education to learners in remote and economically disadvantaged areas in China. So far, students enrolled in Web-based educational programs are mostly (if not all) from urban and rich areas. The bigger problem facing China's vast population wishing to gain access to higher education, therefore, is to "how to send coal to those in the snow." It should be borne in mind, at this point, that one significant advantage of Web-based education, at least in theory, is that it can free learners from time and place constraints, thereby extending quality education to anybody anywhere.

The sixth, and perhaps most sensitive, problem concern the credibility of Web-based education and the quality of its graduates. To date, there have not been many graduates from the Institutes of Online Education at the 44 conventional universities, therefore questions as to credibility and quality can hardly be answered at this time. However, the issue has attracted wide attention throughout China (Liu, 2001; Xiao, 2001).

Implications

Although Web-based education as practiced by China's conventional universities has only enjoyed a short history, it has produced profound implications for the higher education students, teachers, administrators, and government policy makers. Students engaging in Web-based programs must first to familiarize themselves with the use of the computer and the Internet. Basic computer and Internet literacy is essential if students are to become autonomous and effective online learners.

For teachers, they face problems similar to those facing their students. Like their students, teachers must first attain basic computer and Internet literacy skills. They must also learn Web-based teaching strategies and hone their online teaching skills. Most importantly, they need to transform their traditional role from that of simply a course lecturer to that of an all-round helper, so they can provide their students with ongoing support starting from pre-course inquiry through to course completion (Granger and Benke, 1998).

For university administrators, investment in hardware and software development is obviously important. But in the Web-based instructional context, learner and teacher support is equally important. Student support initiatives and human resource development is therefore essential.

For government policy makers, three issues require their urgent and long-term persistent attention. One issue is determining the role of government will play in enabling China's universities to extend Web-based education to its vast poor regions. A second issue is determining how the government can effectively co-ordinate the efforts of different universities to avoid unnecessary duplication in the design and development of quality educational material. They must also promote the leveraging and sharing of educational resources among institutions. A third issue is determining how the government can best encourage the maintenance of uniform and high-quality standards in Web-based educational programming.

With respect to the implications for further distance education research, two areas are of interest and value both to China and to other countries. One area relates to the effectiveness of online teaching and learning. Another area relates to how intra- and inter-institutional collaboration might be promoted effectively

so that Web-based education can bear satisfactory fruits for all.

Conclusion

The purpose of this article has been to present the experience of the 44 conventional universities that have been authorized by the government to establish online educational programs. While still in the experimental stage, these universities face many challenges in the development of an effective, efficient, and user-friendly Web-based instructional model. Clearly much in-depth research needed in this area, now and in the future. As a senior official from China's Ministry of Education said: "I will be in charge of developing 300 Web-based courses in the year of 2000. However, very little research has been conducted so far on Web-based education in China and it is very difficult for us to develop so many Web-based courses of good quality and with cost effectiveness in a short time. But the government has decided to invest a huge amount of money on it and this has placed a lot of pressure upon me" (Personal interview with an official from the Ministry of Education in China, on 13 August 1999).

References

Beijing Institute of Technology. (2001). Enrollment Announcement for Modern Distance

Education Programs 2001. [Retrieved December 2001: http:// learn.bit.edu.cn /sde/recruit/ graduate_2001.htm.]

China Education and Research Network (CERNET) (2001a). *Statistics on China Education.* [Online] Retrieved September 2001: http: //www.edu.cn/ zhong-guo-jiao -yu /shu-zi/xuexiao/putong99.php.

China Education and Research Network (CERNET) (2001b). *Basic Statistics on Education.* [Online] Retrieved September 2001: http: //www.edu.cn /english/ statistics/edu /edu_99_01. php.

China Education and Research Network (CERNET). (2001c). *Education Development.*

[Online] Retrieved September 2001: http:// www.edu.cn /zhong_guo_jiao_yu/ shu_zi/index. php.

China Education and Research Network (CERNET) (2001d). *Advanced Distance Learning.* [Online] Retrieved September 2001: http: //www.edu.cn /english /education /distance/ intro/dis_05. php.

China Internet Information Centre (CIIC) (2001). *China – Quick Facts.* [Online] Retrieved December 2001: http:// www.china. org.cn/e-changshi/ index.htm.

China Internet Network Information Centre (CNNIC) (2001). . *Statistical Report of the Development of China Internet Network (July 2001).* [Online] Retrieved December 2001: http: //www.cnnic. net.cn/develst/ rep200107-1. shtml.

China Today. (2001). *Statistics and Data at Hand.* [Online] Retrieved September 2001: http:// www.chinatoday .com/data/ data.htm#Tel.

Department of Development and Planning (DDP), Ministry of Education, PRC (2001). *Major Figures and a Brief Analysis of National Education Development in 2000.* [Online] Retrieved September 2001: http ://www. edu.cn /20010910 /3000909.shtml.

Fu, Zhengguo (2001). Students registered for university online learning programs will reach 400,000. *The People's Daily* (6 September 2001).

Granger, D. & Benke, M. (1998). "Supporting Learners at a Distance from Inquiry through Completion," in Gibson, C. C (Ed.), *Distance Learners in*

Higher Education: Institutional Responses for Quality Outcomes. Madison, WI: Atwood Publishing, 127-137.

Huang, Ronghuai (2001). A Direct Look at Web-based Education. *China Education Daily* (25 November 2001).

Huang, Ronghuai & Luo, Xiaochun (2001). Reflections on the modern distance education practice at conventional universities. *China Distance Education*, Vol.9, 2001, 38-39.

Hunan University (2001). *Enrollment Announcement for Modern Distance Education Programs 2001.* [Online] Retrieved December 2001: http:// www.nip. net.cn/ home/ zszl_5. htm.

Information Office of the State Council, PRC (2001). *White Paper on Population in China (2000).* [Online] Retrieved September 2001: http: //www.sfpc. gov.cn/en /whitepaper .htm.

Jiang, Guozhen (2001). Diversification of higher education and development of China RTVUs. *China Distance Education*, Vol.7, 2001, 36-37.

Lin, Xi (2001). *Enrollment Expansion at Conventional Universities and Colleges Contributes 7 Billion Yuan to National Economic Growth.* [Online] Retrieved December 2001: http:// 203.207.146. 1/forum/ doc/zjar/ 200104176172. htm.

Liu, Yu (2001). What's Wrong with Online University Diplomas when Job Applications are Rejected Once and Again? *China Education Daily* (20 November 2001).

Ministry of Education, PRC (MOE) (2001a). . *List of Conventional Universities and Colleges in China.* [Online] Retrieved December 2001: http:// www.moe. edu.cn /highedu /gxtz/gxmd. htm.

Ministry of Education, PRC (MOE) (2001b). *Tightening the Management of the Admission Work for the Modern Distance Education Pilot Program.* [Online] Retrieved September 2001: http:// www.moe.edu.cn/Webdoc/news/ 010824-02.htm.

Ministry of Education, PRC (MOE) (2000). *Bulletin of Statistics on National Education Development in 1999.* [Online] Retrieved September 2001: http: //www.moe.edu.cn /moe-dept/ fazhan/index .htm.

Ministry of Education, PRC (MOE) (1999). *Action Scheme for Invigorating Education Towards the 21st Century.* [Online] Retrieved September 2001: http: //www.edu .cn/english /education /law/ law_index .php.

Ministry of Information Industry, PRC (MII) (2001a). *Bulletin of Statistics on China Telecommunications in 2000.* [Online] Retrieved September 2001:

http: //www.mii.gov .cn/mii/hyzw/2000 gongbao .htm.

Ministry of Information Industry, PRC (MII). (2001b). *Adjusted Charges for Internet Users since 1999.* [Online] Retrieved September 2001: http: //www.mii. gov.cn/mii /hyzw/zifei/ tztz_6. htm.

National Bureau of Statistics, PRC. (2001a). *Major Figures of the 2000 Population Census (No. 1).* [Online] Retrieved September 2001: http ://www.sfpc. gov.cn/en/ 5cendata.htm.

National Bureau of Statistics, PRC (2001b). *Statistical Yearbook of P.R. China (2000b).*

[Online] Retrieved September 2001: http: //www.stats. gov.cn/sjjw/ndsj/ zgnj/2000/ C01c.htm.

National Bureau of Statistics, PRC (2001c). *Statistical Yearbook of P.R. China (2000c).*

[Online] Retrieved September 2001: http: //www.stats .gov.cn/ sjjw/ndsj/ zgnj/2000/ J01c.htm.

National Bureau of Statistics, PRC (2001d). *Statistical Yearbook of P.R. China (2000d).*

[Online] Retrieved September 2001: http: //www.stats .gov.cn/ sjjw /ndsj/zgnj/ 2000/ T01c.htm.

National Center for Education Development Research (NCEDR), Ministry of Education, PRC. (2001). *Green Paper on education in China (2000).* Beijing: Educational Science Press.

Pan, Jiankai (2001). The first batch of distance learning students graduated from Zhejiang University. *Guangming Daily* (28 July 2001, A2).

Qu, Zhenyuan (2001). A summary of new students" admission work at higher education institutions in 2001 and future working guidelines. *China Education Daily* (5 December 2001).

Renmin University of China (2001). *Enrollment Announcement for Modern Distance Education Programs 2001.* [Online] Retrieved December 2001: http: //www.cmr.com .cn/distance /eduinfo/ zsjz.htm.

Southern Yangtze University (2001). *Enrollment Announcement for Modern Distance Education Programs 2001.* [Online] Retrieved December 2001: http ://www.cmjnu.com .cn/netschool/ zsjz.htm.

Ta Kung Pao (*Tai Kung Daily*). (21 June 2001, C2). Mobile phone users in China reach 110 million. Hong Kong.

The World Bank (2000). *Entering the 21st century: world development report 1999/2000.* Oxford, UK: Oxford University Press.

Xiao, Lin (2001). Most employers say "yes" to graduating students from Web-based programs. *Beijing Evening News* (14 November 2001).

Yang, Dongping (2001a). *Higher Education in China.* [Online] Retrieved December 2001: http: //www.edu.cn/20010827/208329 .shtml.

Yang, Dongping (2001b). *Report on China Education Development in 2000.* [Online] Retrieved September 2001: http: //www.edu.cn /special/ showarticle .php?id= 232.

Yang, Ping (2001). A rational thinking about the higher education expansion and economic growth. *Education*, Vol.5, 2001.

Yin, Hongzhu & Lu, Nuo (2001). *The Ministry of Education Takes Solid Actions to Boost Modern Distance Education.* [Online] Retrieved December 2001: http:// 202.205 .160.5/ suxin2/read.php? id=102.

Zhejiang University (2001). *Enrollment Announcement for Modern Distance Education Programs 2001.* [Online] Retrieved December 2001: http: //www. zjuyc.com/ zdyc/zszl/ 2001zsjz .htm.

Table 2: Living Standards in China, 1985 - 1999

Item		1985	1990	1995	1999
Income (*yuan*)	Net income per capita in rural areas	397.60	686.31	1577.74	2210.34
	Disposable income per capita in urban areas	739.10	1510.20	4283.00	5854.02
Average annual salary (*yuan*)		1148	2140	5500	8364
Consumption Level (*yuan*)	China	437	803	2236	3143
	Rural	347	571	1434	1918
	Urban	802	1686	4874	6750
Housing	Square meters per capita: Rural	14.70	17.83	21.01	24.23
	Square meters per capita: Urban	5.20	6.70	8.10	9.78
Entertainment	TV per 100 households: Urban	17.20	59.00	89.79	111.57
	TV per 100 households: Rural	11.74	44.44	80.73	100.59
	National radio coverage rate (%)	68.3	74.7	78.8	90.5
	National TV coverage rate (%)	68.4	79.4	84.5	91.7
	Enrollment rate: primary school age children (%)	95.95	97.83	98.50	99.09
	Number of university students per 10,000 people	16.1	18.0	24.0	32.8

Source: Adapted from *Statistical Yearbook of P.R. China (2000c)*

Table 3: Development of General Higher Education in China, 1985 - 2001

Year	1985	1990	1995	1998	1999	2000	2001
Number of conventional universities and colleges	1016	1075	1054	1022	1071	1041	1166
Full-time teachers / per 10,000 persons	34.4	39.5	40.1	40.7	42.6	46.28	N/A
New students admitted to Diploma and BA programs / per 10,000 persons	61.9	60.9	92.6	108.4	159.7	220.6	260.0
Number of students enrolled in Diploma and BA programs / per 10,000 persons	170.3	206.3	290.6	340.9	433.2	556.1	712.0
Diploma and BA graduates / per 10,000 persons	31.6	61.4	80.5	83.0	84.8	94.98	N/A

Note: N/A: Data not available.

Data sources taken from CERNET (2001a; 2001b; 2001c), DDP (2001), MOE (2000; 2001a), NCEDR (2001), Qu (2001), *Statistical Yearbook of P.R. China (2000d)* and Yang (2001a; 2001b).

Table 4: Admission Policy for Web-based Educational Programs

Program Types	Admission Methods	Academic Qualifications
Postgraduate Diploma Program	• Free admission	Bachelor degree plus three years work experience
Second Bachelor Degree Program	• Free admission	Bachelor degree and higher
Bachelor Program starting with a Junior College Higher Diploma	• Free admission; or • Entrance exam	Junior college higher diploma and higher
Bachelor Program starting with a Senior Secondary School Certificate Junior College Higher Diploma Program	• Passing grade in the National Entrance Exams for Conventional Higher Education Institutions administered by the government; or • Passing grade in the National Entrance Exam for Adult Higher Education Institutions administered by the government; or • Entrance exam	Senior secondary school certificate and higher

* (Beijing Institute of Technology, 2001; Hunan University, 2001; Renmin University of China, 2001; Southern Yangtze University, 2001; Zhejiang University, 2001).

Table 5: Credit System and Periods of Study for Web-based Educational Programs

Academic Programs	Credit Requirements	Minimum Study Period	Maximum Study Period
Post-graduate Diploma Program	32 – 40 credits	2 years	4 years
Bachelor Program starting with a Junior College Diploma	100 credits (approx.)	2 years	5 years
Second Bachelor Degree Program; or Junior College Diploma Program	80 credits (approx.)		
Bachelor Program starting with a Senior Secondary School Certificate	170 credits (approx.)	4 years	7 years

* (Beijing Institute of Technology, 2001; Hunan University, 2001; Renmin University of China, 2001; Southern Yangtze University, 2001; Zhejiang University, 2001).

Table 6: Use of ICT for Web-based Educational Programs

University	Transmission Technology	Interactive Technology
Tsinghua University	Ku band of Asian Satellite No.2; China Education and Research Network (CERNET); Cable TV	2-way VSAT; ISDN; Visual telephone; Asynchronous interaction via Internet
Peking University	Internet; Xinnuo Satellite No.1; IP broadcast coursewares	Synchronous ISDN; Asynchronous interaction via Internet
Beijing University of Posts and Telecommunications	ATM broadband multimedia public telecommunications network; Internet	Synchronous interaction via ATM; Asynchronous interaction via Internet
Zhejiang University	Provincial SDH; CERNET; satellite and closed-circuit TV	Synchronous interactions via SDH, CERNET and satellite; Asynchronous interaction via Internet
Hunan University	ATM broadband multimedia public telecommunications network; Internet	Synchronous interaction via ATM; Asynchronous interaction via Internet

Note: Data are up to March 2001.

Distance Education at Conventional Universities in Germany

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Abstract

Germany's educational system has undergone a series of transformations during the last 40 years. In recent years, marked increases in enrolment have occurred. In response, admission requirements have been relaxed and new universities have been established.

Academic distance education in the former Federal Republic of Germany (West Germany) was ushered in by the educational radio broadcasts around the end of the 1960s. Aside from the formation of the FernUniversität (Open University) in West Germany in 1975, there were significant developments in distance education occurring at the major universities in the German Democratic Republic (East Germany). After German reunification in 1990, the new unitary state launched programs to advance the development of distance education programs at conventional universities. Germany's campus-based universities (*Präsenzuniversitäten*) created various entities, including central units and consortia of universities to design and market distance education programs. Hybridisation provides the necessary prerequisites for dual mode delivery, such as basic and continuing education programs, as well as for the combination of distance and campus-based education (*Präsenzstudium*). Hybridisation also has also opened the door for the creation of new programs.

Following an initial phase in which distance education research is expected to centralize a trend towards decentralisation is likely to follow. The German Association for Distance Education (AG-F) offers a viable research network in distance education. Two dual mode case studies are also be surveyed: The Master of Arts degree, offered by the University of Koblenz-Landau, with Library Science as the second major, and the University of Kaiserslautern, where basic education will continue to be captured within the domain of the *Präsenzstudium* or campus-based education.

The area in which distance education is flourishing most is within the field of academic continuing education, where external experts and authors are broadening the horizon of the campus. Multimedia networks will comprise the third generation of distance education.

1. Overview of the German Educational System

Germany's educational system has experienced a series of transformations during the last 40 years. Similar to trends occurring in other countries, there has been a marked increase in student enrolment and in response to growing demand, admission requirements have been relaxed considerably and new universities have been established. After a period of expansion, transformations are now taking place. Schools providing basic education are being given a greater degree of autonomy, and universities are being granted a higher degree of responsibility in the management of their own budgetary affairs. These trends reflect increasing deregulation of the part of the unitary state (federal government), which is incrementally withdrawing from educational matters.

In Germany, formal schooling takes 13 years and concludes with what is known as the *Abitur* or final examination that qualifies students for admission into a university. Students with 12 years of formal schooling who meet the entrance requirements called *Fachhochschulreife* are allowed into an applied science university.

A course of study at a German university generally takes five years (ten semesters) and is completed with a diploma, a state examination, or a Master of Arts degree. The ten-semester period of study is also one of the formal requirements for doctorate programs. The right of conferring a Doctorate is exclusively reserved for the academic universities, whereas Germany's applied science universities do not confer this degree.

Education offered by publicly funded institutions, including continuing education, is the responsibility of the unitary state – but only for state owned facilities. Private institutions, professional associations, and semi-governmental institutions, however, control the majority of Germany's continuing education market. On the job training programs play a significant role in the private sector, enabling the qualification and advancement of their employees. Education, therefore, is also a concern of the country's 16 federal states.

In contrast to its unitary state, the states have been granted "independence in cultural and educational matters," which confers them the right to make their own decisions regarding educational matters within their respective political boundaries. The organisation of the German educational system, therefore, is not centralized, but multi-centralized. Each of the 16 federal states operates its own Ministry of Education, Art and Culture, making them responsible for their own educational system, and consequently their own fiscal affairs through corresponding administrative regulations.[1]

In Germany, school and university education is free, in that no school or tuition fees are charged. Children from low-income families may apply for educational grants to finance their education, a fact that reflects the socialist principal that

no one should be prevented from studying due to financial constraints. Thus, equal opportunities exist for students from both high- and low-income families. However, the above mentioned educational grants are not funded by the unitary government, they are funded by the 16 federal states. As a result, a significant portion of the responsibility for the country's educational system is shared by the 16 federal states alongside its unitary state.

In contrast to basic education programs, the unitary state assumes direct responsibility for vocational training programs delivered in accordance with various agreements made with industrial sectors and other special interest groups. As a consequence, these agreements exert an indirect influence on the educational system of Germany's 16 federal states, as formally articulated in the Service and Salary Classification Act, legislation that applies to the entire civil service sector and to all schools and universities. The unitary state also exerts its influence in other areas, such as through a research promotion program and supportive legislation that applies specifically to universities throughout the Federal Republic. The unitary state also helps fund the construction of new universities, but under the supervision of the respective 16 federal states.

The "General State Law of the Prussian State" (1794) described universities as "organisations of the state." This law also granted the universities "the right to a privileged coordination in accordance with the legislation," a principle that has survived to this day. The constitution of the Federal Republic of Germany also guarantees the "freedom of research and teaching," granting university professors the right to individually determine the content and form of their research and teaching. Responsibility for promotion of academic talents through the internal process of conferring a doctorate and postdoctoral lecturer qualification (*habilitation)* also falls under the scope of university autonomy.[2] Since all universities in Germany are combined research and teaching institutions, no formal institutional divisions exist.

Recent developments indicate far reaching changes are underway in Germany's higher education system that will reshape the nation's future. Recently, Germany's universities and applied science universities were authorized to award Master's and Bachelor's degrees, which could subsequently lead to the replacement of the current German diploma. In some federal states, the duration of study in the school sector has been reduced from 13 to 12 years. Greater autonomy has likewise been granted to universities with respect to the allocation of state funding for the fulfilment of their duties. Overall, the general impression is that Germany's educational system is adjusting to international competition and market dictates and as a result, is loosing some of its unique qualities.

2. History of Distance Education at German Universities

Educational Radio Broadcasts

The birth of academic distance education in the Federal Republic of Germany took place during the latter half of the 1960s when people began to speak of insufficient numbers of higher education graduates in the German population. In response, educational radio broadcasts were initiated in 1966 by the Hessian Broadcasting Corporation (*Hessischer Rundfunk*) and the University of Frankfurt, with the assistance of representatives from broadcasting corporations, other universities, ministries of education, art and culture, and the newly established German Institute for Distance Education (*Deutsche Institut für Fernstudien or DIFF*) at the University of Tübingen. Thus, a new distance education system was developed that reached thousands of people each year via a multimedia system of radio broadcasts, support groups, and eventually television (*Begleitzirkel*).

Since the first educational radio program was broadcast: "Towards and Understanding of Modern Society (*Zum Verständnis der modernen Gesellschaft*)," hundreds of thousands have participated in this form of academic programming, which has both evolved with time and helped a large number of students acquired certificates via distance education (Greven, 1998). However, 32 years later, most broadcasting companies were no longer willing to broadcast educational content (Kapple, 1997) and as a result, Germany's educational radio broadcasts were discontinued after 1998.

FernUniversität (Open University)

The 1970s witnessed the teaming up of nearly 80 German universities to form the University Association for Distance Education in Multimedia (*Hochschulvereinigung für das Fernstudium im Medienverbund or HVF*). Subsequently, collaborative distance education projects were launched and material developed. However, in the absence of a cohesive infrastructure, the country's varied distance education approaches were temporarily brought to a standstill. Confronted with this situation, in December 1974, the state of North Rhine-Westphalia decided to consolidate their distance education activities through the establishment of the FernUniversität (Open University) in Hagen, a higher education institution patterned after Britain's Open University, established five years earlier. Despite political objections, the development of the FernUniversität continued apace, primarily because it was the first and only institution to offer flexible basic university degree programs designed to address the needs of working adults and of those who for reasons of geographical or temporal constraints would not

be able to access higher education. To this day, the FernUniversität retains a dominant position among Germany's distance education providers. It also plays a significant role in the Association of European Open Universities (*Vereinigung europäischer Fernuniversitäten*), established a few years ago.

Nonetheless, academic continuing education via distance education modes did not come to the fore until recently. But thanks to the 1992 recommendations of the scientific and technical advisory committee (Wissenschaftsrat, 1992), and the growing use of multimedia, distance education is now gaining recognition.

Other Approaches

While the FernUniversität officially started operations in autumn 1975, another distance education project was developing parallel to this advancement. The 16 federal states, with their cultural and educational autonomy, collectively agreed to conduct an "experiment in distance education using multimedia systems" (*Versuch für das Fernstudium im Medienverbund*). Referred to as the FIM state experiment, distance education materials were developed for the initial study phase in some subjects, and subsequently resulted in increased university enrolments. However, because the corresponding departments at the universities only participated peripherally, the experiment subsequently met with failure. Indeed, from the outset the FIM state experiment was not intended to be anything more than a relief measure for overcrowded universities. However, after the experiment concluded in 1981, projects, pilot experiments, and finally standardized course offerings were in place and materials for university continuing education programs had been prepared and utilised within the scope of such projects, pilot experiments, and standardized course offerings.

In the 1980s, another distance education option developed from the field of private distance education. The commercial provider, AKAD, established three distance education colleges (Rendsburg, Lahr and Leipzig) that were awarded official recognition by their respective federal states. In some cases, and without any prior formal qualifications for university admission, students attending these institutions could earn a diploma (FH) in the field of economics. Recently, AKAD founded an academic college for continuing education in Baden-Württemberg. The 1980s also saw the establishment of distance education colleges operated by private sector institutions, including the Study Association Darmstadt (*Studiengemeinschaft Darmstadt*).

Distance Education in the German Democratic Republic

Prior to the reunification with the Federal Republic of Germany in October 1990s, the former German Democratic Republic (GDR) enjoyed a fully developed distance education system in which most universities had participated

since the 1950s. The primary purpose of this system was post qualification of management personnel who had been designated by the then ruling Socialist Unity Party (SED) for professional posts that, under most circumstances, would normally require a university degree. Therefore, personnel who held such professional positions without any corresponding university education were required to engage in and complete a post qualification course of study. Accordingly, "members of the cadre" were "dispatched" to distance education programs to these correct labour-planning errors. According to the 1992 recommendations of the scientific and technical advisory committee, the GDR system functioned as a degree oriented, academic continuing education system that, in turn, helped reduce campus attendance periods. In 1988, there were approximately 100 basic distance education study courses at 31 universities. In addition, there was also a larger number of continuing education and postgraduate study courses available. Some universities handled large student quotas, with two thirds of the total number of distance education students enrolled at five universities. The TU (Technical University) Dresden, for example, served approximately 37,000 distance education students, and graduated 20,000 students during a 40-year period. The principal subjects or majors offered were in technical disciplines, business, economics, historical philosophy, and law.

Nonetheless, because this system was based on a sizable proportion of campus attendance owing to the "delegation principle," after the reunification of the German people in 1990, it soon became clear that no commercially operated enterprise could in the long run afford to grant leave to its employees for extended periods of up to 50 days to participate in distance education courses. In the previous GDR system, such a release would have included both practical training and access to corresponding technical equipment that provided an optimal balance of theoretical education and practical application. This didactic combination is one reason why many former participants miss the old GDR distance education system. However, the fact remains that course contents were often deficient or ideologized in several subjects, e.g., economics, law, philosophy and history. Despite Germany's trend towards deregulation since the 1970s, such an educational planning instrument of a state controlled economy could not last in a free economic system. Today, only rudiments of the GDR distance education system have survived, primarily in disciplines like medicine and nursing.

Three New Impulses

Distance education in the Federal Republic of Germany entered a new phase in the 1990s, as evidenced by three developments: first, the university programs of the Federal Government with their distance education components; second, the international – in particular the European – situation; and third, the recommendations of the scientific and technical advisory committee. These three developments contributed to the following four developments: (1) In addition

to the large centralized system of the FernUniversität, individual universities became the focus of attention; (2) distance education courses were established nationwide on a decentralised basis; (3) networks of university facilities and programs emerged; and (4) amidst the variety of new flexible courses offered, academic continuing education emerged at the forefront.

New communication media, and in particular personal computer and network technology, provided an additional boost to distance education. As early as 1995, multimedia was already a catch phrase. With the dawn of the 21st century the full dimensions of the Internet and the resulting possibilities for systematic learning and study processes are becoming even more evident. Distance education has again received new impetus thanks to technological developments, and traditional educational institutions are now finding themselves compelled to develop new technical communication forms, even if they lack the necessary didactic preparation. And although merely making educational materials available on the network does not necessarily involve distance education, Internet supported distance education courses are mushrooming. New facilities for telelearning are being established, Internet universities are being launched, and "virtual universities" are establishing themselves as projects of university associations (Kapple, 1996, 1999).

Today, one would define distance education not as a course of study that overcomes the geographic distance between teacher and learner, but rather one that supports the self-determination of the learner. In this respect, learner self-determination may pertain to three levels: content, time and location. Distance education provides learners with the greatest possible degree of flexibility and independence with respect to preferred course content, time, and location.

3. Current situation

Germany has a distinctive and well-developed distance education system. In the year 2001, 133 distance education courses were offered at 27 state owned campus-based universities (*Präsenz-Universitäten*) (Hochschulrektornkonferenz, n.d., *http://www.hrk.de*), with an approximate total enrolment of 20,000 students. Sixteen of these study courses are at the basic level – i.e., for the *Abitur* or university entrance examinations – and lead to a first academic degree conferring professional qualification. One hundred and seventeen continuing education courses are also being offered and linked to a specific course of study that combines several years of working experience. In total, 37 per cent of all students enrolled in Germany's universities earn their academic degree in this fashion. The remaining continuing education courses are certificate programs, lasting only one or two semesters.

A variety of university structures are involved in the delivery of distance educa-

tion courses. Learning centres comprise either science centres or service units. Science centres are regarded as superior to service units, because they engage in research and teaching and hence, are taken seriously as part of the academic establishment. Besides learning centres, there are a number of consortia operating in Germany: namely three distance education course associations, and five virtual universities sponsored by various collaborating universities and which offer distance education courses under the auspices of continuing education. Most members of the consortia have been granted university status. The consortium structure allows for formation of a central office that acts as a cohesive coordination unit. While consortium members identify and develop the content, types of courses offered, and supporting policies, the central office implements decisions within the structures of the individual universities. Thus, the central office concentrates on delivery and staffing of the continuing education courses delivered via distance education in accordance to specific requirements.

In Germany, basic education courses are provided gratis by the state; students do not incur any costs from the time of course commencement to the attainment of a first profession qualifying degree at a campus-based university (*Präsenzhochschule*). However, universities are allowed to charge fees for costs incurred in the production and distribution of course materials. No costs are charged for tutoring and other academic activities.

The German Higher Education Framework Law (*Deutsche Hochschulrahmengesetz*) and the University Laws of the Federal States (*Universitätsgesetze der Länder*) have different rules with respect to continuing education and as such, courses financed by student fees must be marketed through the corresponding participating institutions.

At campus-based universities (*Präsenzuniversitäten*) that offer distance education courses, the question arises as to what extent dual mode is possible. The dual form of the dual mode system is presented below.

Basic Education and Continuing Education:

Of the 133 distance education courses currently offered, only six are basic and continuing education courses. Significantly more distance education course offerings are available through private universities, primarily because private universities can charge participation fees. This is where a fundamental problem arises. Basic study courses offered by state institutions are provided free of charge, yet according to law, participation fees may be charged if a student wishes to enrol in the same course via a continuing education programme. In this case, legal discrepancies cannot be avoided. The easiest procedure to follow, therefore, is to divide participants in terms of time and space. No judgement shall be passed at this point regarding the pedagogic usefulness of an identical offer for first time and/or adult students. More frequently (but statistically not

recorded) is the use of supplementary and substitution course and lecture materials used within the framework of basic education. In this case, clear provisions regarding costs and integrity of the course offerings must be central.

Distance education and campus-based education (*Präsenzstudium*):

Simultaneous course offerings using both a distance education and campus-based delivery (*Präsenzstudium*), is another option. Dual forms of study are growing in popularity, especially in North America. However, dual offerings are not as effective in Germany, simply because geographic distances are seldom an issue. As well, overall content would have to be organised to complement the dual modes. The dual mode component utilises available resources from both campus-based and distance education programs in the development of courses that encompass both study forms and in which distinctions in terms of content are clearly effected where possible. Such an example is Germany's Master of Arts Degree in Library and Information Science (*Magisterstudium Bibliotheks - und Informationswissenschaft*).

Research topics in distance education include planning, organisation and implementation of courses, didactic and methodical problems relating to distance education and, of course, the use of new media. To date research in distance education has been conducted by the German Institute for Distance Education Research at the University of Tübingen (*Deutsches Institut für Fernstudienforschung or DIFF*). Whereas, the Central Institute for Distance Education Research at the FernUniversität in Hagen, (*Zentrales Institut für Fernstudienforschung or ZIFF*) concerns itself with fundamental principles and application research in distance education. In the case of decentralisation of distance education research, an increasing number of central distance education facilities of campus-based universities (*Zentrale Einrichtungen für Fernstudien der Präsenz-Universitäten*) are also engaged in distance education research.

Formulation of research topics, avoidance of duplication, and discussion of major research points and their respective results, require an ever-increasing degree of coordination. This level of coordination can only be achieved by dividing up the work involved. On the one hand, some coordination is performed by the unitary states. One is the Federal States Commission for Educational Planning and Research Promotion, an organisation in which the Federal Government and the Federal States work together on projects such as financing new developments in the field of distance education. Up to now, however, corresponding coordination was also carried out by the DIFF, which devoted its attentions to the academic support of these new developments. On the other hand, the Association for Distance Education at Universities (*Arbeitsgemeinschaft für Fernstudium an Hochschulen*) exists as part of the Association for Adult University Education (AUE). As a result, Germany's universities are furnished with a strong platform for the formulation of ideas and the practical realisation of goals pertaining to

distance education.

4. Best Practice, Local Reports

University of Koblenz-Landau, Centre for Distance and Continuing Education

The Centre for Distance Education and University Continuing Education at the University of Koblenz-Landau is engaged in the practical side of development, planning, implementation of distance education and related research activities. At present, the Centre offers three distance education study courses within its academic stream, and more than 10 one-semester university continuing education courses in the distance education program. Current student enrolment in all programs stands at 450.

One illustrative program is the partial Master of Arts degree (*Magisterteilstudiengang*) in Library and Information Science. In contrast to Master of Arts degrees offered in English-speaking countries, this Master of Arts degree (*M.A. Magister Artis*), can be completed by studying either two major subjects or one major with two minor subjects. The duration of study is 2,700 hours spread over nine semesters, and includes an M.A. thesis in the first major subject. Faced with few restrictions, students are given a choice of subjects. Regulations permit the study of subjects not offered at the university itself. Since 1999, students enrolled at the University Koblenz-Landau can also enrol, as part of a second major, in subjects taught as part of the Library and Information Science major for the M.A. at Humboldt University in Berlin. Because both universities have a contractual arrangement and the support of the Federal and Rhineland Palatinate State Governments, Koblenz and Landau students may study this particular subject without any change of location. However, the criterion of self-determination of content, time and location that applies in this case, is a significant exception to the general pattern of distance education in Germany.

Study materials developed at Berlin University are divided into modules. Course materials developed for each module consists of published literature, study manuals, and an accompanying student guidebook that provides methodical suggestions, gives didactic instruction in the selection of advanced literature, and contains questions for oral and written exams. Regular videoconferences provide students at both the Koblenz and Landau locations (200 km apart) the opportunity to have personal contact with their Berlin based lecturers located more than 600 km away. Seminars, exercises, consultations and even examinations are conducted via videoconferencing.

To avoid lapses in concentration and overall fatigue, videoconference sessions do not exceed two hours. All three locations can be linked up simultaneously.

The rooms are furnished with the appropriate technical equipment and personnel. Telephone lines with six ISDN-interfaces using conventional television engineering and the corresponding Codecs ensure high quality audio and video transmission. Each studio requires a control unit that technically regulates the elements of video conferencing as well as enables the display of corresponding text or graphic pages via the Internet. An additional telephone connection is also available in the event that problems occur at any of the locations. The overall technical and methodical control of the event is the responsibility of a coordinator, thereby relieving students and lecturers of any technical work involved. To enhance participation, the number of participants for each session is limited to 15; the optimal number of participants is less than ten. Difficulties encountered during videoconferencing must be overcome by students on an individual basis; however, all participants soon develop competency in videoconferencing, as reflected in disciplined behaviour such as dialogue, preparation, timely processing of problems, etc.

In preparation for videoconference sessions, students have the use of a computer that allows them to download and read the student guidebook, submit questions to course lecturers prior to the videoconference, and work on assignments that are sent and submitted via email. Course specific newsgroups moderated by lecturers serve as discussion forums that cover topics in detail. A newsgroup provides administrative information and communication. Students are provided with extensive listings of compulsory online course readings, and links to advanced literature. Searchable resources from all major European libraries and corresponding order lists are also available to students, along with the option of electronic enrolment, access to curricula, important dates, addresses, and contact lists. It goes without saying, all study related Internet pages as well as downloadable material, newsgroups, and other information channels, are password protected. In order to form electronic media competencies from the start, a first term IT course acquaints students with the basics of Hypertext Mark-up Language (HTML) so that they can design and program their own homepage. Once a year, students and lecturers meet on a voluntary basis to exchange ideas. This meeting, held for one week, is often combined with field trips.

As of Autumn 2001, the fourth group was enrolled in the Master's degree program. In the first three groups, 40 students were studying their second major subject, Library and Information Science. Initial evaluations show that students readily accept of this form of study. Students rate highly the diversity of learning produced by the versatility of their activities. Students also report that they received more support and assistance than they would otherwise in traditional campus-based situations (*Präsenzstudium*). They also report a stronger affinity with their lecturers with the Centre for Distance Education than they would in campus-based situations. As reflected by increased levels of learning success, student willingness to achieve is enhanced as a result of the required study discipline and related videoconference sessions.

Lecturers also positively rate this method of distance education delivery, despite the necessity of intensive preparations for their lectures and video appearances. Indeed, they have to convince themselves of the transmission quality of their courses, plus they also are required to carry out trial link-ups. They also report their concentration levels must be considerably higher than they otherwise would be conducting campus-based teaching sessions (*Präsenzveranstaltung*). Nonetheless, lecturers also develop a higher level of identification with their distance education students, such as knowing their names, along with their work habits and capabilities, much sooner.

The hybrid form of distance education described above, including its multimedia components, is certainly not an exception in Germany's distance education sector. However, in spite of its success, it is still a minority element. However, recognising its intrinsic value, considerable attention is now being paid to the research and development of new distance education delivery modes like the one described above. For example, a thorough analysis of previous experiences and outcomes led researchers to the realisation that producing a mere carbon copy of Web-based academic lectures contained in Germany's so called tele-teaching program would only produce disadvantages. On the other hand, face-to-face conferencing, a situation where students have the opportunity to ask their lecturers questions and receive answers directly, would yield tremendous value. In sum, it was recognized that the main value of videoconferencing rests more on its seminar like exchanges and its methodical exercises, than on its formal lecture components. Within this mix, corresponding course materials are made available to students on the Internet and in printed form. This study form described above is suitable for basic and continuing education programs.

University of Kaiserslautern, Centre for Distance and Continuing Education (ZFUW)

At ten years old, ZFUW is a mere youngster among the continuing education institutions, many of which were already established in Germany's universities by the end of the 1970s. Bearing the same name as its sister institution in Koblenz, ZFUW has become a leading provider of postgraduate distance education courses. More than 1,500 students throughout Germany and abroad are currently enrolled in programs such as: Human Resources, Medicine, Natural Science, Technology, and Management.

The role of ZFUW has enabled the University of Kaiserslautern to become a dual mode university. Prior to the development of ZFUW, the only continuing education courses offered at the university were campus-based courses in the area of basic education. The establishment ZFUW, however, resulted in a fundamental change. Today, the university is already perceived as the Open University Kaiserslautern. The integration of the distance education unit into the university corresponds more or less to the Keegan model shown in Figure 1

below.

Fig.1: Distance education courses from a university model
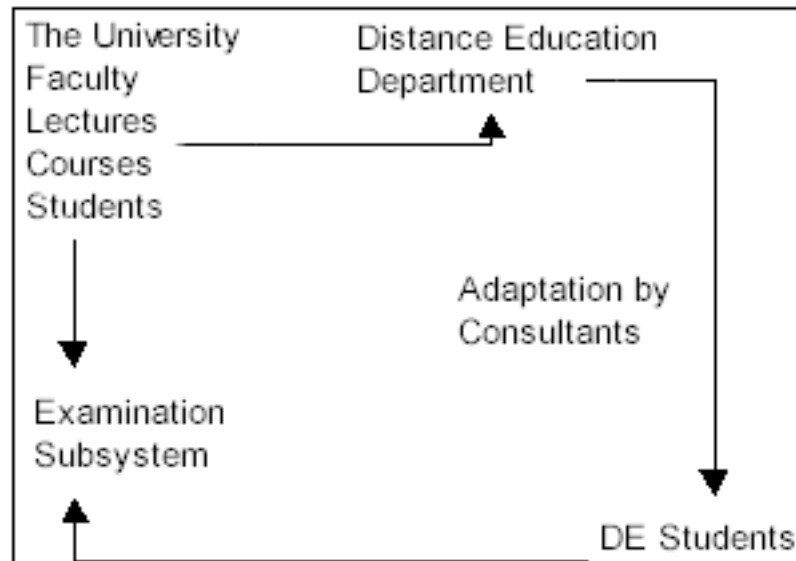
The decision to offer academic continuing education via distance education – namely all its educational contents with an exclusive connection to current topics within the framework of teaching and research – is in line with the view that distance education is a separate teaching and instructional organisation form (Peters, 1997) that can develop its full effectiveness when it is used for continuing education purposes. Recognising that attempts to utilise distance education for basic education are more likely to fail, as shown by a large number of experiences gathered in this respect, ZUFW decided not to offer basic education via distance education, the reason being that in basic education it is essential to establish learning experiences and strategies that often cannot easily be communicated in the distance education mode, if at all. On the other hand, university graduates often possess the intellectual qualifications and learning strategies necessary to acquire the knowledge essential to the preservation of their existing jobs or for the advancement their professional careers in a systematic and goal oriented manner. They have learned how to learn, are able to distinguish the essential from the nonessential, and to discern the relevance of the educational contents with regard to their respective goals. An academic beginner is hardly in a position to achieve the same results. This view is confirmed by the fact that approximately 80 per cent of the participants of the ZFUW acquire a degree, while the international success rate in the basic distance education sector is only about 20 per cent.

ZUFW is an integral part of the university. In the development and conceptualisation of a program, ZUFW always strives to ensure that the know-how developed in the faculties flows into the university's continuing education activities. Therefore, a faculty or a faculty representative assumes responsibility for each continuing education program offered by ZUFW in the field of continuing education.

Despite the intensive efforts towards anchoring the programs and structures within the core sectors and competencies of the university, it turns out that continuing education is developing a remarkable momentum of its own accord. For instance, because the University of Kaiserslautern is best known for its focus on engineering and natural sciences, one would naturally expect to find its postgraduate continuing education programming focused on these sectors. In reality, however, the university's most successful programs are found in the field of Human Resource Management – a so called soft skill sector – and therefore a thematic area which does not belong to the university's core sectors, but instead to its marginal sectors. Under normal circumstances, a university would hardly be in a position to develop and deliver programs outside its core specialities. This fact alone demonstrates the strength of the continuing education/distance education system, a tactic that permits the integration of external experts into the expanded profile of the university's core sectors, thus providing the university with an enhanced image that it would not otherwise be able to achieve without its distance education components. In sum, continuing education delivered via distance education not only contributes to the satisfaction of educational needs, it also constitutes an opportunity for an offering university to develop and expand its role and profile in sub-sectors in which it was only marginally or previously not active.

The basic concept of the continuing education/distance education program at the University of Kaiserslautern has been tried and tested. The duration of all programs of study connected to its graded university certificate (one that will in the near future lead to a Master's degree) is equivalent to two or four semesters. The foundation of its studies is formed by what are known as *study letters*, i.e., textual materials prepared according to the principles of distance education didactics and that are suitable for self-study.

In contrast to the distance education systems developed by the British Open University that uses books in combination with study guides, ZFUW's entire range of educational materials is produced especially for the teaching purposes of individual course authors. The material production also differs from other systems. For example, at the British Open University, educational materials are developed by author teams, and individual authors are subordinate to the complete work. Each educational text produced in the University of Kaiserslautern, however, intentionally bears the individual trademark and influence of its author. This fact reflects ZFUW's conviction that academic instruction is made up of individual interpretations, even in areas where an "established

school of thought" has gained acceptance. Thus, it is made clear to students from the start that they are not dealing with an objective scientific "truth," but with an interpretation that is still evolving.

The didactic concept pursued by the facility is that of "guided self-study." Educational materials are produced for independent work, yet they are also accompanied by learning goals, instructions and exercises to be completed within predefined deadlines. In this respect, a fully self-controlled learning process as described and demanded, in part, in social science literature (Knowles, 1975), does not take place, nor is it aimed for. The student support system technically embraces all options currently offered by communication technologies such as: telephone, fax, email, and bulletin boards that are in some cases moderated, and in other cases not.

Students registered in ZFUW 's distance education programs participate in compulsory attendance activities (*Präsenzphasen*), which usually take place on a weekend at the conclusion of each semester at the university. These meetings serve to reinforce understanding of the subject matter through seminars, practical training, laboratory work, and written assignments. Compulsory attendance also distinguishes it from other established distance education systems, where participation at campus-based events (*Präsenzveranstaltungen*) is often purely voluntary. The combination practiced at the University of Kaiserslautern, comprised on a guided self-study phase with a mandatory face-to-face activity (*Präsenzpflicht*), is based on the conviction that face-to-face encounters are an integral part of teaching and learning, and should not be left to the discretion of the individual participants. In short, attendance fulfils a pedagogic purpose.

In the past, ZFUW chose not to produce its own instructional media such as videos, audiocassettes or CD-ROMs, nor will it will do so in the future. In essence, this leaves out one step in the distance education development phase as conceptualised by Garrison (1989). At present, ZFUW is putting a great deal of effort and commitment into transforming the text-based versions of its programs of study to an online supported study format. A pioneer of this trend is ZFUW's "Personnel Development" study course, where a large number of modules can be studied in the traditional form or alternatively, in the electronic form. The key philosophy, in which the transformation of distance education in the University of Kaiserslautern reflects a "technology based distributed learning" approach, is followed by a large number of American universities. The Institute for Academic Technology, University at North Carolina, offers this description of the aforementioned "technology based distributed learning" approach:

> A distributed learning environment is a learner-centered approach to education, which integrates a number of technologies to enable opportunities for activities and interaction in both asynchronous and real-time modes. The model is based on blending a choice of ap-

> propriate technologies with aspects of campus-based delivery, open learning systems and distance education. The approach gives instructors flexibility to customize learning environments to meet the needs of diverse student populations, while providing both high quality and cost effective learning (1995).

The act of transformation is accompanied by the initiation of new continuing education programs, which will emerge as Internet supported continuing education courses without any preceding print version. The e-Learning concept developed by ZFUW, therefore, is a model that extends to the faculties of the university by which it is then adapted. Viewed from this perspective, ZFUW has evolved into a media competency centre representing the new forms of teaching and learning, both within and outside the university.

5. Distance Education in a Digital Age

Multimedia networks are the third generation of distance education, a theory that was advanced by Garrison (1989). At that time, the claim was more of a prophecy than a distance education reality. Even in the international context – i.e., in England, the U.S. and in other parts of the world – the fact that distance education would have already reached the digital age was hardly considered a possibility. Aside from some ambitious e-Learning initiatives, there were only a few experiences which could be presented and which could have corresponded with the theory forwarded by Garrison. Today, the situation is fundamentally different. E-Learning is a mega-trend, and it is presenting a challenge for all educational facilities to keep abreast of the changes triggered by the electronic media.

As is true on the international level, the trend in the Federal Republic of Germany is towards the adoption of what Mitra (1999) refers to as "complete or complementary or supplementary environments on the one hand, and on the other, the virtual instruction facility" (Mitra, p. 121). *Complete Environments* come into being in the newly established virtual universities or virtual campuses, most of which resulted from the linking up of various universities. In a way, they can be regarded as a new type of university that supplements the already established forms of campus-based (*Präsenz*) or distance education facilities. *Complementary or supporting or supplementary environments* refer to face-to-face instruction enriched by online technologies, a trend that is emerging both in open universities and in campus-based universities (*Präsenzhochschulen*). In other words, both types of university are acquiring online components, digitalizing individual courses offerings, and adding additional features and resources via the online mode, to existing course offerings. Meanwhile, distance education programs at campus-based universities (*Präsenzhochschulen*) are following the same line of action. They are following the same process or logic as their core

facilities or role models – namely the open universities. For example, university centres in Oldenburg, Lüneburg, Hildesheim, Kaiserslautern, Koblenz, and even Karlsruhe are offering online instructional support programs in the same manner as the state owned distance education colleges.

The results produce a relatively broad range of variants. The offerings of individual facilities include Web-based training as well as the organisation of online seminars or the option of downloading educational materials. Progress has also been made with respect to internationalization as demonstrated by examples such as the "Master in Distance Education" at the Oldenburg University, or to use another example, the cooperation between the ZFUW at the University of Kaiserslautern and the University of British Columbia in Canada.

On the whole, the rate of development is slower than was anticipated by many diagnosticians of future learning environments. The main reason is that that many universities – and this also applies to distance education providers – are currently dealing with the problem of appropriate technology as it affects production of content. Resistance on the part of German university professors, such as those sometimes observed in the U.S.A. regarding the introduction of e-Learning (Ceraulo, 2002) has not materialized. Nor are there any signs that such opposition might be expressed in the future. However, there are acceptance problems on the part of both of academics and students. For example, FernUniversität, which recorded a current enrolment figure of approximately 54,000 students, reported that 16,000 students have applied for Internet access and around 200 students are using the online programs. This is a clear indication that at present, e-Learning in the academic sector is more likely to be a risky undertaking with an uncertain outcome, primarily because acceptance and interest among participants may only be of a limited nature, although this situation might possibly change in the future.

Distance education programs currently operating signal a good starting position at the onset of the digital age (Schulmeister, 2001). Open universities and dual mode structures retain copyright of the educational materials that entitles them to digitally reproduce and distribute these contents and to transform them into multimedia learning environments. Nonetheless, involvement in online instruction – and this is overlooked at times – can monopolize resources that are urgently needed for updating existing materials that, in all probability, will be the information, teaching and learning content carriers for quite some time.

In the long run, a new problem will arise for dual mode structures. Whereas, in the past, these structures were able to legitimise their right to exist by pointing to the fact that distance education is a *sui generis* instructional form, requiring specialized personnel and specific measures, this legitimisation will become invalidated with the gradual expansion of e-Learning within conventional higher education institutions. If a faculty starts to operate successful e-Learning operations without reference to the existing distance education unit, then distance education units may have to justify their right to continue. The chances of

survival and coexistence of the distance education facilities with dual mode programs will be decisively dependent on whether they find a rational argument for this purpose. One possible solution may be for distance education facilities to form media competency centres that involve computer departments, faculties, and media designers. Distance education of the future – and there is no doubt about it – will either be digital or it will cease to exist.

References

Arbeitsgruppe Bildungsbericht am Max-Planck-Institut für Bildungsforschung (1994). *Das Bildungswesen in der Bundesrepublik Deutschland. Strukturen und Entwicklunge im &#220berblick.* Reinbeck bei Hamburg.

Arthur Andersen (2001): Studie zum europäischen und internationalen *Weiterbildungsmarkt*, Bundesministerium für Bildung und Forschung (BMBF)

Bundesgesetzblatt Jhg. (1999). Section I No.3, Bonn 27.1.

Deutscher Bildungsrat (1970). pg. 197

Ceralo S. (2002). *Change comes hard: PhD. Higher Education's View of Online Learning follows the familiar "PC Pattern"* [Online] Available at: http://www.elearnmag.org/index.cfm.

Fernstudienprogramme der AG-F Mitglieder, *Sonderheft 2000 AUE Hochschule und Weiterbildung*, Regensburg Dezember, 2000.

Garrison, D.R., (1989). Understanding Distance Education: A Framework for the Future. Boston: Routledge.

Graessner, G. (1996). &#220berregionale und regionale Kooperationsbeziehungen im Feld der Erwachsenen- und Weiterbildung; In: *Der AUE an der Schnittstelle zwischen tertiärem und quartärem Bildungsbereich – Bilanz und Perspektive,* Festschrift aus Anla&#223 des 25jährigen Bestehens des AUE, AUE e.V. Bielefeld

Greven, J. (Hrsg. 1998). Das Funkkolleg 1966-1998. *Ein Modell wissenschaftlicher Weiterbildung im Medienverbund.* Erfahrungen – Auswertungen – Dokumentation, Weinheim

Hochschulrektorenkonferenz [Online] Available at: http://www.hrk.de.

Institute for Academic Technology, University of North Carolina, March, 1995. In: Centre for Educational Technology Steering Committee. A Vision Statement for Distributed Learning at the University of British Columbia. September 23, 1996. [Online] Available at: http://www.cet.ubc.ca/about/vision.html.

Kappel, H.H. (1996). *Fernstudium als flexible Weiterbildung. Wissenschaftliche Weiterbildung gewinnt neue Dimensionen,* in: Dikau, J., Nerlich, B., Schäfer E. (Hrsg. 1996): Der AUE an der Schnittstelle zwischen tertiärem und quartärem Bildungsbereich – Bilanz und Perspektive. Festschrift aus Anla&#223 des 25jährigen Bestehens des AUE, Bielefeld, S. 168 – 184

Kappel, H.H. (1997). *Das Ende des Funkkollegs. Von den Schwierigkeiten einer Bilanz nach 30 Jahren Medienverbund,* in: AUE Hochschule und Weiterbil-

dung Informationsdienst 1/1997, S. 3 – 7

Kappel, H.H. (1999). Qualifikation und Erfolg. Ein praktischer Führer für Ihre Karriere mit Zukunft, 3. Aufl. Frankfurt am Main

Keegan, D. (2001). Distance Training. Taking stock at a time of change. London, New York: Routledge.

Knowles, M. S. (1975). Self directed learning: A Guide for Learners and Teachers. New York: Association Press.

Kommer, A.; Graeßner,G.; Prokop,E. (1997). *University Continuing Education in Germany*, Beitrag zur THEG3 THENUCE. [Online] Available at: http://www.aww.uni-hamburg.de/html/aue/german-UceOrg.html.

Lehmann, B.; Loeper, J. (1997). *Implementation von Fernstudienangeboten an Präsenzhochschulen;* Vortrag auf der Jahrestagung der AG-F des AUE in Kaiserslautern

Mitchell, V.A. (2000). *Universitäre Weiterbildung in Europa, Ein Handbuch für Führungskräfte*, THENUCE-DIS, European SOCRATES Programme, EUCEN Liège

Mitra, S. (1999). Virtual Institutions in the Indian Subcontinent (Including Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka*).* In: Farrell, G.M. (ed): *The Development of Virtual Education: A Global Perspective. A Study of Current Trends in the Virtual Delivery of Education.* The Commonwealth of Learning: Vancouver, Canada. 125-134.

Peters, O. (1997). *Didaktik des Fernstudiums.* Berlin.

Rahmenvorgaben für die Einführung von Leistungspunktsystemen und die Modularisierung von Studiengängen; Beschlu&#223 der KMK vom 15.9.2000

Schulmeister, R. (2001). Virtuelle Universität, Virtuelles Lernen. München, Wien

Weber, K. (1995). *Profil und Qualität der wissenschaftlichen Weiterbildung; Beiträge zur Hochschulforschung* 4-95, Bayerisches Institut für Hochschulforschung und Hochschulplanung

Wissenschaftsrat (1992). *Empfehlungen zum Fernstudium*, Hannover

Universitätsgesetz vom 23.5. (1995). *Ministerium für Bildung, Wissenschaft und Weiterbildung*, Mainz: 1997

Endnotes

1. That there is a predominantly uniform schooling system in Germany spite of the "multi-centralism" may be attributed to the fact that the federal states adjust and coordinate their activities in joint committees such as the Conference of Ministers of Education (Kultusministerkonferenz or KMK).

2. The habilitation or the postdoctoral lecturing qualification generally follows the DoctorateIt is usually the prerequisite for the appointment to a university professorship.

A Top Down Strategy to Enhance Information Technologies into Israeli Higher Education

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Abstract

This article examines the integration of the new information technologies (IT) into Israeli higher education, and most particularly its research universities through a top-down strategy, initiated by the Israeli Council for Higher Education since the end of 1999. This top-down strategy has created a systemic change that will affect the many layers of university activities rather than in a random, sporadic manner undertaken by enthusiastic individuals. This article discusses the built-in contradictions and dilemmas in the process of adapting distance teaching methods by conventional universities in Israel (as well as in other higher education systems). It examines the merits of a top-down strategy aimed to implement the IT through a macro-level, systemic approach, and analyses the differential uses of the IT in Israeli higher education institutions, relating to variables of: access-outreach; teaching-learning processes; study materials production; data and information retrieval; administrative functions; the creation of researchers communities; inter-institutional collaboration; and associated costs. The article concludes with some suggestions for effective implementation of the IT in different types of higher education institutions in a comprehensive and systematic manner, that will take into account their academic ethos and organizational infrastructure, and cater to the unique needs and characteristics of their relevant constituencies.

Introduction

New information technologies (IT) have moved distance education from the margins to the center stage of higher education worldwide. They prompted nearly all higher education institutions to integrate to some extent various forms of distance teaching (Bates, 1995, 1999; Guri-Rosenblit, 1999a, 2001; Trow, 1999). But new technologies have also presented traditional campus universities with a critical dialectical dilemma. On one hand, many research universities are better equipped than mass-oriented and single-mode distance teaching universities to utilize IT for their benefit. Their advantage is based on their low student-faculty ratios, richer resources and their ability to use IT for add-on functions to enrich teaching-learning processes, rather than replace their total instructional

apparatus. On the other hand, the academic ethos of many research universities, which cherish personal academic freedom, institutional autonomy and a selective-elite orientation, oppose the notions of team-work, inter-institutional cooperation and open-door global outreach policies, which characterize the underlying principles and operation of many distance education endeavors.

Research universities are the most dominant sector in Israeli higher education. For fifty years, from 1924 until 1974, they enjoyed a total monopoly and were the only higher education institutions in Israel. The Technion (established in 1924) and the Hebrew University (established in 1925) were shaped on the basis of the German Humboldtian university ideal, premised on unity of research and teaching. The other five university-level institutions, established between 1934 and 1965, tended to follow the model of the two veteran institutions. The research orientation features prominently in Israeli universities. In 1974, the Open University of Israel was established. Differing from the research universities, it was based on the model of the British Open University. In the same year, the first non-university institute, the Rubin Academy of Music and Dance in Jerusalem, was authorized to grant academic degrees in Israel. Since then, Israeli higher education has changed dramatically both in size and composition. When Israel was established in 1948, only three percent of the relevant age cohort were admitted to its two universities. In 2000, over 30 percent of the relevant age cohort studied in higher education institutions (Central Bureau of Statistics, 2000).

The last decade was characterized by rapid change that has shaken the relatively stable and conservative foundations of Israeli higher education. The changes were manifested mainly by tremendous growth in the relevant age cohorts participating in higher education; a fast expansion of the non-university sector; initiation of private colleges; and the "importation" of dozens of extensions of foreign universities. In 1990, about 89,000 students were enrolled in Israel's 21 institutions of higher education: eight universities, six colleges and academies, and seven teacher-training colleges. In 2000, over 200,000 students were enrolled in 54 higher education institutions: eight universities, 24 colleges and academies, and 22 teacher-training colleges (Central Bureau of Statistics, 2000), reflecting an increase of 113 percent over a decade. Among first-degree students, the increase was of 133 percent. In addition in 1999, there were 52 extensions of foreign universities, mainly from the UK and the USA (Kadosh, 1999). This constitutes a drastic restructuring of the Israeli higher education system in a relatively short span of time.

Following these drastic changes over the past decade, the research universities found themselves in a most vulnerable situation. They are still considered to be the strongest and leading institutions of the Israeli higher education, but at the same time they have to compete both for students and funds. They are dreading the deterioration of their status by continuous budget cuts and by increased government intervention in their academic internal affairs. It is important to

stress that although mainly the Government finances these universities, like most other higher education institutions, they still enjoy full autonomy in academic and administrative matters, albeit within the limits of their budgets. They are not state universities. Except for earmarked grants, they are autonomous to decide what proportion of their budget will be devoted to research or teaching, to graduate or undergraduate programs, to professional schools or science departments. This academic autonomy is vested in the Law of the Council for Higher Education of 1958. The Council for Higher Education was established in 1958 as a buffer body between the Government and the universities in order to control the growth and development of higher education in Israel. In 1974, the Council established the Planning and Budgeting Committee (PBC) that brought into control the allocation of money to higher education institutions. Through its control over the budgets of the various higher education institutions, the PBC exercises tremendous power. It also represents universities' interests, as well as those of other higher education institutes, in negotiating the overall annual higher education budget allocated by the Government.

In the last few years, the Government has threatened the universities' autonomy several times. The latest threat took place in September 2001, when the government decided to change the universities' governing structure and to abolish psychometric examinations as a prerequisite for admission to the universities. The universities are considering a strike against these decisions at the beginning of the next academic year. New developments, including the integration of the new IT, are viewed by many Israeli academics with suspicion, and as additional interventions that might threaten their individual academic freedom.

In 1999, the Council for Higher Education nominated a special sub-committee for enhancing the integration of IT into Israeli higher education, and most particularly into the universities. The Council for Higher Education has realized the importance of IT for enriching the teaching/learning processes, for research purposes and for the development of high tech industry. At the same time, the members of the Council for Higher Education also understood that without obtaining additional funds and being promised other incentives, it was unlikely that the universities would have initiated a systematic approach in their adoption of IT. Thus, in October 1999, the Council for Higher Education published a special competitive call for projects integrating IT aimed at all higher education institutions (Council for Higher Education, 1999). This call encouraged the applying parties to plan the integration of IT into their teaching apparatus, academic management, and administration procedures, thereby rewarding the winning institutions with generous grants. The underlying principles of this top-down strategy are discussed in detail further on.

This article discusses the impact of academic cultures on implementing changes in various national settings. It examines the merits of a top-down strategy aimed to implement the IT through a macro-level, systemic approach, and analyses the differential uses of the IT in Israeli higher education institutions. The discussion

relates to the variables of: access-outreach; teaching-learning processes; study materials production; data and information retrieval; administrative functions; the creation of researcher communities; inter-institutional collaboration; and associated costs. This article concludes with some suggestions for effective and systematic implementation of IT in different types of higher education institutions that takes into account their academic ethos and organizational infrastructure, while catering to the unique needs and characteristics of their relevant constituencies.

Academic Cultures and Distance Education

Different academic cultures dominate the operation of various higher education systems. These cultures affect the implementation of changes and the adoption of new traditions and teaching innovations. Clearly, the academic environments of English collegiate universities and liberal arts colleges in the USA differ meaningfully from Humboldtian research-oriented universities (Rothblatt, 1997). As in many other fields, there are also crucial differences between different higher education systems in their attitude towards distance education.

The degree of novelty of distance education at the university level in various higher education systems has influenced the way different distance education institutions have been shaped in various national settings. The UK and Canada, for instance, have a long history of university correspondence teaching dating back to the nineteenth century. The establishment of the British Open University in 1969 and Athabasca University in Canada in 1970 were not perceived as a sharp break with tradition (Guri-Rosenblit, 1999b). Although none of their antecedents offered the precise mix the new universities offered, the notion of distance teaching at tertiary level was nonetheless well established and long-practiced in these two countries.

On the other hand, in most European countries, the concept and practice of distance teaching at university level was novel and revolutionary until the 1970s. Hence, the Spanish UNED and the German FernUniversität decided to be as similar as possible to the traditional universities in their admission policies, curricula and exit requirements, and they had to fight to ensure their academic status and acceptance by their conventional counterparts. In Israel, the Open University has been treated for many years with suspicion by the research universities and has yet to be fully accepted as a peer in the Council of the Universities' Heads.

An additional example relates to the crucial difference between the USA and Europe in the attitude of their higher education systems towards extensions and lifelong learning. In the USA, most universities, and certainly the great public universities, have an extension division that provides courses for adults

in nearly any study (Trow, 1999). This practice is not widely shared among Europeans. Unquestionably, the extension tradition in the USA greatly affects the ways that adult education through IT has developed in the US universities. In addition, the idea of a university that makes profits for its proprietor and shareholders (such as Phoenix University and the National Technology University in the USA) is unthinkable for most Europeans, yet totally acceptable by most Americans.

It follows that the adoption and integration of IT in each national milieu is greatly affected by the overall academic ethos in each country. The perception of academic freedom, for instance, has influenced the operating practices of different distance teaching universities. In Germany, Spain and Israel, where the academic freedom is highly prized and sacred, the notion of teamwork and compulsory quality control mechanisms have been vigorously resisted by many academics (Guri-Rosenblit, 1999b).

Institutions that offer distance teaching or use IT differ enormously in how they were initiated, whom they aim to serve, how they are funded, and the kind of programs they offer. Students and teachers engaged in different kinds of education use the resources of the new technologies differently, influenced by the nature of the subject, the location of the student, purpose of the instruction, etc. (Arnold, 1999; Guri-Rosenblit, 1999c, 2001; Trow, 1999). There are differences influenced also by the various types of institutions within each higher education system. The elite research sector in higher education, the mass-oriented institutions, and the full-fledged distance teaching universities operate on different underlying premises (Daniel, 1996; Guri-Rosenblit, 1999c). The academic goals, potential clienteles, and organizational infrastructure of each of these sectors are immensely diverse, and these profound differences shape the ways in which IT are harnessed in each context to the benefit of variable interest groups. Reaching out to tens of thousands of students is not naturally part of the research universities' agenda. They are inclined retain their elitist orientation for the few and well-to-do students. Their applicants will always exceed the number of places available. The research universities are nonetheless interested in reaching out to some distinct populations outside their campuses, but these are mainly adult postgraduate clienteles working in high tech organizations and in other leading industry enterprises. However, the most impressive and extensive applications of IT in learning processes, at the present time, takes place in the training sectors of the corporate world and in professional continuing education. On the other hand, mass-oriented and distance teaching universities are greatly interested in extending their target populations and utilizing their IT abilities.

The Israeli Council for Higher Education has realized that the dominant academic culture in Israeli universities hinders the application of IT on a wide institutional scale and in a comprehensive manner. As is the case with other research universities, Israeli universities are complex, decentralized organizations, characterized by a high degree of division and diffusion of power. In addition, it

has been quite clear from the experimentation with IT in various places, that to set an appropriate infrastructure for their efficient and effective use is highly expensive. Therefore, it was speculated that with no special funding, utilization of IT in Israeli higher education institutes would be performed by a handful of enthusiasts in a most sporadic pattern. Moreover, the overall reluctance of Israeli academics to allow government to exert external interference in their internal matters has fostered a subtle attitude that decisions to participate in any new effort should be left to the individual academics, and performed in a voluntarily rather than in a compulsory way. All these underlying considerations, taking into account the unique academic culture in the Israeli universities, prompted the Council for Higher Education to issue a call for competitive proposals for designing an overall teaching/learning system based on advanced technologies. The call ensures that the winning parties receive ongoing funding for the proposed experiments for at least two and a half years.

Merits of a Top-Down Strategy

Universities, in general, as loosely coupled systems, cannot be expected to develop a consistent institutional policy from the academic base only. Given the many changes that Israeli universities have had to face in the last two decades, it was unlikely that any top-down initiative would originate from the universities governing bodies. At the same time, given the entrenched values of institutional autonomy and individual academic freedom, universities tend fiercely to resist any external dictates. The Israeli Council for Higher Education, therefore, had to combine both top-down and bottom-up elements to promote the design and implementation IT policy on a macro level.

The top-down strategy of the Israeli Council for Higher Education in the field of IT utilization aimed at achieving three major goals (Council for Higher Education, 1999):

- To ensure a macro-level institutional approach in implementing IT in each higher education institution;

- To enhance establishment of support centers for the faculty volunteering to implement the new IT into their lectures/seminars and other activities on a stable and ongoing basis, as well as for students.

- To encourage collaboration between several higher education institutions (one of the prerequisites was to submit proposals by at least two collaborating institutions).

Since the call of the Council for Higher Education, published in October 1999, was competitive, it has not compelled anyone unwilling to participate to do

so. It was, in its essence, a strategy that allowed individual enterprise and entrepreneurship under a top-down sponsorship. The Council devoted $US 3.8 million for that purpose, and the Ministry of Education, which is directly budgeting the teacher training colleges, devoted a sum of $US 1.2 million, altogether $US 5 million for a period of two and a half years.

In addition to the three major goals mentioned above, the call emphasized the importance of additional prerequisites by which different proposals would be evaluated: *transferability* – the potential of the proposed projects to be transferred to an array of disciplines and other fields of study; *scalability* – the potential of applying any of the proposed experiments on a large scale; and *sustainability* – the ability to continue any given project at the end of the special budgeting by the Council for Higher Education.

Acknowledging the fact that there are many levels of applying IT in teaching/learning processes, and participating agents may have differential previous experiences with IT, the call stressed that several levels of IT applications would be considered. Levels might range from using the IT as add-on functions in conventional classrooms through substituting part of the face-to-face teaching by technology applications, to delivering courses exclusively through the Internet (Beller & Or, 2001).

Interestingly, in spite of the inherent reluctance of academics to external interventions, most universities have submitted comprehensive proposals for the application of the IT in many layers of their activities, as did some colleges. Table 1 below presents the number of institutions that submitted proposals and the number of proposals accepted after a careful evaluation of the special subcommittee nominated by the Council for Higher Education, as well as the total number of courses in which IT will be incorporated.

Table 1: Proposals for Implementing IT into the Israeli Higher Education*

Type of institution	Total number	Submitting proposals	Accepted proposals	Total of courses
Universities	8	7	6	307
Colleges**	24	5	2	26
Total	32	12	8	333

* Based on Beller & Or, 2001, p. 33

** Does not include the 22 teacher training colleges, out of which 6 submitted proposals to the Ministry of Education

As can be seen from Table 1, seven out of the eight universities submitted proposals, and six out of the seven were accepted. A much smaller proportion of

colleges submitted proposals. The positive and active response of most universities to the call of the Council for Higher Education reflects the attractive appeal of a well-designed top-down strategy, even in institutions that guard vigorously their internal autonomy.

Functional Uses of Information Technologies

IT are complex in nature and serve a wide array of functions. Quite often the discourse on information technologies can be characterized as suffering from "The Tower of Babel Syndrome" – a confusing language and misleading conclusions, resulting from the fact that people refer to totally different functions and roles while using the same generic terms (Guri-Rosenblit, 2001). One emphasizes the interactivity and communication functions, while another highlights the information retrieval possibilities. Some are excited by the video-conferencing abilities, whereas others focus on the sophistication of text production, the richness of multi-media packages, etc. One application can be relatively inexpensive (such as email communication), while another possibility might be costly (such as a pre-prepared multi-media program). Some abilities of IT may be used with minor alterations of the study environment, while others require major changes in the existing infrastructures. The main uses of IT in Israeli universities, both those that are already in practice and those submitted as proposals in the framework of the call of the Council for Higher Education, are described as follows:

Access-Outreach

Traditionally, distance education aimed at extending access to higher education. IT facilitate the outreaching to student clienteles beyond the physical university boundaries. Also, the Israeli Council for Higher Education has defined the reaching out to working adults and the promotion of lifelong learning opportunities as important goals. Nevertheless, many research universities are not so eager to significantly increase their student numbers. Subscribing to an elitist-competitive principle, they select the best students from a large number of applicants each year. Motivated by a desire to increase their financial base, they gear most of their outreach programs towards graduate and post-graduate students who are sponsored, by and large, by their employers. Tel-Aviv University's Business Faculty, for example, operates the most successful programs that utilize IT. Many other programs at other universities are at the graduate or professional diplomas levels and in the fields of professional continuing education. In December 2000, for example, an experimental one-year Telemedicine Project was conducted under the auspices of the World Health Organization and Israel Inter-University Computerization Center, which saw eighteen Medi-

cal Centers from seven different countries (USA, UK, France, Denmark, Sweden, Brazil and Israel) participating in continuing education courses in Paediatrics through teleconferencing and computer mediation.

Bar-Ilan University has established the Virtual Jewish University that offers online courses in Jewish studies to various locations inside and outside Israel. Bar-IIan University plans to expand this activity; it also offers courses to high school students in computer sciences (Jolles, 2000). The Open University of Israel teaches more than 8,000 students in the former Soviet Union states, in addition to 34,000 students in Israel. Most of the course delivery involves self-study materials and traditional tutoring, but part of the teaching/learning process is conducted through video-conferencing and chat groups through computers located either in study centers or in students' homes. The Open University of Israel utilizes IT in a variety of applications in more than 200 courses out of its 450 courses. The courses are offered to its students that are scattered in over 100 centers throughout Israel.

Teaching-Learning Processes

The call of the Council for Higher Education has purported mainly to integrate IT more fully into the teaching/learning processes at all universities. As previously shown in Table 1 above, accepted proposals relate to the implementation of IT in 333 different courses in six universities and six colleges. Proposals submitted to the Council for Higher Education included various levels of IT utilization in teaching/learning processes. Some replace entirely class encounters by Web-based delivery. But the majority of the proposals substitute only partially the face-to-face meetings in class, adding such enrichment components as: simulations, chats between students and teachers and among students after class, course homepages that contain former exams, detailed syllabi, exercises, relevant connections to data resources, experiments, etc.

The fact is that IT are mostly used in learning/teaching processes at Israeli universities as add-on functions, rather than as a replacement of the lecture or seminar encounters. As in many other single-mode distance-teaching universities, this is also the case even at the Open University of Israel. So far, the new IT has not replaced the overall apparatus of traditional distance teaching. Most online students still receive the relevant textbooks through mail, or are advised to buy their study books and readers in nearby bookstores.

Interestingly, many Israeli academics do not regard teaching through IT as equivalent to enhancing distance education (Jolles, 2000). Some believe that distance education should be performed by open universities, or by special institutions designed to teach students at a distance. IT enables to enrich teaching/learning activities for students on campus and for a handful of students

outside the campus; but they do not necessarily create a distance teaching environment. Even when offering full online courses, most Israeli academics believe that the overall teaching in a research university should be based on personal encounters in lecture halls or seminar rooms. These encounters are essential for socializing students into the academic world, and for shaping their minds and values.

Study Materials Production

The production of specially designed self-study materials stood at the heart of the distance teaching universities that were established in the early 1970s and based on the model of the British Open University. Textbooks and study materials produced and developed by the Open University of Israel serve the students at all Israeli universities, because they are often the only university level materials written in Hebrew. The process of developing high quality materials is labor intensive, time consuming and costly. Therefore, dealing with this issue in their specific call for proposals, the Council for Higher Education stressed that the original development of study materials is not the major task of the call, and should be avoided as much as possible. Participants should adopt existing textbooks and materials and adapt them for the use of teaching through the Internet and other IT applications.

Evidently, the new IT enable updating of existing study materials on an ongoing basis and retrieval of information from a wide range of data sources. They also add exciting components into the learning process. Yet thus far, they have not offered an overall solution for replacing most of the textbooks and resource books. Future developments of the e-book, standardization of computer software, and growing student accessibility to personal computers might change this situation. Few submitted proposals dealt with the production of original study materials. In the framework of the call, it was specified that the content of any original development or production will be owned entirely individual inventors. But the instructional design and tools of producing new materials or simulations will be owned by the Council for Higher Education, and that they will hold the copyright to transfer the knowledge to all other higher education institutions.

Data and Information Retrieval

Unquestionably, English constitutes nowadays the 'academic Esperanto' throughout the world. English proficiency is a prerequisite for completing any degree at an Israeli university or college. The ability of the new technologies to extend the possibilities of data retrieval and information, mainly for English speaking

students, is one of their important attributes. All university libraries in Israel use a variety of engines for retrieval of information in most disciplines and subject matters. The Union List of Israel (ULI) has connected the catalogues of all university libraries. All university libraries are currently in the process of transforming their existing catalogues into the international MARC format. Students can nowadays access many resources both outside their university and outside Israel. The project of the Council for Higher Education encouraged the universities to extend these activities, and some of the proposals submitted by the universities, referred to various library projects to establish virtual libraries.

Administrative Functions

IT have the power to facilitate many administrative operations in the field of enrolment, registration, taking examinations, class management, grades, etc. Most Israeli universities, via the Internet, enable the students to enrol, receive and retrieve detailed information as to their prospective fields of studies, loans, fellowships, chances of being admitted, etc. In the teaching process, students can see their exam grades, average grades of their fellow students, exam answers and assignments. It seems that in Israeli universities, IT are currently utilized for administrative purposes on a much larger scale as compared to the teaching/learning processes. Many of the university proposals referred to the growing applications of the IT in their administrative apparatus at many levels: faculty level, schools, and departments.

Researchers' Communities

IT enhance the creation of researchers' communities, which enable academic communities to transcend institutional boundaries and national borders. It is well known that sometimes academics' loyalty to the international discipline-based groups exceeds that of their own institution. IT are realizing most scholars' dreams of global access to enormous bodies of information at his/her desk and immediate or frequent interactions with fellow scholars all over the world (Trow, 1999).

Israeli researchers have a long established reputation for being internationally oriented and for collaborating with peers in leading universities in the USA, Europe and other places. Through the use of email, Israelis are participating in various projects and special research tasks initiated by the European Union and Council of Europe, as well as many other research endeavors. The call of the Council for Higher Education encouraged collaboration between scholars from different higher education institutions in Israel. Obviously, the planning of the inter-institutional proposals and their monitoring have been enhanced by the

rich avenues of communication that are enabled and facilitated by IT.

Inter-Institutional Collaboration

Despite its importance, Inter-institutional collaboration contradicts the tendency of many elite-oriented universities to stay aloof and unique. Few collaborative endeavors exist among Israeli universities. Unlike the situation in the USA, Canada and many European countries, there are no standard accreditation procedures in Israel for students transferring from one university to another amidst their studies. There are some collaborative ventures between Israeli universities in various research projects, but no cooperation in the domains of curriculum planning and instruction. The Council for Higher Education realizing the huge investment in setting appropriate infrastructure for the various applications of IT, and the obvious duplications that exist between institutions that insist on being totally independent, it seemed imperative to encourage inter-institutional collaborations. For that reason, in its call to submit proposals, The Council of Higher Education specified for each proposal to be submitted by at least two, and preferably more, institutions.

Associated Costs

In the face of shrinking budgets, the problem of costs is most pertinent as to the future applications of IT in higher education environments. While IT literature contains many claims of cost efficiency and of providing economies-of-scale compared to traditional classroom teaching, there is little evidence to support these claims in higher education environments. Most of the accumulated evidence provides contradictory results. Implementation of technologies costs more money as compared to previous distance teaching techniques. Since they are used mainly as add-on functions, are labor intensive, and bring the expert teacher back to center stage, they can be costly.

Preparation of an online course may take from four to twenty times more resources as compared to the planning of a regular lecture (Bates, 1999; Guri-Rosenblit, 1999b). Some people currently teach online for free, because they feel enthusiastic and they are curious to examine the new technologies' possibilities. But institutions cannot rely on such a voluntary readiness demonstrated by all, or most, of their academic faculty. Obviously, until the cost issues related to IT uses are clarified, examined carefully, and transparent, huge gaps will persist between potential abilities of new technologies and their actual implementation.

The Israeli Council for Higher Education tried to circumvent this dilemma by sponsoring part of the new initiatives of IT implementation in most universities

and some colleges, and by promising an ongoing sponsorship for those projects that prove to be successful and endurable.

Concluding Remarks

New IT have a tremendous potential to change and reshape the academic teaching and learning practices in all types of higher education institutions. They open up possibilities to design new study environments that have not previously been feasible for both on-campus and off-campus students. It seems as though the whole world is currently engaged in discussing the actual and potential effects of the IT abilities and qualities (Evans & Nation, 2000; Khan, 1997; Littleton & Light, 1999; Selinger & Pearson, 1999; Somekh, & Davis, 1997).

IT offer a real challenge to supplement existing technologies and to provide exciting new possibilities to enrich and improve the quality of the learning process, and to affect the delivery, production and administrative mechanisms of academic systems. So far, the promise of the new technologies is to reshape the learning/teaching processes in most higher education institutions, but there is still a long way to go before its optimal and full realization. Many policy makers, administrators and academics worldwide are currently engaged in applying IT in different domains. But most trials are still operated on a small-scale and are characterized by a sporadic and dispersed nature. Any serious shift of the existing learning infrastructures, therefore, requires an overall institutional commitment, a gradual induction of both students and academic faculty to the new IT uses, the planning of appropriate support services, and clear financial prospects.

In promoting integration of IT into the Israeli higher education institutions using a macro-level systematic approach, and most particularly into the research universities, any large-scale change in higher education systems must be attentive to the dominant academic culture in each national setting. The Israeli Council for Higher Education has employed a top-down approach to extend a competitive call for integrating IT in higher education addressed to all universities and colleges. No policy was imposed upon the universities, but they were encouraged to compete for funds in applying IT into their operations. Such a strategy took into consideration the long-standing reluctance of academics to external intervention, and their sensitivity in relation to their individual academic freedom. In such a way, bottom-up elements were triggered by a top-down initiative, enabling individual enterprise under a central sponsorship. The call has also encouraged inter-institutional collaboration, by making it a prerequisite that submission of proposal be by at least two institutions.

Seven out of eight Israeli universities submitted comprehensive proposals for implementing IT in hundreds of courses, and provided plans for establishing

support services for both professors and students, and for utilizing IT into academic management at the various levels of the university operations. The fact that most universities have responded positively to the call of the Council for Higher Education, and invested efforts in retaining the special funding for incorporating IT into their everyday activities, reflects the inherent advantages of a top-down policy. Even the Israeli universities that value highly their institutional autonomy and vigorously resist external interventions into their internal affairs, have understood that only through a central sponsorship, it might be possible to implement IT in an intelligible and systematic manner. The results of these sponsored projects are yet to be known, since the experiments will end in 2003. All participating parties are expected to present the lessons that they have deduced from the operation of the various applications in a symposium open to the public, and to offer their insights as to future developments in this field to all higher education institutions.

The Israeli case highlights the problematic situation of costs associated with the application of IT in higher education. Many higher education institutions find it difficult to sponsor the experiments and various uses of IT from their operating budgets. Even a relatively inexpensive application such as email, requires many hours of human capital investment. In potential, students can contact their teachers through email 24 hours per day. But the teacher is expected to respond, and it is totally unclear who is going to reward these extra efforts. The major attraction of the Council for Higher Education's call was the promise to fund the different proposals for at least two and a half years. A central intervention of a body, like the Israeli Council for Higher Education, is quite essential for enabling IT uses in the many layers of the university activities. It seems that the cost issue constitutes a most important hindrance for the application of IT on a large scale, and explains partially the fragmented and limited nature of their implementation so far.

References

Arnold, R. (1999). Will distance disappear in distance studies? Preliminary considerations on the didactic relevance of proximity and distance. *Journal of Distance Education. 14* (2), pp. 1-9.

Bates, A. W. (1999). Managing technological change: Strategies for academic leaders. San-Francisco: Jossey Bass.

Bates, A.W. (1995). Technology, open learning and distance education. London: Routledge.

Beller, M. and Or, E. (2001). Virtual learning is an existing reality. *Academia, 9*, pp. 27-34 (in Hebrew).

Central Bureau of Statistics (2000). *Education and culture – selected data*, based on the Statistical Abstract of Israel 2000, No. 51. Jerusalem: State of Israel Central Bureau of Statistics (in Hebrew).

Council for Higher Education (1999). . *call for proposals: Designing an overall teaching/learning system based on advanced technologies.* Jerusalem: The Budgeting and Planning Committee of the Council for Higher Education (in Hebrew).

Daniel, J. S. (1996). The mega-universities and the knowledge media. London: Kogan Page.

Evans, T. and Nation, D. (Eds.) (2000). Changing university teaching: Reflections on creating educational technologies. London: Kogan Page.

Guri-Rosenblit, S. (2001). The Tower of Babel syndrome in the discourse on information technologies in higher education. *Global E-Journal of Open, Flexible and Distance Education. 1* (1) pp. 28-38.

Guri-Rosenblit, S. (1999a). The agendas of distance teaching universities: Moving from the margins to the center stage of higher education. *Higher Education, 37*, pp. 281-293.

Guri-Rosenblit, S. (1999b). *Distance and campus universities: Tensions and interactions - A comparative study of five countries.* Oxford: Pergamon Press and The International Association of Universities.

Guri-Rosenblit, S. (1999c). Differential impacts of information technologies on three academic environments: The elite sector, mass-oriented universities, and distance teaching institutions. A Keynote Address at the Euro-Med Conference on Tele-Technology in Learning Environments, Tel-Aviv, October 1999.

Jolles, S. (2000). *The use of technologies in Israeli universities*: An internal report of the Marketing and Strategic Division. The Open University of Israel (in Hebrew).

Kadosh, F. (1999). *Structural changes in the higher education system in Israel in the Nineties,* M.A. thesis. Tel-Aviv University, Faculty of Social Sciences.

Khan, B. H. (ed) (1997). *Web-based instruction.* New Jersey: Prentice Hall.

Littleton, K. & Light, P. (Eds.) (1999). *Learning with computers: Analysing productive interaction.* London: Routledge.

Rothblatt, S. (1997). The modern university and its discontents: The fate of Newman's legacies in Britain and America. Cambridge: Cambridge University Press.

Selinger, M. & Pearson, J. (eds) (1999). *Telematics in education: Trends and issues.* Oxford: Pergamon Press.

Somekh, B. & Davis, N. (eds) (1997). Using information technology effectively in teaching and learning London: Routledge.

Trow, M. (1999). Lifelong learning through the new information technologies, *Higher Education Policy, 12* (2), 201-217.

Out of the Shadow and Into the Spotlight - The Development of Distance Teaching in Norwegian Higher Education

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Distance Teaching - Some Education Policy Traits

On October 4, 1914, The Norwegian Correspondence School (NKS) accepted its first student, a woman, who, for a fee of NOK 10, registered for two courses (Amdam and Bjarnar, 1989). Seventy-five years later, distance education has become an important part of Norwegian higher education. However, there are several reasons why distance teaching did not gain acceptance in Norwegian higher education earlier. One of is the well-known skepticism of distance teaching as a strategy, the other was the adoption of other modes of making higher education accessible to more people, such as offering part-time studies and decentralized study programmes in locations without higher education institutions. In Norway, because geography has been more of an obstacle than social class, might help explain the greater focus on building traditional education institutions during this period (Støkken 1999).

Early in the 1990s, we can talk to a certain degree of a change of climate or attitudes towards distance education within higher education circles. This change in attitude was initially found in the Ministry of Education and with a few visionary university and college leaders. However, by the late 1990s, favourable attitudes towards distance education had spread to an increasingly larger number of faculty members, as indicated by a substantial number of distance teaching programmes that were being developed. Hence, it can now be claimed that distance teaching has moved out of the shadows and into the spotlight.

Although running the risk of historical simplification, we claim that the beginning of "the new spring in distance teaching" can be connected to two pivotal events at the end of the 1980s. These events may be understood both as visible developments and as essential prerequisites for further developments in the field.

The first is closely connected to the ICDE 14th World Conference in Oslo in 1988, and more specifically to the opening lecture given by the then Prime

Minister, Gro Harlem Brundtland. Even if she did not announce much in the way of specific efforts underway in Norway, she did suggest visions for this field in general, and for Norway in particular. The other event was the green paper titled: "With full knowledge" (*NOU 1988:28 Med viten og vilje*), also know in Norway as the Hernes Report. At the time, there was a growing optimism outside education circles, which emphasized the ideal of lifelong learning and education as a way of life rather than a particular phase of life. Within this context, distance teaching was discussed as a viable strategy strongly influenced by advances in information technology (IT).

The Hernes Report indicated that distance teaching would be both a less expensive and qualitatively better form of education than what was being offered by traditional institutions at that time. So far it has been difficult to determine if these expectations have come true. However, we can with some certainty say that distance teaching has not proven to be inferior to so-called regular education (e.g., SOFF's surveys below). As to the expectations of "inexpensive study programmes," the central authorities have expressed other and more realistic assessments.

The Structure of Distance Teaching in Norwegian Higher Education – The Establishment of SOFF

Report to the Parliament (*Storting*) no. 43 (1988-89) titled: "More Knowledge to More People," (*Mer kunnskap til flere*) clearly signaled that the existing higher education institutions should be used for distance teaching. There was no wish to establish a separate open university for a number of reasons. First, the central authorities considered such a solution fairly unrealistic both in terms of finances and expertise. Second, importance was attached to the creation of a national network between universities and colleges, one that would resolve some of the major problems facing Norwegian higher education at that time. The idea was that by dividing the work among the educational institutions, teaching expertise could be concentrated in a few strong environments. At the same time, learning opportunities could be distributed, thereby allowing access to higher education in various subjects regardless of students' place of residence. Distance teaching would play an important role in this respect. A third reason the concept of an open university was not accepted, was that G. Hernes, the Norwegian Minister of Education at the time, did not approve the idea of expanding the number of universities.

As an alternative to an open university, a small coordinating unit – SOFF – was instead established in 1990 to create an electronic knowledge network. In the Parliamentary (*Storting*) report No. 43 (1988-89), the rationale for establishing a state agency for, what was then called: "Distance Teaching on a Higher Level in Norway," was the need for a national agency to handle national tasks, to stimulate Norwegian universities and colleges to become active in this field, and

to evaluate and coordinate the operations that had already been launched or which would be launched.

The power and authority the national agency would have over the educational institutions would mainly rest on the allocation of project funds and on professional expertise that might enable institutions and experts to join together. A clear division of labour between the agency and the educational institutions was planned. SOFF would stimulate and coordinate, while the educational institutions would develop and offer distance teaching programmes.

The Committee on Education and Church Affairs of the Norwegian Parliament found it natural that such an agency would be located in Northern Norway, "where this type of education has had or will have particularly great importance." Critics nevertheless interpret the Northern Norway location from another standpoint – regional considerations were far more important than a major effort to develop the field of distance teaching (Eide, 1996, pg. 61). SOFF was finally established and its secretariat was located in Tromsø. The Ministry also designated seven so-called hubs for distance teaching, where it was originally envisioned that the bulk of distance teaching programmes would originate. Right from the start, SOFF disagreed that distance teaching should be restricted to these seven hubs and in 1993 proposed that the scheme of using hubs be abandoned. In practice, the scheme with seven hubs in distance teaching has lost all importance. On its own initiative, in 1995, SOFF established an informal network for the exchange of experience and contact: The National Distance Teaching Network.

Development Strategy and Education Policy

The 1990-94 period was an active, turbulent and eventful time for higher education in Norway. Important events during this period included a vast increase in the number of students enrolled in higher education, restructuring of the state college sector, and the establishment of common legislation and regulations for state universities and colleges. In this picture, not only was distance education a relatively marginal activity, it was a completely new activity for most higher education institutions. During the first half of the 1990s, and functioning on a fairly satisfactory level with respect to its mandate and budgetary framework, SOFF laid the groundwork for later major developments. This gradual development, however, was not accompanied by increased government funding.

From 1995 to 1997, new national units, which partly overlapped SOFF's field of operations, were established and the central authorities focused more on Information and Communication Technology (ICT) in ordinary education than on distance education. In spite of this, the field progressed rapidly, largely due to the growth of the Internet and the growing emphasis on the role of universities and colleges as institutions for lifelong learning. During the last five years,

the interest and activity levels of distance teaching and flexible education have
increased greatly. This growth occurred in spite of the absence of clear direction
in education policy and initiatives for a unified policy, a fact so striking we refer
to it as an "educational policy lag," where the central authorities have lagged
significantly behind developments.

In recent years, the most important education policy initiative has concerned
further and continuing education. This initiative, the so-called Competence Re-
form, has mainly targeted developing theoretical and practical competencies of
the working population. In the proposed budgets for 1999 and 2000, the Min-
istry signaled expectations that SOFF and higher education should contribute
to realising the intentions of the Competence Reform through their activities.
These signals suggest that the central authorities are now more aware of the
increased importance of distance teaching or flexible learning in higher educa-
tion. (Flexible learning is the new buzzword in Norway, including both distance
education and ICT-supported campus education).

In spite of indications of a more active education policy, much work remains
before the educational policy lag can be overcome. The following educational
policy challenges may be mentioned:

- Various public initiatives are needed to stimulate the use of ICT both in
  ordinary and distance teaching, in order to enhance quality and to better
  orient users.

- Evaluation, research and development, learning from experience, and competence-
  raising activities in flexible learning in higher education, must be signifi-
  cantly strengthened.

- Relationships between the fields of higher education and the adult educa-
  tion, and the actors involved in the two traditionally separate fields, must
  be further clarified.

- Universities and colleges must be provided with more freedom, allowing
  them to satisfy new demands for restructuring and adapting study pro-
  grams for users. Higher education's degree of market orientation must
  also be balanced in relation to the fact that universities and colleges
  have a long-term duty to society in preserving, developing and passing
  on research-based knowledge.

- Further development of the field depends greatly on the policies and ef-
  forts of individual educational institutions. An interesting feature in this
  context is that the administrative officers of many Norwegian universi-
  ties and colleges recognise the great strategic importance that distance
  teaching and flexible learning might have for their own institutions in the
  future. Much of this understanding is still connected with the rhetoric and
  positioning through various loose cooperation projects. To stay on top of

developments in this area, poses new challenges for central authorities and SOFF.

The Educational Challenges – From Distance Teaching to Flexible Education

SOFF and higher education initially faced three educational challenges: one, expectations of increased recruitment of adults; two, the development and testing of study models; and three, the use of ICT. Motivating universities and colleges to take this task seriously was another major challenge. From SOFF's perspective, distance-teaching activities at the educational institutions should serve a "double benefit goal." The work performed by scientific personnel with distance education would raise the quality of teaching at the institution, both by raising the competence of their teaching staff and by utilising teaching aids. The development during the 1990s supports these assumptions.

ICT as a Basic Condition and Measure

In the early1990s, when information and communication technology was adopted for general use, distance education expanded its repertoire. This not only applied to limited pilot projects, but also to regular distance education programmes. Even early in the 1980s, Norwegian universities and colleges tested a wide range of technological possibilities, including the telephone, satellite-based transmissions, computer technology, and video conferencing. SOFF's own reviews show that during the 1990s, institutions of higher education (in some cases in cooperation with the autonomous distance teaching institutions) tested a variety of relevant technological alternatives. This developmental activity appears in no way to lag behind the international scene. After many study visits abroad, it is interesting to note that Norway is fully up to the standards of the rest of the world.

While ICT has been an important driving force, it also has been dysfunctional in some areas. One of the most prominent features of the ICT development so far, is that it is accompanied by rhetoric that typically promises much more than it can deliver. Haugsbakk (2000) offers a number of critical remarks on the exaggerated enthusiasm and grand visions that are typical of this field and points to a number of interesting aspects, including the lack of historical awareness in current debates and developments, prominent revolutionary rhetoric, restricted technical or technological perspectives, and a conscious use of biased concepts that explicitly and implicitly communicate positive values and qualities in a learning context.

Teaching Models

Generally, the so-called "classic" distance education model, as practiced in Open Universities in other countries such as in the UK, Germany and Canada, for instance, has been somewhat restricted in Norwegian higher education. This was expressed on pages 42 and 43 of the Parliamentary (*Storting*) report No. 40 (1990-91) "From Vision to Work" (Fra visjon til virke):

> Distance teaching should be a supplementary element of the teaching programmes. Development of education programmes based solely on distance teaching, as practiced by some open universities in other countries, is so far not pertinent for institutions of higher education in Norway.

Thus the main model in Norway has been a combined form of distance teaching. Included as a smaller or larger part of a comprehensive plan comprising self-studies (partly by means of specially adapted electronic and paper-based teaching aids) are: face-to-face meetings, two-way synchronous and asynchronous dialogues among participants, and in some cases, activities and developments tied to a student's local community or workplace. This emphasis on combined models in higher education may be linked to the fact that Norwegian higher education has more experience with part-time and decentralized programmes, and that these programmes have revealed the importance of meetings among students for a number of reasons. Still others claim that the emphasis on combined teaching programmes may be understood as an attempt by established academia to wrest some degree of control over a new and unknown field (Støkken, 1999).

With the development of web-based programmes, a growing number of studies, including those on a higher level, will approach the classic distance education model. The major challenge of such a model is to maintain the qualities connected to the academic dialogue as they appear in the good seminar situation. So far the experiences appear slightly divided. A high number of current programmes appear more to be electronic correspondence courses than integrated, holistic study environments.

The methods and strategies adopted by distance education are often based on the idea that distance is a problem – e.g., that compensation is needed for the problems that arise when the involved parties are not together in the same place or at the same time. However, distance may also be considered an opportunity, primarily because it allows for exploitation of several different learning arenas. Distance education offers better opportunities to bring learning arenas and similar knowledge forms together. For example, the teacher education project FUTURE at the University of Tromsø, was based on a flexible model to better exploit teaching practice as a learning arena and to establish better connections between a student's academic learning and practical experiences (Grepperud, 1997; Thorp, 1999).

From Product to Process Orientation

Throughout the first half of the 1990s, Norwegian distance education activities typically clung to an extended product-oriented model. This development was inspired by emerging technological possibilities, by the belief that an increased number of teaching aids would reinforce learning, and by inspiration from developments in international distance education. This production model may, in one sense, be claimed to be the most sophisticated form of distance teaching based on industrial (Peters, 1993) or Fordian thinking (Grepperud 1997; Farnes, 1993; Campion, 1995). The production model may be said to base its operations on a paradox. While its teaching aids promote openness with respect to accessibility and thus allow students to control their own study situation, it is fairly closed when it comes to content, the view on knowledge, and on the learning process itself. Experiences with this model are somewhat ambiguous (Wilhelmsen, 1996). To the extent that assessments have been carried out for such programmes in a Norwegian context, no evidence can be found either that the integration of a number of media/teaching aids or expensive media productions in themselves strengthen learning outcomes.

Throughout the last half of the 1990s, there were initiatives to use media more effectively and to apply more process-oriented thinking with regard to distance education. This approach attaches much importance on creating a social learning environment and is linked to a number of issues: learning theory re-orientation in the direction of constructivism; orientation towards greater individualism; flexibility and user control; and the transition from second-generation to third-generation technology, which implies more and better opportunities for interaction between actors in teaching and learning processes. These approaches, to a certain degree, have revitalized interest in established learning theorists such as Piaget and Vygotsky in a distance education context. Thus we can see in these developments in the field of distance education, an increased emphasis on learning theory that has been influenced by technical possibilities.

Even though ICT has been used throughout the 1990s for communication between individuals (both synchronously and asynchronously), Norwegian academic discourse and theoretical reflection on ICT has, to a limited extent, focused more on its pedagogical use. So far it appears that with regards to research and assessment, too much time has been spent on looking for reasons why activity levels are so low with technology itself. Not only has such an approach yielded poor results, in our opinion this approach represents a flawed and simplistic view of complex teaching and learning processes.

Media Innovation and Method Tradition

Referring to teaching connected to adult learning in general, Paulsen has documented that within web-based teaching, no methods are found that are not

also used in an adult education context, and that the choice of methods used in web-based education is less varied than what is found in other adult education settings (Paulsen, 1998).

Paulsen's conclusion also seems to apply to the teaching forms that have been used for distance teaching in general. Generally, the same teaching methods persist even if the context is changed from local to distance and/or ICT-supported teaching. Such an acknowledgement contrasts with the claim that distance teaching virtually, by definition, means an education paradigm shift. Nonetheless, it is important to underline that the use of traditional teaching principles and methods does not mean that the education programmes are of poor quality. Such stereotyping of the educational discussion can be found among the most enthusiastic and uncritical advocates for the use of ICT.

Our experience suggests that an interesting approach may be to redefine the expectations for new pedagogy or new didactics. Instead of referring to qualitatively new forms of teaching and learning (i.e., the paradigm shift thesis), it may be more productive to focus on measures to implement general and familiar didactic principles within a new context.

A Field Undergoing Change: New Actors – New Relations

During the 1980s, Norwegian higher education has become a composite and complex field. When SOFF arrived on the scene in 1990, it appeared reasonable to speak about a dual-track system for knowledge distribution in higher education. One consisted of a large network of public universities and colleges; the other a small network of public and private actors that included distance education institutions, adult education organisations, and The Norwegian Broadcasting Cooperation (NRK). The actors in these two tracks had widely divergent interests and different conditions, both organisationally and financially, so much so they may also be understood as different social fields (Bourdieu and Wacquant, 1993). When applying such a "field" perspective to higher education, it also becomes clear that there was a ranking order between the two sub-fields; those who were working with distance education were struggling to have their methods perceived as equally good as those of traditional education (Støkken 1999).

When SOFF was about to launch its operations, the situation was one where the various suppliers in these two networks were developing overlapping domains and activity areas. They were increasingly targeting the same groups, attempting to satisfy the same needs, offering similar services, and/or targeting the same sources of financing. The situation was one of intensifying competition, which in many cases was tackled by means of new network formations.

New Network Formations

When SOFF commenced operations, many cooperative projects and small networks had already been established. Later, such network formations became more and more common. It would not be unfair to speak about an explosion of new – more or less hybrid – organisational designs that partly transcend the public-private boundary. This has come about in part on the initiative of the institutions, and within distance education this has also been an expression of SOFF's strategic intentions.

We may, in principle, distinguish between (at least) two network types. One is based on complementary – i.e., the actors have different resources as a basis for a balanced trade among themselves. Cooperation between distance education institutions (which supply and distribute teaching materials and organise distance teaching), adult education institutions (such as local course arrangers), and the traditional education institutions (with professionals and the right to arrange examinations), are examples of this type. The other type of cooperation is based on greater equality of resources and may, for example, concern different educational institutions. Examples may be large national distance education programmes where one institution is in charge of project management, but is cooperating with others based in their respective fields of expertise. However, there is a plethora of tensions in this field connected to the autonomy of institutions and their reluctance to be subordinate to others.

The Public-Private Relationship

As demonstrated in the Parliamentary (*Storting*) report No. 43 (1988-89), during SOFF's initial phase, the relationship to private actors was characterised by a higher degree of visibility and acceptance than had previously been the case, particularly concerning higher education. Private actors have always been included in the practical work regarding establishing and operating SOFF. They have always sat on the board of SOFF, and they have been represented in strategy groups working on assignment from SOFF (SOFF, 1993 and SOFF, 1997).

There has also been cooperation between public and private institutions in the many small and large networks established around specific study programmes based on distance teaching. These networks have functioned well primarily due to the fact that Norway's public education institutions have undergone changes that have made them more market oriented. We can see evidence of this, for example, in a more explicit wish on the part of educational institutions to channel their assignment operations via external foundations or joint-stock companies.

This dawning market orientation really took off in 1997, when the entire estab-

lished academia were challenged by a proposal by the Norwegian Employer's Confederation (NHO) to establish a Norwegian Open University. This proposal made distance teaching a visible alternative and, for the first time, the subject of education policy discussion in which major portions of the sector became engaged. It is also interesting because the initiative signaled that distance teaching is now a generally acceptable education policy scheme in higher education.

What now appears to be happening, is that the Norwegian network concept is being instantiated and designed from below, probably in a far more binding manner and with closer relations than previously envisioned when this network was first launched. It also appears that universities and colleges are confirming their role as "suppliers" in a knowledge market. A recent initiative for creating a Norwegian University Network for Lifelong Learning appears to be based on an understanding of higher education both as a "mixed economic" and a "mixed administrative" system. This mixture of public and private sectors, market and hierarchy, has led to new and more hybrid forms and more institutionalised forms of distance teaching in higher education.

From Enthusiasts to Institutionalization

In the early 1990s, distance teaching in the educational institutions was promoted and conducted by enthusiasts. These people believed in this new arena of work and were excited to be a part of it. Over time, enthusiastic activity has given way to a firmer organisational basis as evidenced by an office or department at many institutions. In some cases, it may even have been set up as an external operation altogether and combined with further and continuing education. Up to this time, it has been difficult to determine what type of organisational design will lead to a better institutional form of distance teaching and flexible learning. That staff may wish to continue to retain such assignments as supplementary jobs may indicate that these operations will be organised in external units with a greater degree of independence. However, such wishes may also be seen as an attempt by the traditional sector to keep the new teaching forms somewhat off to the side of the old ones, if only to avoid more fundamental and comprehensive restructuring. One can only expect that when traditional lectures or classroom instruction are no longer the only cornerstone of the higher education system, the current work organisation and administrative structures will come under scrutiny again. Not all educational institutions are ready for that yet.

Perhaps the most basic barrier in the established system is tied to the distinction between teaching and research. Work with new teaching models takes time. The handicap of distance teaching is that it must compete for employee time and interest in research. Research is what primarily provides status and promotion possibilities in the system.

Flexible Education – A Developing Field

During the 1990s, two decisive factors made distance education more than a
marginal activity at Norwegian universities and colleges. First, we have in mind
the breakthrough of the Internet and, second, the renewed interest in compe-
tence development of the entire adult population. Higher education policies
have also changed in the direction of greater market orientation. As a result, it
is more probable that these trends will only accelerate.

However, this is not to say that the road ahead is straight and devoid of stum-
bling blocks – rather it is quite the opposite. The actors in a field growing
so rapidly will be faced with a number of difficult considerations and choices.
Education policy makers, for example, will have to decide whether they want to
exploit distance education and distance teaching as a stage in a more explicit
education strategy, or whether they want to leave it to the actors in the current
education market to handle this development alone.

Literature

Amdam, R.P. and Bjarnar, O (1989). NKS en bedrift i norsk skole [NKS a
company in the Norwegian school]. Oslo: NKS-Forlaget.

Boyesen, E. (1964). Norsk Korrespondanseskole gjennom 50 år [The Norwegian
Correspondence School through 50 years]. Oslo: NKS.

Bourdieu, P. and. Wacquant, L.J.D. (1993). Den kritiske ettertanke [The criti-
cal after-thought]. Oslo: Samlaget.

Brundtland, Gro, H. (1988). Developing Distance Education - the Broady Lec-
ture at the 14th World Conference on Distance Education, Oslo, 12 August
1988.

Campion, M. (1995). The Supposed Demise of Bureaucracy: Implications for
Distance Education and Open Learning - More on the Post-Fordism debate. In
Distance Education Vol. 16, No. 2.

Eide, K. (1996). Samfunnsendring og livslang læring [Social Change and Life-
long Learning]. In Tøsse.S (ed): *Fra lov til reform.[*From Act to Reform]. Trond-
heim: NVI.

Farnes, N. (1993). Modes of Production: Fordism and Distance Education. In
Open Learning. Vol. 8, No. 1.

Grepperud, G. (1996). SOFF and the National Distance Education Network -
Background, Organizational and Didactical Experiences. In George J.; Støkken,
A.M.; and Nyhlen B. (Eds.) *Distance Education in Norway and Scotland.* Ed-

inburgh, Scotland: John Donald Publishers.

Grepperud, G. (1997). Lærerutdanning pà nytt spor - FUTURE-prosjektets
profil og forankring [Teacher education on a new track - the FUTURE project's
profile and basis]. In Grankvist, R. et al.(Ed). *Klasserommet i sentrum. Fest-
skrift til Åsmund Strømnes.* Trondheim: Tapir.

Grepperud, G. (1999). *Samarbeid mellom Folkeuniversitetet og høgre utdanning-
omfang, aktivitet og relasjon* [Cooperation between Folkeuniversitetet and higher
education - scope, activity and relation]. Forskningsrapport nr. 44. Høgskolen
i Lillehammer.

Haugsbakk, G. (2000). *Interaktivitet, teknologi og læring* [Interactivity, Tech-
nology and Learning]. ITU report. Oslo.

KUF (1988-89). *Innstilling* [Recommendations] S. 267 (1988-89).

KUF (1988-89). *Mer kunnskap til flere* [More Knowledge to More People].
(Report to the Storting no. 43.) Oslo.

KUF (1988). pg. 28. *Med viten og vilje* [With Full Knowledge and Will]. Oslo:
NOU.

KUF (1990-91). *Fra visjon til virke* [From Vision to Work]. (Report to the
Storting no. 40.) Oslo.

KUF (1996). *IT i norsk utdanning - 1996-99* [*IT in Norwegian Education - Plan
for 1996 - 99*].

KUF (1997). pg. 25. *Ny kompetanse* [New Competence]. Oslo: NOU.

KUF (1997-98). *Kompetansereformen* [The Competence Reform]. (Report to
the Storting no. 42.) Oslo.

KUF (1999). pg.18 *Organisering av oppdragsvirksomhet* [The Structure of As-
signment Activities] Oslo: NOU.

Mason, R. (1995). Using Communications Media in Open and Flexible Learn-
ing. London: Kogan Page.

Paulsen, M.F. (1998). *Teaching Techniques for Computer-Mediated Communi-
cation.* University Park, PA. PennState University: The Graduate School.

Peters, O. (1988). Distance teaching and industrial production: a comparative
interpretation in outline. In Sewart, D. et al. (Eds.) *Distance Education
International Perspectives.* London: Routledge.

Rekkedal, T. and Paulsen, M. F., (1992). *Den elektroniske høgskolen, EKKO
prosjektet, del III* [The Electronic College, the EKKO project, part III]. SEFU/NKI.
1009 . Oslo.

Sewart, D. (1988). Distance Teaching: A Contradiction in Terms? In Sewart, D. et al., (Eds.) *Distance Education International Perspectives.* London: Routledge.

SOFF (1993). *Fra prosjekt til permanens? Erfaringer med fjernundervisning i norsk høgre utdanning* [From Project to Permanence? Experiences with distance teaching in Norwegian higher education]. Report No. 6

SOFF(1993). *Det nasjonale kunnskapsnettet* [The National Knowledge Network]. Report No. 5

SOFF (1997). *Utviklingen av fjernundervisningstilbudet i norsk høgre utdanning fram mot 2005. Innstilling fra utredningsgruppe nedsatt av Sentralorganet for fjernundervisning på universitets- og høgskolenivà* [The Development of the Distance Education Programme in Norwegian Higher Education towards 2005. Recommendations from a study group convened by the Norwegian Agency for Distance Teaching on the University And College Levels]. Report No. 2

Studiekvalitetsutvalget (1990). *Studiekvalitet* [Studies Quality]

Støkken, A.M. (1999). Det usynlige Akademia. Om fjernundervisning i høyere utdanning [The Invisible Academia. On Distance Teaching in Higher Education]. Tromsø: The University of Tromsø.

Thorp,V. (1999). *Langt borte og nesten der. Fleksibel lærerutdanning* [Far Away and Almost There: flexible teacher education]. Oslo: UNIKOM Report No. 2

Yanay, U. (1989). Reactions to Domain Overlap. *In Administration & Society.* November.

Wilhelmsen, L. S. (1996). Integrating Distance and Traditional Education at a University. In George, J., Nylehn, B., Støkken, M. (Eds.) *Distance Education in Norway and Scotland: Experiences and Reflections.* Edinburgh: John Donald Publishers.

The Development of CyberLearning in Dual-Mode Higher Education Institutions in Taiwan

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Abstract

Open and distance education in Taiwan has evolved into the third phase – cyberlearning – conceptualized as teaching and learning interactions mediated entirely through the application of state-of-the-art information and communications technologies (ICT), such as the Internet and World Wide Web (WWW). Socio-economic influences, the development of new technologies and a marked shift in learning paradigms have increased the utilization of ICT at all levels of the Taiwanese education system. Since the advent and provision of cyberlearning programs, well over half (56 percent) of the conventional universities and colleges have been upgraded to dual-mode higher educational institutions. They offer real-time multicast instructional systems using videoconferencing and cable TV technology, virtual classroom systems via network-based instructional management systems, and curriculum-on-demand systems utilizing video-on-demand technology. Critical success factors in the development of these cyber universities and the opportunities, challenges and implications inherent in these are analyzed. ICT and the provision of cyberlearning have gradually been changing the structure and vision of higher education institutions as well as the entire learning environment and educational systems. Because the Ministry of Education (MOE) has initiated a policy on credit-based degrees for cyberlearning courses/programs, the development of open and distance education is anticipated to hasten the transformation of Taiwan's education system towards one which will create an ideal learning society in the 21st century.

Introduction

Distance education has been identified as one of the key strategies for educational reform and national development in Taiwan (Ministry of Education, 1996a). "Education over the air," or "distance education," is the most commonly used term to describe teaching and learning from a distance in this country. With increased applications of information and communications technologies (ICT) in this field, other terms being used to refer to distance education include "interactive distance education" (Chu, 1999), "Web learning" (Lee, 1997), "virtual education" (Farrell, 1999a) and "cyberlearning" (Han & Wang, 1999).

Definitions of Cyberlearning

Among the aforementioned terms, "cyberlearning" is perhaps the least common. However, some newly created institutions – the dual-mode universities and colleges – have begun to describe themselves as cyber universities. Cyberlearning is focused on those teaching and learning interactions mediated entirely through the application of state-of-the-art ICT, such as the Internet and WWW (Chen, 2001).

Cyber Education Institutions

Accordingly, a cyber university is identified as an organization that uses ICT to deliver programs and courses either as a direct provider of learning opportunities to students or, without being involved itself as a direct provider of instruction, has been created through alliances/partnerships with universities/colleges or corporations to facilitate teaching and learning for participants. Such institutions typically use ICT for other core activities as:

- Administrative services, including program marketing, registration, student records, fee payments, etc.

- Teaching material development, production and distribution.

- Course delivery and tutoring.

- Career counseling/advising.

- Prior learning assessments and examinations.

In Taiwan, the use of the term cyberlearning may be gaining popularity in light of the fact that over 56 percent of higher education institutions, including many well-established conventional universities and colleges, are currently providing distance education programs with ICT and are, at the same time, rapidly moving toward Web-based delivery. Instead of using "education over the air," currently the most common term to describe teaching and learning at a distance in Taiwan, the author instead chooses "distance education" to describe open and distance education in Taiwan in general, and "cyberlearning" to refer to distance learning via ICT in particular.

Context and Evolution of the Development of Distance Education

Although the history of distance education in Taiwan dates back to the mid-1960s, distance learning at the university level was not initiated until the establishment of The National Open University (NOU), Taiwan in 1986. Almost a decade later, conventional universities and colleges using ICT began to participate in the provision of cyberlearning. There are basically three generations in the development of distance education in Taiwan.

1966 - 1985. Taiwan's Ministry of Education (MOE) first introduced distance education in 1966 with the initiation of the Educational Radio Station and a trial of "School over the Air." In 1971, "High School over the Air" − the first open learning institution in Taiwan − was also established by the MOE. Two years later, teacher education programs were broadcast to some junior colleges via the radio to meet the urgent needs of elementary school teachers. In 1977, the "Junior College over the Air" was established to offer alternative schooling and supplementary education for adults. Correspondence and broadcasting via both radio and television served as the main media for course delivery in this stage. To provide feedback and teacher-learner interactions, such instruction was backed-up with a limited number of face-to-face tutoring sessions.

In this generation, distance education programming was offered by primary and secondary schools and junior colleges. The principal purposes of such programs in this period were mainly to provide: (a) basic education by means of an alternative medium for citizens who had less than nine years of schooling and were past school-leaving age; and (b) to offer learning opportunities for the general public who wished to study beyond the nine-year compulsory education level.

1986 - 1994. The second generation of distance education in Taiwan began in 1986 with the launch of the National Open University, established by the MOE as the first independent open learning institution in Taiwan. "Education over the Air" became popular and has been widely utilized in Taiwan since then. By the mid 1990s, the NOU was already being operated with national mandates. With enrollments of over 100,000 students in both its degree or non-degree programs, this puts the NOU into the category Daniel (1996) calls a "mega-university." NOU, therefore, represents a rare discontinuity in the evolution of higher education, not only in terms of the scale of their operations, but also in their use of open and flexible admission policies, pedagogy, logistics and technology to dramatically increase university capacity and achieve economies of scale (Latchem, Abdullah & Ding, 1999).

During this stage, broadcast radio and television were still the major media of instruction, with the latter becoming dominant in the 1980s. Radiophonic instruction was supported by print material and in-class tutoring provided at

NOU's 13 learning centers located throughout the country. But as the average education level of the general public climbed above the secondary level, the emphasis of distance education switched from basic education to university level courses delivered via continuing education, leading even more importantly to lifelong learning. That is, distance education systems were being planned as a source for lifelong education, thereby catering to a mix of adult learners and school leavers.

1995 − 2001. The third generation of distance education in Taiwan began in 1995, with the advent of advanced computer mediated communication (CMC) to provide cyberlearning. The genesis of this generation coincided with the Taiwanese government policies of upgrading the information industry and the National Science Council's effort to develop the National Information Infrastructure (NII) Project in the early '90s (Chu, 1999). Under the framework of the NII Project, three types of cyberlearning systems in Taiwan's higher education institutions were born: (a) real-time multicast instructional systems using videoconferencing and cable TV technology, (b) virtual classroom systems via network based instructional management systems, and (c) curriculum-on-demand systems utilizing video-on-demand technology (Ministry of Education, 1996b).

In the current stage, conventional higher education institutions, rather than open learning institutions, have been playing a leading role in providing distance education programs in Taiwan. Universities and colleges began experimenting with cross-university courses through real-time multimedia in 1995. By the fall of 2000, of the 153 universities and colleges in Taiwan, 85 institutions (56 percent), including many established schools, were providing distance education programs via ICT and moving rapidly to Web-based delivery (Table 1). Meanwhile, 150 videoconferencing courses and 100 Web-based courses, either entirely online or supplementary for classroom instruction, were being offered. Consequently, as conventional universities increased their provision of cyberlearning programs, the total enrollment of registered students at the NOU declined by 20 percent in the late 1990. To response to this challenge, in 1999 the NOU began to replace face-to-face instruction sessions at remote sites where the number of participants engaged in real-time-multicast and Web-based courses were low. This set-up differs from cyberlearning programs offered by conventional universities and colleges in that the NOU's pool of participants are comprised of both on-campus students and non-traditional learners with full-time jobs. The focus of cyberlearning at this stage is not only to improve in-class instruction, but also to meet the requirements of continuing professional education.

Socio-Economic Factors: All of the aforementioned distance education program initiatives have been financially supported by the MOE. Since the early 1990s, the MOE has promoted lifelong learning, and to this end has been implementing many action strategies such as the Medium-Term Distance Education Plan, 1997-2000. As shown in Table 2, in the 1996/97 academic-year, this plan

budgeted over US$19 million in an effort to build up distance education systems in higher education institutions through the use of telecommunication technologies within a lifelong learning framework (Ministry of Education, 1996c). Funding was granted for six aspects, namely international cooperation and technology development, course development and experiment, establishment of infrastructure, corporate participation, international telecommunication fees and domestic telecommunication fees. Extra-institutional financial support from the MOE has been a highly instrumental, if not the most important, factor contributing to the development of cyberlearning in universities and colleges.

Table 1. Number of Dual-Mode Universities and Colleges and Distance Education Courses, Fall 2000

	Number of Institutions	Institutions offering DE Programs	Total Percentage
National Universities	26	22	85 percent
Private Universities	28	23	82 percent
National 4 Year College	25	10	40 percent
Private 4 Year Colleges	50	24	48 percent
National 2 year Colleges	4	0	0 percent
Private 2 year Colleges	20	20	30 percent
Total:	153	85	56 percent

As is the case in other regions of the globe, Taiwanese higher education institutions face common challenges in terms of limited financial resources, diverse learning needs and learning styles, increased demand for more accessible programs with preferred content and increased competition from other education

providers (Farrell, 1999b). To cope, many Taiwanese universities and colleges have stepped up efforts to utilize ICT in order to reduce costs, increase enrollments, enrich the quality of on-campus instruction, improve the quality of current distance learning, enhance access to instructional resources, and gain an edge over competitive forces. Taiwanese distance education is affected by two additional factors: the development of ICT and a shift in learning paradigms.

Influence of ICT Development on Distance Education. The application of multimedia and Internet applications in distance learning are potentially hindered by obstacles such as computer access, electronic communication software, insufficient bandwidth, and a lack of supplementary learning resources. Affordable rates for online learning, learner skills in the use of electronic communication software, extensive readings of print on the Internet etc., also hold implications for the evolution of distance learning. As a result, text-based materials still dominate the content format. Yet as technical, financial and learner issues continue to improve, distance education in Taiwan is anticipated to evolve rapidly.

Shift in Learning Paradigms. From the perspective of the teacher-centered learning paradigm, ICT was initially used to facilitate the design and delivery of instruction for teachers. Accordingly, teacher-directed models such as telecourses and teleconferences, were the two primary modes of distance learning for decades. In the mid-1990s, ICT came to be regarded in Taiwan, as a tool to stimulate learner initiative and control and to enhance students' responsibility for their own learning. Therefore, a new learning paradigm using ICT to facilitate learning to improve student competencies in knowledge construction, critical thinking, teamwork and collaborative learning, has become the predominant approach to cyberlearning.

Examples of Dual-Mode Universities

A growing number of conventional universities and colleges are now dual-mode institutions, catering to the needs of on-campus students as well as off-campus learners. In Taiwan, where there is a long-standing tradition of university-level extension education, many universities and colleges provide both on-campus courses and extension education programs, particularly continuing professional education programs via such cyberlearning modes as videoconferencing and Web-based instruction.

Real-Time Multicast. Utilizing videoconferencing and cable TV technology to link a master classroom to one or more remote sites with two-way audio-video transmissions, real-time multicast instructional systems comprised the major distance learning model in the late 1990s. Allowing for synchronous interaction between instructor and learners and among learners, this type of delivery was

adapted to promote cross-institution courses – that is, providing opportunities for students to take courses from other universities that were not offered in their own school.

Established national universities (Taiwan University, Chin Hwa University, Chiao Tung University, Cheng Kung University and Chung Cheng University) began to offer inter-university courses via real-time multicast in the 1995-96 academic year. Other universities followed suit the next year. As shown in Table 3, the number of dual-mode higher education institutions and cybercourses offered increased dramatically from 1997 to 2000. Of the 153 conventional universities and colleges in Taiwan, 95 institutions (62 percent) offered cyberlearning programs from 1995 to 2000 (an increase of 217 percent since 1997). Distance education courses taught via ICT increased from 22 to 150 in three years. With advancement of network-based communication technologies, the MOE announced that although it would stop funding real-time multicast programs, it would continue to support Web-based courses from 2001 onward (Ministry of Education, 2000).

*Including Spring and Fall 2000

The Emergence of Cyberlearning Organizations. The integration of powerful instructional environments of cyberlearning (Internet systems, multimedia software, database technology, network information retrieval, computer-mediated interaction, general communication interface, HTML and JAVA, and Web-based information delivery) simulates classroom settings in which the instructor interacts with learners synchronously. This level of technological integration also enables learners to comment, for example, on reading materials and to discuss with one another asynchronously without attending scheduled class meetings. In a synchronous system, learners communicate in real-time in written or verbal form, depending on the system configuration. By posting messages, students share ideas, raise questions, and receive feedback online asynchronously and simultaneously. Web-based learning systems also enable learners to send assignments via e-mail, or upload the system interface to take exams via the platform. Learning resources, such as online libraries and related Web sites, can also be hyperlinked to course pages. Some virtual classroom systems even have a built-in virtual learning companion to study with the learner (Chao & Huang, 1997). Given all the tools and functions, the Web-based instructional system creates a meaningful, collaborative learning environment for students.

In addition, curriculum-on-demand systems are also network-based systems that allow remote access to instructional software and materials. Students select desired courses from a menu listing those that are available. However, the types of interactivity available depend on the design of the courseware. Video-on-demand technology is required to support multimedia and course-on-demand courseware. Compared with real-time multimedia and Web-based instructional systems, course-on-demand systems provide low-level learning activities because they only allow for interaction between the learner and the software.

Examples of cyberlearning organizations in Taiwan include:

Taiwan University (http://ceiba3.cc.ntu.edu.tw.)

Sun-Yat-Sen University (http://cu.nsysu.edu.tw.)

Chung Cheng University (http://server2.webedu.ccu.edu.tw.)

Chiao Tung University (http://e.nctu.edu.tw/index_new.php.)

Chin Hwa University (http://www.nthu.edu.tw/teaching/teach.html.
)

Cheng Kung University (http://www.ncku.edu.tw/~media.)

Central University (b¿http://www.ncu.edu.tw/cnormal/admini/admini.html.
)

Cheng Chi University (http://www.elearn.nccu.edu.tw.)

Tainan Teachers' College (http://linc.hinet.net.)

Yuan Ze University (http://www.yzu.edu.tw.)

Except Yuan Ze, all the universities or colleges listed above are national in
scope. The first few institutions in Taiwan to begin experimenting with course-
on-demand systems include Chung Cheng University, Sun-Yat-Sen University,
Yuan Chi University and the Tai Chun National Science Museum. Cyberlearn-
ing courses offered by these institutions have now been expanded to include
industries desirous of providing on-the-job training opportunities for their em-
ployees, and to a variety of other bodies wishing to offer continuing professional
education.

**Cyberlearning Programs for Nontraditional Students – The SYSU
Case.** Among the dual-mode higher education institutions, Sun-Yat-Sen Uni-
versity (SYSU) is a typical example of a university that offers cyberlearning
courses to professionals. In the fall of 1999, SYSU introduced cyberlearning
courses for professionals in the fields of information management, finance man-
agement and e-commerce. As shown in Table 4, a total of 37 courses taught by
27 instructors was provided to 3,844 adult learners from 1999 to 2001.

Of all the SYSU cyberlearning courses, the Information Management Program is the most popular, comprising over one fourth of total enrollment of the SYSU distance learners. The Department of Information Management completed the design and development of nine online core courses within two years. Table 5 shows that as the number of courses increased, along with enrollments (23 percent in 2000 and 41 percent in 2001). Tables 6, 7, and 8 show that participants are located in all regions of the country and represent variety of backgrounds in terms of age and education levels.

According to the SYSU Information Management program planner, institutional support is the most important factor contributing to the success program. Top-level administrators of SYSU encourage faculty members and staff to develop Web-based courses, providing them with sufficient technical support and incentive mechanisms to design and conduct programs. Program marketing and promotion also enhance public awareness, thus increasing enrollment. In addition, training and professional development to facilitate cyberlearning have been provided to faculty and staff, helping improve the quality of instruction. Since 2001, SYSU has expanded its cyberlearning programs to China in collaboration with Beijing University.

Implications

Although the development of cyberlearning in dual-mode higher education institutions began a few years ago in Taiwan, critical factors that appear to favor successful adoption of ICT in universities and colleges include:

- Taiwan governmental policies toward upgrading the information industry and the National Science Council's effort to launch and promote the NII Project in the early '90s.

- Financial resources from the MOE to initiate the distance education experiment via ICT in 1995, backed by its ongoing efforts to support cyberlearning programs.

- Partnerships involving higher education institutions and the private sector in the development and delivery of cyberlearning courses.

- Delivery formats that are appropriate for, and accepted by, the target audience.

- Accreditation in the form of credits and degrees, which serve as a motivating force and an impetus in the development of industry standards.

The implications of cyberlearning in dual-mode universities and colleges present a variety of opportunities and challenges for Taiwan's distance education sector in the future. Opportunities include:

- Increasing the number and types of courses to meet online learning needs.

- More cyberlearning programs for both on-campus and off-campus participants.

- Greater potential for learners to interact with students from around the globe.

- Measures to improve the quality of course design and learning outcomes.

- Better provision of computer and network skills.

Besides some technological issues, such as limited network bandwidth and expensive network fees, challenges also include:

- Technology-driven rather than need-oriented course design.

- Resistance by some faculty and administrators.

- Lack of clear evaluation criteria for cyber instruction and learning.

- Concern over inadequate socialization opportunities for some learners.

- Problems of equity in terms of access to computers and networks.

Conclusions

ICT and the provision of cyberlearning are changing the structure and vision of higher education institutions in Taiwan. With the current MOE policy of accreditation, which only offers course credits in programs leading to full degrees, the development of open and distance education is anticipated to swiftly move Taiwan closer and closer towards the goal of becoming a model learning society in the 21st century.

References

Chao, M. S. & Huang, R. H. (1997). A Case Study of a Broad-band Network Real-time Multicast System: The Development of National Chung Cheng University Distance Learning Pilot System. *Journal of Information and Education*, 58: 30-38.

Chen, Y. J. (2001). Cyber University and Adult Learning. *Adult Education Bimonthly*, 59: 30-39.

Chu, C. T. (1999). The Development of Interactive Distance Learning in Taiwan: Challenges and Prospects. *Educational Media International*, 36(2): 110-114.

Daniel, J. (1996). *Mega-universities and Knowledge Media: Technology Strategies for Higher Education*. London: Kogan Page.

Farrell, G. M. (1999a). *The Development of Virtual Education: A Global Perspective*. The Commonwealth of Learning, Canada.

Farrell, G. M. (1999b) *The Development of Virtual Institutions in Canada*. The Commonwealth of Learning, Canada.

Han, H. W. & Wang, Y. C. (1999). Lifelong Cyberlearning System: A Pilot Project for the Learning Society in the ROC. *Educational Media International*, 36(2): 115-120.

Latchem, C., Abdullah, S., & Ding, X. (1999). Open and Dual-Mode Universities in East and South Asia. *Performance Improvement Quarterly*, 12(2): 96-121.

Lee, G. B. (1997). The Current Status and Future Trends of Web-based Training. *The Navigator of Information Application*, 15: 1-14.

Ministry of Education (1996a). *Report on the Needs Assessment of Distance Learning*. Taipei, Ministry of Education.

Ministry of Education (1996b). *Report on the Plan of Development of Distance Learning Pilot Systems*. Taipei, Ministry of Education.

Ministry of Education (1996c). *The Medium-term Plan of the Development of the Distance Education Project*. Taipei, Ministry of Education.

Ministry of Education (2000). *Report on the Evaluation of the Implementation of the Distance Education Project*. Taipei, Ministry of Education.

Online Resources

Cyberlearning Systems of National Taiwan University. [Online] Available at: http://ceiba3.cc.ntu.edu.tw.

http://cu.nsysu.edu.tw. Homepage of Cyberlearning Systems of National Sun-Yat-Sen University.

Cyberlearning Systems of National Chiao Tung University. [Online] Available at: http://e.nctu.edu.tw/index_new.php.

Cyberlearning Systems of National Tainan Teachers' College. [Online]. Available at: http://linc.hinet.net.

Cyberlearning Systems of National Chung Cheng University. [Online] Available at: http://server2.webedu.ccu.edu.tw.

Cyberlearning Systems of National Cheng Chi University. [Online] Available at: http://www.elearn.nccu.edu.tw.

Cyberlearning Systems of National Cheng Kung University. [Online] Available at: http://www.ncku.edu.tw/~media.

Cyberlearning Systems of National Central University. [Online] Available at: http://www.ncu.edu.tw/cnormal/admini/admini.html.

Cyberlearning Systems of National Chin Hwa University. [Online] Available at: http://www.nthu.edu.tw/teaching/teach.html.

Cyberlearning Systems of Yuan Ze University. [Online] Available at: http://www.yzu.edu.tw.

Table 2. MOE Grants (US\$) Medium-Term Plan of the Distance Education Project

	1997	1998	1999	2000	Total:
International Cooperation & Technology Development	521,739	415,942	455,072	475,362	1,868,145
Course Development & Experiments	1,484,057	1,191,304	1,440,579	1,553,623	5,669,565
Setting-up Infrastructure	2,927,536	686,956	747,826	800,000	5,162,318
Corporate Participation	318,840	321,739	292,753	269,565	1,202,898
International Telecommunication Fees	173,913	173,913	231,884	289,855	869,565
Domestic Telecommunication Fees	927,536	927,536	1,159,420	1,391,304	4,405,797
Total Funding (US\$)	**6,353,621**	**3,717,390**	**4,327,534**	**4,779,709**	**19,178,288**

**Table 3. Increase in Institutions Providing Distance Education
Courses in Taiwan 1997 to 2000***

	1997	2000	Increase Rate (%)
Total Number of Taiwanese Conventional Universities & Colleges		153	
Cumulative Number of Dual-Mode Institutions	30	95*	217 %
Number of Courses	22	150	560 %

**Table 4. Numbers of SYSU Cyberlearning Courses, Instructors &
Enrollment**

All Departments (1999-2001)	N
Cyberlearning Courses	37
Instructors	27
Enrollment	3844
Average Enrollment/per course	**104**

**Table 5. Enrollment and Participants in the IM Program, SYSU
(Fall 2000)**

Semester	Course	Enrollment	Increase Rate (%)
Fall 1999	3	177	
Spring 2000	6	217	23 %
Fall 2000	9	312	41 %
Spring 2001	9	287	
Total		**993**	

Table 6. Student Age - Fall 2000 (N=312)

Age	Number of Students	Percentage
22 − 29	156	50 %
30 − 39	115	37 %
40 − 49	35	11 %
50 − 59	6	2 %

Table 7. Education Background - Fall 2000 (N=312)

Education	Number of Students	Percentage
2-year College	90	29 %
University & College	200	64 %
International University	12	4 %
Military Schools	10	3 %

Table 8: Location of Students – Fall 2000 (N=312)

Learner Location	Number of Students	Percentage
Northern Taiwan	76	24 %
Central Taiwan	31	10 %
Southern Taiwan	199	64 %
Eastern Taiwan	6	2 %

The Hybridisation of Conventional Higher Education: UK perspective

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Abstract

Before the creation of the United Kingdom Open University (UKOU) -
its Charter was given in 1969 and the first students were admitted in
1971 - the full-time residential model of higher education was pervasive,
with part-time and distance modes of study seen as separate and inferior.
The UKOU demonstrated the effectiveness of distance learning but also,
because of its success, in some ways inhibited change in the mainstream
tertiary sector. As social and political pressures on the sector grew, higher
education providers were forced to innovate and models of "open learning"
offered ways forward. As a result, the distinction between "distance" and
"face-to-face" delivery rapidly eroded during the 1990s. However, barriers
still remain to a more radical approach to provision as a whole.
Key terms
Open learning, distance learning, barriers to innovation, communications
and information technology, learning environment

Introduction

Any attempt to summarise a UK perspective on the topic of hybridisation is
bound to be both partial and personal. This contribution is inevitably influ-
enced by the author's roles in several key UK organisations developing open
learning during the 1970s and 1980s, including the National Extension College,
the Open University, the Open Tech Unit of the Manpower Services Commis-
sion, and the Open College. During the late 1980s, the author was involved
in implementing change within a higher education institution; his current role
offers a more general perspective of hybridisation across the sector. The par-
tiality is sharpened by a surprising lack of literature on the influences of these
open learning initiatives on mainstream education and training (though some
web references are included at the start of the References).

Before the creation of the OU in 1970, the main target market for higher educa-
tion providers in the UK was full-time students, aged 18 (for most institutions
this remains the main target market). Universities were designed as residential

institutions to initiate young students into a distinctive social and learning experience. Even the newer universities established in the mid 1960s (such as York and Essex) were basically collegiate institutions usually set to one side of their towns and cities to offer a traditional social and academic experience (though they did begin to innovate in terms of the curriculum).

There were other routes. The University of London had for decades operated its external degree scheme, catering to adult students in many parts of the world capable of learning largely on their own and seeking London degrees. Some of these students signed up for classes (as part-time students) with providers offering preparation for London awards, whilst many learned at a distance, relatively unsupported, with little in the way of learning material (usually only a reading list) (Bell and Tight, 1995).

One of the constituent colleges of the University of London (Birkbeck) specialised in the education of part-time students via evening class provision. Many of the regional colleges and newly designated polytechnics were also active in this type of delivery.

These differing routes to higher education attracted varying degrees of attention and prestige (Scott, 1995). The full-time student experience was the norm and of highest status; part-time provision was much a second best; while the distance route was largely invisible (even though many thousands of students sought to prepare themselves by this mode).

The Open University

The creation of the UKOU changed this landscape. Rarely does the creation of a new educational institution attract such attention. The launch was given great publicity and quickly claimed as a major coup for the Labour government. Subsequent commentators claimed it was perhaps that government's greatest achievement.

In many ways the UKOU was radical. It was open to adults regardless of background or previous qualifications. It was committed to teaching such students at a distance (whatever their subjects of study). Its curriculum was innovative (often multi-disciplinary). It used a range of media both for transmission of course content and for supporting students. The curriculum and its delivery were the responsibility of course teams which included as full members, not only academics but also educational technologists and broadcasters. Given such innovation, it is not surprising that the existing academic community was disconcerted and sceptical. It was claimed that adults would be unable to learn in their homes and that university degrees would be devalued.

Unlike other distance and part-time provision, instruction offered by the UKOU

was visible – literally so, in the lounges of the nation's television viewers. Its provision was officially labelled "open learning." With its carefully orchestrated use of a variety of media (face-to-face, postal, telephone) to ensure accessibility and consistency wherever in the UK the student happened to be based, the OU also set new standards in supporting distance students.

The UKOU proved itself remarkably quickly. First of all, in market terms the numbers of undergraduate students learning with the UKOU grew: approximately 20,000 in 1971; 60,000 in 1981; 75,000 in 1991; and 134,000 in 2000. The UKOU has now secured a remarkable proportion of the total UK part-time undergraduate market in a number of curriculum areas: 79 per cent in mathematical sciences, 68 per cent in biological sciences and 60 per cent in social, economic and political studies (data from the 1999-2000 year of study). Secondly, the OU has proved the quality of its provision, scoring significantly better in assessment of its courses than many other conventional universities: twelve of the 19 quality assessments carried out since 1993 have either been judged excellent (using the initial method of classification) or have scored at least 22 out of the 24 available points (using the later method of scoring).

The UKOU was not the exclusive provider of open learning. Other traditional universities offered distance options (more often called "distance" than "open"); the universities of Leicester and Sheffield are examples. "Openness" in terms of access was a concern of many of the polytechnics that in the late 1980s and early 1990s became "new universities." Both types of provision (distance and open) continued. But, it could be argued that the UKOU's success was a disincentive for other universities to commit major resources to develop the open and distance learning field. The perception existed that students who wanted this form of education should enrol in the special institution set up for that purpose.

Open learning

In the late 1970s, the UK government began to take a further interest in what were still known as "alternative" modes of provision. Carrying out a project on "open learning systems" (Davies, 1977), the then Council for Educational Technology (a semi-governmental body) uncovered many such schemes that operated not only (or mainly) in higher education, but also in further education, organisational training – and even in schools (Lewis (Ray), 1984). The project produced a more sophisticated analysis than the usual simple opposition of "conventional/face-to-face" and "distance" education. It identified three models of provision, categorized according to the geographical location of the learner in relation to the provider: distant, local and centre-based. In distant provision the learners might never physically visit "the centre," whereas in local provision learners could attend occasional sessions organised by a provider. In the third

type of provision, learners were studying on-campus, but flexibly – for example in a learning centre or workshop rather than in conventional classes.

The favoured term to characterise these three modes was "open learning." Initially the phrase was used somewhat broadly to describe a student-centered approach, aimed particularly at lessening the restrictions implied by the fixed time, pace and place of most conventional provision. But the term needed elaboration: what did these three different models have in common? How could one term, "open learning" be applied to such diverse provision, including cases where students were studying on a campus, but not conventionally?

Gradually a definition of "openness" developed. At the heart of this was learner choice: putting decisions about learning into the hands of the learners themselves. Choice could be over the context in which learners studied: time, place and pace of learning; or over matters closer to the curriculum itself, such as content, learning method or nature of assessment. This choice was bound to be relative: students could be provided with *more or less* choice (Lewis, 1984).

This definition brought into the fold other provision than that traditionally designated "distant." It challenged the compartmentalisation of what had always been considered different modes of provision. The breadth of the definition of "open" also moved debate from the mechanical process of "delivery" into wider issues of the curriculum and how students learned. This view of open learning, and the debates it occasioned (Rumble, 1989; Lewis, 1990; Nation, Paine and Richardson, 1990) could be said to have helped stimulate the hybridisation that is so much a part of the current picture.

Open learning thus moved the student into the centre of the picture. Work in the UK during the 1980s also brought the needs of other stakeholders into prominence, particularly employers, through such government-funded initiatives as the Open Tech Programme and the Open College. The main effect of these initiatives was felt in the training and further education sectors, rather than in higher education. In higher education the demands of the professions for more flexible education provision were however also apparent – for example in physiotherapy and nursing (Humphreys and Ham, 1994; Jones and Rushforth, 1996; Quinn, Phillips, Humphreys and Hull, 1997; Allison and Tinson, 1999; Dearnley and Matthew, 2000). The effects on higher education were also seen in the way around 20 polytechnics got together (without any external funding) to create the Open Polytechnic (now the Open Learning Foundation) in the 1980s, to share materials and expertise in broadening the basis of their provision along "open learning" lines (Hardy, 1991).

Though the language and approaches of open learning continue to spread throughout higher education provision, it is still the case that government-funded initiatives are set up in uneasy relationship to the mainstream. Current UK examples are the University for Industry (mainly at the further education level) and the e-University (in higher education). Though both make use of existing institutions

the activity seems distinct from their core business.

Pressures for Hybridisation

The barriers between different types of provision have continued to dissolve through the 1990s. A number of pressures have challenged higher education institutions to review their provision in the direction of greater openness. We can distinguish five here:

1. Continuing stakeholder demands for accessible provision

2. Increasing diversity of students in higher education, and in particular the involvement of new groups

3. Recruitment pressures on institutions

4. Need to maintain quality

5. Increasing resource constraints on higher education institutions

With respect to continued and growing demand for provision that is accessible, distance forms of provision grew up originally because the needs of some groups were not met by conventionally designed education. Such needs are now much more widely recognised. As well as the groups well-known in distance education – such as women at home with children, the disabled, and those in mobile occupations – the learning needs of people in employment are increasingly important in a society which requires its population to engage in the constant renewal of skills and knowledge. Employers are now much more likely to support their staff, not just in developing the skills immediately needed at work, but also on programmes that build a general and continuing capacity to go on learning. Employers as stakeholders demand provision that suits their own needs for convenience and cost-effectiveness as well as the needs of learners themselves.

Easier access to learning is also being demanded (somewhat ironically) by students who are supposedly learning full-time, on campus. Given increasing financial pressures resulting from the cessation of maintenance grants and the imposition of tuition fees, conventional full-time younger students are behaving increasingly like part-time distance learners, funding their way through university to pay fees and living expenses. Traditionally part-time employment was a part of vacation life; now it is eating into term-time. Hence students sometimes cannot attend lectures because they are working in supermarkets, pubs,

restaurants or other places of casual employment. Other ways than physical attendance at classes and tutorials thus have to be found to sustain the learning of such students. Case studies published by the Open Learning Foundation (Appleton, 1996; Bashir, 1998; Grannell; Halton and Parker, 1996; Harrigan and Wade, 1995; Harris and Stoney, 1996; Lisewski, 1994; Perry, 1995; Perry and Simpson, 1996; Stokes, 1994; Whitehead, 1995) provide further analyses of these pressures and of the responses higher education institutions are developing in response.

Further pressure to expand provision is the increasing diversity of students studying in higher education. The current UK government has set a target to increase higher education participation towards 50 per cent of those aged 18-30 by the end of the decade and within this target has put particular emphasis on recruiting students from groups considered disadvantaged and currently under-represented in higher education.

The impact of this new target has yet to be fully felt but it is likely to lead to at least the following challenges:

- Curriculum development to create programmes that appeal to these new student groups

- Changes in the ways in which students learn and are assessed

- New ways of delivering the curriculum, particularly those using communications and information technology (C&IT)

The MacFarlane Report (Committee of Scottish University Principals, 1992) was the first major document to stimulate discussion of the kind of learning environment needed to respond to these challenges; its points were revisited and re-emphasised by the Dearing Report (National Committee of Inquiry into Higher Education, 1997).

Government targets are thus setting universities the challenge of meeting the needs of an increasingly diverse body of students. At the same time, these targets are leading to competition to recruit students, there are signs that the growing number of places made available is not being matched by the number of students wishing to study in higher education. Under new pressure to fill places, universities are responding by becoming more student-centred. We are beginning to see universities become more aware of their markets and sharper in developing curricula and methods of delivery that meet student needs.

Another pressure is the need to maintain quality, defined in a number of ways, including the percentage of students who successfully complete their courses, degree results, and a more general perception of the quality of the learning experience enjoyed by students. Currently, course subjects are reviewed regularly by the UK Quality Assurance Agency (QAA), in its quest to contribute to three

purposes: (1) effective use of public money (accountability); (2) enhancement of the quality of learning and teaching; and (3) provision of information, for example to help students when applying to university and employers when recruiting. In QAA reviews, judgements are made about the following aspects of quality: curriculum design, content and organisation; teaching, learning and assessment; student progression and achievement; student support and guidance; learning resources; and quality management and enhancement. Scores range from one (Not acceptable quality) to four (Makes a full contribution to attaining stated objectives). This method of "subject review" is currently in the process of change, and the quality arena remains hotly contested (Barnett, 1992 and 1994).

The increase in participation rates inevitably triggers discussion of the "more means worse" kind, but the MacFarlane Report asked more profound questions about the quality of the learning environment for all students. In particular, the report advocated the need to employ technology more systematically to support individuals learning at different rates and with different needs. There are also pressures from student perceptions of quality. As students increasingly have to pay directly for their education, they are making more use of publicly available information on quality (seen, for example, in various "league tables") and are making more demands once they are enrolled.

These pressures are converging at a time of reduced resource. Between 1989-1990 and 2000-2001, there has been a real term reduction of 38 per cent in unit funding for higher education (excluding capital). This has stimulated discussion of the potential of wider use of technology to address the challenges, especially given the increasing power of C&IT and its permeation of spheres of activity other than the educational.

Conclusion

These pressures have led to a picture that is much more diverse than previously. It is best seen in terms of a spectrum. At one end, universities are developing provision that has most of the characteristics of distance learning: the intensive use of learning materials, distant tutors and (at best) infrequent attendance at centres. At the other end of the spectrum, traditional education proceeds much as it always has, recruiting largely from traditional student groups with high prior conventional academic attainment. These two extremes are characterised by Rumble (1992) as "distance teaching universities" and "campus-based universities."

But the growing area, and for this paper the most interesting, is the gap between these two extremes. This is not "mixed mode" or "dual mode" (Rumble, 1992) provision as these terms are usually understood; they imply separate and parallel

face-to-face and distant (alternative) provision. What we are now seeing is the gradual, largely unplanned and ad hoc development of a range of delivery methods, often overlapping, used by students in different circumstances. (See the analysis of institutions: "learning and teaching strategies in HEFCE, 1999" and the subsequent advice to institutions in HEFCE, 2001.)

Hybridisation has accelerated with developments in C&IT. Traditional distance learning materials have always been used by students on conventional courses (witness the widespread but often covert use of Open University printed materials) but web-based materials can more easily and flexibly be made available for students learning from different locations and on different terms. Other uses of technology for on-campus students are equally useful to those studying off-campus, for example the use of bulletin boards and discussion groups, electronic tutorials and (pre-eminently) email as a means of reliable, convenient and inexpensive contact between students, tutors, and student and academic services. As King puts it: "one clear consequence of the new technologies is that the range of teaching options available on- and off-campus, which have represented almost polar opposites, will blur substantially" (King, 2001, p. 55).

In the mid to late 1990s, the Open Learning Foundation commissioned studies of the hybridisation of UK higher education (Lisewski, 1994; Stokes, 1994; Harrigan and Wade, 1995; Perry, 1995; Whitehead, 1995; Appleton, 1996; Edwards, 1996; Grannell, Halton and Parker, 1996; Harris and Stoney, 1996; Hopkins, 1996; Perry and Simpson, 1996; Richardson, 1996; Bashir, 1998; Richardson, 1998; Thompson, 1998). These studies show the range of such approaches across all areas of the curriculum, and the variety of delivery methods in use.

Issues

But, as an analysis of the above cases shows (Lewis, 1997), a number of issues remain, which are not unique to the UK. The results of King's (2001) analysis of the situation in Australia, is remarkably similar. To make full use of new technology and build a new learning environment to meet the needs of all student groups requires a clear strategic vision in addition to imagination and energy from those who interact with students. In the UK, the status and rewards for lecturing and learning support staff are perceived as low and the sector is characterised by continued nervousness about what the future may bring. In spite of initiatives to raise the status of learning and teaching, these activities still rank below research and arguably also below other activities such as consultancy and other work with companies. Typically, the energy of managers tends also to flow more towards these higher status activities than to learning and teaching.

In spite of the activities of the Quality Assurance Agency, it can be argued that change in learning and teaching has been incremental and at the level of

techniques rather than action arising from a more radical assessment of the learning environment. We have seen the gradual modification of the status quo, under pressure, rather than proactive development of new learning and teaching arrangements as part of a longer-term strategy.

Students themselves often act as a conservative force. Their expectations are often of traditional teaching, using methods (e.g., lectures) and assessment arrangements (e.g., exams) with which they are familiar. Distance teaching organisations are used to tackling these expectations proactively and helping students to adjust to a different way of learning.

The way forward thus requires the learning environment to be considered more analytically, much as the MacFarlane Report recommended some ten years ago (Committee of Scottish University Principals, 1992). Higher education institutions need to analyse their markets (present and future) and consider the kind of learning environment needed to meet these needs cost-effectively. They need to develop a strategy to make available resources and approaches that support students in whatever mode they are learning: full-time, part-time or at a distance. This means looking not just at technology but also at all other aspects of the learning environment, including:

- Curricula (defined not just in terms of content but also the methods by which students learn)

- Role of teachers and other staff (new roles and skills will be needed, new posts created, and the barriers between existing roles will be blurred as team-working is increasingly used)

- Physical and virtual learning environments (universities' estates will need adapting, with more open access learning or resource centres, more flexible spaces for learning, and arrangements for supporting students whose contact with the campus are solely electronic)

- Learning material in a range of media, serving a variety of student needs and going beyond mere transmission of information, with special consideration of the role of electronically transmitted material.

Finally, but most importantly, universities need to review the role of students themselves, for students are the most important resource of all in the learning environment. Universities have traditionally been seen as communities of scholars. Whether this ideal has been consistently achieved must be open to question. The emphasis in higher education on curriculum content moves students into a passive role: absorbing information (the basis of the traditional lecture). The emphasis has now shifted to seeing students more as customers, but this can be an equally limiting role. They need to be viewed more as participants in their own learning and that of their peers: "students are not simply consumers of education. They are also producers of it" (Fitzgerald, 1996, p. 12). This

perhaps offers a way of reinstating the old ideal of learners as active scholars, along with their teachers.

All of these issues raise the question of resources. Creating a higher education environment that supports learning across different delivery methods require the prioritisation of resources. Teachers typically like to add new resources and techniques to those that exist: to retain lectures whilst also disseminating information electronically, to offer face-to-face tutorials alongside electronic equivalents. But this incremental approach is unlikely to be sustainable. Resources will need to be reallocated to support new activities and grow new methods of supporting student learning. Substitution is much more painful than addition: hence the need for a strategy for change.

References

Allison, A. and Tinson, S. (1999). The academic development programme: making higher education accessible for nurses. *Open Learning,* 14(1), pp. 38-45.

Appleton, D. (1996). *Implementing open learning in business studies.* London: Open Learning Foundation.

Barnett, R. (1992). *The idea of higher education.* Buckingham: Open University Press/SRHE.

Barnett, R. (1994). *Limits of competence.* Buckingham: Open University Press/SRHE.

Bashir, T. (1998). *Supporting learning through IT and the Internet.* London: Open Learning Foundation.

Bell, R. and Tight, M. (1995). Open universities in nineteenth century Britain. *Open Learning,* 10(2), pp. 3-11.

Committee of Scottish University Principals (CSUP), (1992). *Teaching and learning in an expanding higher education system* (known as "the MacFarlane Report"). Edinburgh: CSUP.

Davies, T. Charles (1977). *Open learning systems for mature students.* (Working Paper 14). London: Council for Educational Technology.

Dearnley, C. and Matthew, B. (2000). A group of nurses' experience open learning: exploring the impact. *Open Learning,* 15(2), pp. 191-206.

Edwards, P. (1996). Implementing diagnostic testing for non-specialist mathematics courses. London: Open Learning Foundation.

Fitzgerald, M. (1996). *No mark for effort skews assessment.* London: The Times Higher, April 5 issue, p. 12.

Grannell, M., Halton J. and Parker, D. (1996). *Self-managed study in mathematics using text and video.* London: Open Learning Foundation.

Hardy, D. (1991). The Open Polytechnic. *Open Learning,* 6(2), pp. 55-59.

Harrigan, P. and Wade, J. (1995). *Extending opportunity in nurse education.* London: Open Learning Foundation.

Harris, V. and Stoney, C. (1996). *An independent learning project in hospitality management.* London: Open Learning Foundation.

HEFCE (1999). *Institutional learning and teaching strategies: A guide to good*

practice. Bristol: Higher Education Funding Council for England (HEFCE).

HEFCE (2001). Strategies for learning and teaching in higher education: A guide to good practice. Bristol: Higher Education Funding Council for England (HEFCE).

Hopkins, T. (1996). Using open learning in social work: an implementation handbook. London: Open Learning Foundation.

Humphreys, J. and Ham, R. (1994). An application of open learning for the UK physiotherapy profession. *Open Learning,* 9(3), pp. 3-8.

Jones, F. and Rushforth, D. (1996). A consumer survey of an enrolled nurse open learning conversion course. *Open Learning,* 11(1), pp. 64-68.

King, B. (2001). Managing the changing nature of distance and open education at institutional level. *Open Learning,* 16 (1), pp. 47-60.

Lewis, Ray (1984). Clwyd local education authority: A-level sociology distance-learning scheme in schools. In *Open Learning in Action* R Lewis (Ed.) London: Council for Educational Technology.

Lewis, R. (1986). What is open learning? *Open Learning,* 1(2), pp. 5-10.

Lewis, R. (1990). Open learning and the misuse of language: a response to Greville Rumble. *Open Learning,* 5(1), pp. 3-8.

Lewis, R. (1997). Open learning in higher education. *Open Learning,* 12(3), pp. 3-13.

Lisewski, B. (1994). . *pilot project at the Liverpool Business School.* London: Open Learning Foundation.

Nation, D., Paine, N. and Richardson, M. (1990). Open learning and misuse of language: some comments on the Rumble, Lewis debate. *Open Learning,* 5(2), pp. 40-45.

National Committee of Inquiry into Higher Education. (1997). *Higher education in the learning society,* (known as "the Dearing Report"). London: HMSO.

Perry, B. (1995). *Flexible learning methods for corporate clients.* London: Open Learning Foundation.

Perry, M. and Simpson, M. (1996). *Resource-based learning in accounting.* London: Open Learning Foundation.

Quinn, F.M., Phillips, M., Humphreys, J. and Hull, C. (1997). Professional development for nurses: a national open learning partnership. *Open Learning,* 12(1), Feb 1997, pp. 45-51.

Richardson, J. (1996). Changing courses – strategies for changing the HE learning environment. London: Open Learning Foundation.

Richardson, J. (1998). Horses for courses? – converting learning materials for electronic delivery. London: Open Learning Foundation.

Rumble, G. (1989). "Open learning," "distance learning," and the misuse of language. *Open Learning*, 4(2), pp. 28-36.

Rumble, G. (1992). The competitive vulnerability of distance teaching universities. *Open Learning*, 7 (2), pp. 31-45.

Scott, P. (1995). *The meanings of mass higher education.* Buckingham: Open University Press/SRHE.

Stokes, R.J.S. (1994). Computer assisted learning in engineering at the University of Humberside. London: Open Learning Foundation.

Thompson, D. (1998). . *flexible MBA by Internet.* London: Open Learning Foundation.

Whitehead, K. (1995). . *flexible learning initiative at Coventry University.* London: Open Learning Foundation.

For further discussion, the following documents available on the Web:

Survival of higher education: using new technologies http://www.open.ac.uk/vcsspeeches/lomalinda.html.

The traditional university is dead: long live the distributed university http://www.fae.plym.ac.uk/tele/longlive.html.

The OU at thirty: strategies for 1999 http://www.vous.org/vc2.html.

Global Perspectives: The University of South Australia (UniSA) Case Study

Reviewers

Abstract

This case study describes current developments in the change processes that are underway at the University of South Australia (UniSA) as it develops from a dual mode institution to one that embraces flexibility in delivery of all of its courses and programs. Forces operating in the context of higher education are causing traditional institutions to become dual mode. Institutions that were already operating as dual mode are developing a proliferation of program delivery arrangements that move beyond hybridisation. A number of Australian institutions claim to provide flexibly delivered courses where student centred learning processes are facilitated through the use of information and communication technologies.

Hybridisation and the move to flexible delivery in Australia has partly been driven by changes in the socio-economic context of higher education that have forced universities to compete for income to sustain their operating costs. Offshore teaching and the provision of onshore fee paying courses for international students have required changes to delivery processes for resource-based teaching and online technologies and these changes have washed through institutions. However, for some institutions the development of flexible delivery has been to achieve a wider range of educational purposes for all students. Such purposes are often described in terms of the shift in focus: for example, from teaching to learning; from elite to inclusive; from "producer" to "consumer;" from local perspective to international; from credentialing (four year degree) to life-long learning (40 year degree).

This case study looks at the ways in which UniSA course, student, regulatory, logistical and technological systems or subsystems are changing, both in response to extra-institutional influences and in relation to institution-wide development of greater flexibility in teaching, learning and program delivery. This analysis highlights the ways in which these subsystems interact with each other and the critical importance of shared vision to coordinate changes on multiple fronts within the institution and to facilitate internalisation and ownership of such change by its staff.

The case study highlights how the logistical assumptions and arrangements of online education are significantly different in kind from those of traditional face-to-face or distance education and argues that moves to

> online education therefore require pervasive change. At the same time, online education can provide an integrating framework for different forms of delivery, thereby achieving synergies and economies of scale.

Introduction

This case study explores in detail the experience of the University of South Australia (UniSA) in attempting to position itself to its advantage in a period of rapid and far-reaching change. The developments described in this paper go beyond hybridisation between distance and face-to-face forms of delivery, to the evolution of new forms enabled by information and communications technologies. Nevertheless, hybridisation has been a starting point for developments. The infusion of the technology and techniques of distance education into traditional modes of teaching and learning has meant that UniSA has had to plan for future learning environments that both encompass hybridisation and develop flexibility in the provision of programs.

UniSA was formed in 1991 and has sought to redevelop and reshape the traditional forms of on campus and distance education inherited from its antecedent institutions. This reshaping is creating flexible modes of delivery to serve an increasingly diverse domestic student clientele and an increasingly international clientele studying on and offshore. These developments have challenged all of the constituent parts of the institution to rethink and reinvent themselves in quite fundamental ways. As a "work in progress" study, UniSA provides lessons and examples that may serve to inform other institutions embarking on similar journeys (Busuttil et al., 1999).

To understand the changes occurring at the institutional level, it is important to appreciate the various contexts in which the University operates and from which the drivers for change derive. The national and local contexts are the starting point.

The Context of Higher Education in Australia

A range of environmental factors[1] has challenged the Australian higher education sector over the last decade. Globalisation of the economy, changing patterns of work and employment and the emergence of the knowledge economy have changed demands for education from elite to mass, while at the same time giving rise to increased labour market inequalities and thus, access to goods and services by certain sectors of society.[2] Changing demographics arising from changes in birth rates and patterns and levels of migration mean that Australia, like other Western nations, is experiencing the effects of ageing populations and

changes in the dependency ratios (ratio of workers to non-workers). Communication and information technologies have become pervasive, changing the nature of work and enabling communication and business to occur regardless of time of day or country in the world. Government funding of higher education has been reduced substantially, meaning that institutions have had to develop new sources of income and become more transparent and responsive to their new or changing clienteles. Business and education are increasingly borderless, demanding new levels of cultural literacy as participants communicate and engage across cultures and languages. The changes are summarised, albeit in simplified form, in Table 1 below.

The effects of such shifts on staff and structures in universities have been profound, and challenge institutions to react and/or anticipate and adapt.[3] Universities must now compete against one another and against emerging educational providers for government funded and fee-paying students. Therefore, they must develop business capabilities across a broad spectrum of staff to initiate and sustain income generation ventures, develop skills, contacts and capabilities to operate in international markets in a range of countries (but predominantly in emerging economies in Asia). In short, universities must become learner centred as an essential competitive characteristic, and they must use information and communication technologies intelligently.

University responses to these drivers necessarily influence all aspects of their operations:

- Shaping of roles and expectations about being a student in a student centred institution

- The roles, skill sets and bases of employment of staff, both academic and administrative

- Structures and governance

- Administrative and management information systems and processes

- Courseware and delivery mechanisms

Policy changes in these areas are considered later in the section on the regulatory subsystem.

The Context of Higher Education in South Australia

The state of South Australia has a particular suite of circumstances that may act to amplify or mitigate these more global forces. Some features of South Australia that impact on higher education in the state are:

- An ageing population in relation to other states, with lower fertility, net emigration to other states and low levels of international migration - i.e., low growth in the domestic student market

- Slower economy and narrower industry base, higher levels of unemployment, lower labour force participation rates, and lower average incomes - i.e., reduced local employment opportunities for graduates.

This is balanced to some extent by a lower cost of living, ease of mobility, the emergence of a number of boutique industries, and major investment in a small number of large infrastructure projects.

The University of South Australia: The Institutional Context

UniSA was established as the newest university in the state of South Australia in 1991. It represented a merger of the then South Australian Institute of Technology and parts of the SA College of Advanced Education, each of which was also the product of a number of antecedent institutions, including some that date back to the South Australia's colonial history. In defining itself as a university, UniSA has, in the ten years since foundation, developed a managed approach to establishing a vision, policies, and priorities that steers its teaching, research and community service. In some ways, the timing of its formation meant that it was more free to shape itself in response to the emerging drivers than has perhaps been the case with more established institutions.

The University's enabling legislation requires it to provide education for the broadest range of Australians and address the educational needs of indigenous people.

The University in 2001:

- Operates six campuses - five in metropolitan Adelaide and one in a regional centre of South Australia

- Has approximately 27,000 students, making it the largest in the state

- 5,763 International students – 1,566 study on campus and a further 4,197 are enrolled offshore

- 2,000 staff

- An annual budget of more than $AUS200 million

The institution has been actively engaged in developing its learning environment to take advantage of new technologies and has determined its directions towards 2005.[4] UniSA has an overarching teaching and learning framework built around concepts of student centred learning, development of a set of graduate qualities as outcomes and enabling these through flexible delivery.[5] Flexible delivery encompasses processes, products and mechanisms that enable the UniSA to deliver its programs and courses on campus, at a distance, online and offshore. In positioning the University to exploit opportunities for income generation in a range of educational territories, flexibility is one aspect of an institutional capability that is regarded as critical as curriculum.[6]

Flexible delivery processes include: conventional text based distance education; twinning arrangements with other higher education institutions; the provision of services by external bodies in a vertically disaggregated form of delivery; global partnerships with other universities to deliver offshore programs; face-to-face teaching in offshore locations; involvement in delivery of distance education in a national open learning body; online delivery; and various combinations and permutations of these approaches. As previously mentioned, the capacity to develop such a range of delivery options arises from the starting points of hybridisation in which the capacities of a dual mode operation have been extended and enhanced in various ways.

Critical Incidents in Developing Flexible Delivery Capability

Course subsystem

In 1993, UniSA articulated a vision of its future learning environment to the year 2003. Among other features this environment would be characterised by flexible teaching and learning strategies that emphasises student management of learning and communication technologies.

A key decision of the University was taken in 1995 to expand its range of services and support involved with facilitating conventional distance mode studies to all forms of program delivery. This has been described in detail in a previous paper in this journal.[7]

In May 1999, UniSA's Academic Board adopted new processes for the development, amendment and approval of university programs. Traditionally, program approval processes focused on the content of the courses that made up a program and involved judgments about the intellectual coherence, relevance, and standards associated with discipline based content. The new processes added to these concerns issues about resources, delivery mechanisms and costs, mechanisms to support student learning, and whether the program was provided as flexibly as possible.

The effect of these changes has been to add the logistics of delivery to curriculum issues so that a more accurate picture of programs can be gained. Issues such as start-up costs; resource requirements (including the impact of the program on library and information technology resources); the appropriateness of delivery mechanisms for student cohorts involved in the program; and student administrative arrangements are now considered formally within an approvals process. Formal consideration of such issues is critical to developing and maintaining a capacity to deliver programs flexibly. These decisions have been paralleled by important changes in other subsystems in the teaching and learning environment of the institution.

Student Sub-System

A further critical incident in developing flexible delivery capability has been changes to the student sub-system. This sub-system comprises:

- Administrative systems (i.e., systems that handle enrolments, etc.)

- Administrative services (i.e., services that support enrolment, fee payment, graduation etc.)

- Learning services (i.e., library, information technology, language and learning support, counselling and welfare services)

Together with discipline based teaching and learning activities the smooth operation of these systems and the availability and variety of services contribute to student learning and satisfaction. However, prior to re-engineering the student system, its components were structurally and physically separate and experienced by students as fragmented entities disconnected from the course subsystem. Administrative systems had been heavily mediated by staff and available only during traditional business hours, with congestion at peak periods such as enrolment. Administrative staff spent time on data entry and verification at the expense of contact with students and staff. Administrative systems had been designed around meeting government information requirements for funding, rather than as sources of information for students and staff. Learning services were heavily mediated by staff and students experienced difficulty in getting to see advisers. Services were often disconnected from mainstream teaching and learning processes in that they were seen as "remedying deficits" in students.

A major critical incident was a project to develop a new student administration system (initiated in 1999 and implemented in late 2001) and to re-engineer administrative services and learning services. In short, each component of the student system was changed, with attention given to the complementary operation of services. The main objectives to be met in a changed administration system were:

- To be student centred (i.e., permit and encourage student access to and control over their teaching and learning environment, including administrative aspects) and service oriented, integrating administrative services with the teaching and learning environment.

- To provide the flexibility to manage a range of traditional and non-traditional educational business on and offshore, face-to-face or distributed and in the new worldwide e-business hours of 24 x 7 rapidly supplanting the traditional (9 to 5) x 5.

- To support devolved management decision-making, institutional responsiveness and quality assurance processes by making comprehensive information reporting widely available.

Likewise, in re-engineering administrative services (Campus Central) and complementary learning services (Learning Connection) the objectives were:

- To be highly visible, accessible and coordinated, integrating a range of high quality, consistent and coordinated services and resources across multiple campuses accessible in a variety of ways - by phone, fax, email, face-to-face and online.

- To recognise student diversity and study modes (on campus and at a distance) and offering multiple pathways and options to allow students to choose those that best suit them.

- To position students as active and capable agents, recognising the developmental nature of educational programs and that student needs and circumstances vary over student lifecycle stages.

The development of Learning Connection and Campus Central reflects the recognition that recent changes in higher education require new approaches and not simply incremental adjustments to structures and strategies designed for previous conditions. Face-to-face services are supplemented and extended by the imaginative application of technology. Actual services are mirrored by virtual services that provide student access from anywhere at any time. Virtual services are largely unmediated - students are free to select the services they need, when they need them.

A new service provided through Learning Connection illustrates how re-engineering is directed at valuing flexible approaches to teaching and learning. If they are provided with the means to chart their development of skills and abilities and thus choose to develop or extend skills in particular ways, students are better able to exercise choice and control over the opportunities provided to them through flexible teaching and learning. UniSA has developed student operated online software that provides the means to review what they are learning, as well as information about how their studies develop particular qualities and outcomes. Students are encouraged to record how their activities and assessment contribute to the development of such qualities throughout their studies.[8] It is through this mechanism that students recognise and exercise control over their learning.[9]

Changing the student sub-system has been a critical and vital component of shaping a teaching and learning environment that supports and fosters flexible delivery. In developing capabilities in this area, attention has been given to how students experience the total institutional environment and this has meant that there are consequent changes to services that are shaped by both new systems and overarching educational values such as promoting flexibility, choice and student centred-ness.

Re-engineering systems and using technology to achieve student centred learning present fundamental and difficult challenges as they require a changed view of the power relationship (often implicit and covertly applied through transmission models) between students and staff.

Regulatory Subsystem

The environmental changes detailed in the earlier part of this case study have demanded significant policy development, not simply incremental adjustments to existing policies. The key policy responses to these changes are in the areas of:

- Commercialisation, intellectual property and staff rewards for commercial activity

- Copyright

- Regulation of contractual relationships when operating with external parties, especially for offshore delivery of education

- Quality assurance and improvement of programs, courses and teaching

- Addressing quality issues arising from casualisation of teaching especially in relation to adequate induction of staff

- Issues of entry conditions into programs in relation to English language competency

- Provision of technology infrastructure and interfaces to support off campus teaching and learning

- Quality assurance of online delivery The key policy statements and their timing are shown in:

Logistical Subsystem

The procurement and supply of resources to support flexible delivery of the UniSA's programs and courses was informed by two historical circumstances. First, with a strong history of dual mode delivery, staff members were accustomed to teaching students both on-campus and at a distance, assuming equivalence of academic standards and expectations, but employing different delivery methods. This environment was one where the adaptation of distance education methodologies to online and resource-based delivery was seen as further increasing the flexibility of delivery, rather than a step without historical precedent. The second circumstance was the UniSA's success in distance provision, through a central unit managing the required administrative and production services to support distance teaching and learning.

This capacity as a dual mode (i.e., face-to-face and distance) institution proved, however, a double-edged sword. On the one hand, it provided the University with experience, technologies and educational understandings necessary to introduce technologies into its delivery processes for all of its programs and students. On the other hand, the production house methodologies used to employ these technologies and create teaching materials were not sufficiently scalable to the extent required for UniSA's strategic directions.

Models that had been successful in the past proved unsustainable because the production requirements of traditional distance delivery created bottlenecks when the number of products to be produced in a timeframe outstripped resources and scheduling capacity. This has been a perennial problem in the production of traditional, largely print-based distance learning materials. The power of Web-based tools that can be made available on the desktop has rendered this production line approach inefficient. This meant moving from a production model to an enabling (professional development) model. This change is illustrated in:

A professional development model enables academics to produce, maintain and revise their own teaching and learning resources without the intervention of specialist instructional design or production staff. It depends upon "up-skilling" through just-in-time professional development - it provides tools and information relevant to particular needs of teachers in developing learner centred

approaches and materials. It uses structured means for up-skilling through wizards, templates and decision algorithms. The application of such tools to teaching and learning situations involve decisions that take into account key educational and contextual issues.

When professional development models employ communication and information technologies to deliver up-skilling they become more scalable with the potential for universal uptake by all teaching staff, more relevant because the information and skill development takes place just-in-time, and more effective as personal teaching methodologies become embedded in the learning materials developed. When such models are combined with quality assurance mechanisms that evaluate the application of skills to teaching and learning developments (i.e., peer review) they provide a powerful approach to improving teaching, learning, and resources for teaching and learning.

The move to a professional development model from a production model is not a simple matter. A major debate within distance education has been about the balance between professional development of distance teachers and the provision of specialist educational and production assistance. What makes this situation different at this time is the development of "smart tools" and the provision of just-in-time information via communications and information technologies - it is the desktop capacities of the technology coupled with desk top delivery of skill formation and development that takes the enabling capacity to new levels and tips the balance to scalable professional development.

This move to an enabling (professional development) model has been supported by a number of parallel and coordinated shifts. First of these was the establishment of a dedicated project team to develop an online delivery platform - UniSAnet - that was interoperable with UniSA's IT environment, was scalable to every course offering, and had embedded within it the necessary "smart tools." (This development is described in more detail in the next section on the technological subsystem.) Second, staff development services were reshaped to provide extra support for teaching staff in the area of using online methods in teaching and learning. Third, UniSA upgraded its IT infrastructure and computer pools.

Application of a professional development model and parallel shifts provided the impetus for the development of online teaching and learning. This development has blurred the boundaries between on-campus and distance teaching and learning approaches and has given rise to hybrid arrangements, which challenge the assumptions behind on campus (face-to-face) and traditional distance education. A convenient characterisation of hybrid situations is "online education" as it may be resource-based learning used by on-campus students (and combined with face-to-face teaching) or, equally, used by off campus students (with or without face-to-face components) studying the same course. Where the information and communication capacities of online technologies are fully exploited, it is possible to characterise this as a new mode with distinctive assumptions and differences from on and off campus teaching.

It is possible to identify particular logistics associated with characterisations of face-to-face, distance and online education - that is, the characterisations contain assumptions about the effective "operation" of labour and materials to achieve their goals. In face-to-face contexts, the focus is on the teacher's performance in lectures and tutorials. Effort is expended on time tabling - i.e., the coordination of staff, students, space and time. A new group of students requires a new performance, and this requirement for "repeat performances" increases the marginal costs of delivery. In this teacher centred mode, materials support the performance of the teacher.

With distance education the prime focus is on teaching and learning materials. Materials support student learning. Teacher and ancillary labour is expended on the development, production, duplication and dispatch of these materials. However, once this process is in train, materials can be provided to many students and at reasonably low marginal cost, as they are produced on the assumption of having a particular "shelf-life" beyond the immediate delivery period. In this resource-centred mode, materials support the activity of the learner.

In an online teaching context the teacher and the student gain access to materials created by the teacher, other students, or other parties using the evolving World Wide Web. Access is generally provided asynchronously, independent of place, allowing the accumulation of a collective and collected wisdom within and between learning experiences. The educational experiences can be ephemeral (e.g., in synchronous chat or broadcast techniques) or lasting (e.g., in asynchronous discussions or Web-based resources). Any party can create materials in the educational interchange, allowing just-in-time and learner-centred virtual environments. Costs of online delivery can vary depending on the degree of human interaction (labour) required, the amount of custom-built resources and the sophistication of technologies employed.

Clearly, the above applications of labour and materials are representations that serve to highlight the different logistics associated with the modes. They serve a useful conceptual purpose of clarifying particular positions about "logistics." However, in practice, the logistical arrangements of delivery of teaching and learning, is usually a complex mix of the assumptions and processes characterised by these modes. The logistical assumptions and arrangements of these three modes are summarised in Table 3.

The logistical assumptions and arrangements of these three modes are summarized below:

Moves from face-to-face or traditional distance education to online education represent significant changes in the assumptions on which teachers, learners and support staff go about their business and to the technological infrastructure and skill base that support the moves. Achieving a migration from the "post-box and hard text" delivery of conventional distance education to online requires at least three preconditions. First, the technical infrastructure needs to be

transparent to users. Second, its operational framework must address teaching and learning decisions when it describes its functions. Third, systematic and local professional development in online teaching and learning using a "just-in-time" and "just-for-me" approach must be available to academics.

Technological Subsystem

As previously noted, UniSA developed a vision of its future learning environment in 1993. In 1997, it changed its budget profile[11] to enable it to build the necessary technological infrastructure to support online delivery.

Key to the success in using information technologies is the degree to which the technological approaches chosen were viable within the infrastructure of the institution. To move beyond small-scale and localised innovation, an institution-wide technology strategy to support large-scale initiatives was necessary. A comprehensive information management strategy was seen as the most efficient and effective approach and was made possible by a planned approach to IT across the University. This management strategy would require support and coordination by a governance structure that included the key service units of the University and employed consultative mechanisms involving members of senior management in UniSA-wide policy committees.

This management approach mandated a number of technical decisions to enable a large-scale technological environment. These included the establishment of a common email system (MS Exchange), a common authentication system (MS NT and Exchange accounts) and common corporate database systems (Oracle RDMS). By ensuring that data were stored once and re-used, efficiencies were gained and a universal infrastructure was built. Onto this common infrastructure was built a common online delivery system (UniSAnet), which was integrated into it, thus saving effort and producing scalable tools that operated in ways that were consistent with existing software. Students gained access to this platform via their own Internet provider, or via standardised student computer pools (Windows PCs with common software installations, e.g., MS Office).

The development of UniSAnet in this environment involved the following steps: ¡UL TYPE=1¿

Convert textual information from the University Calendar to database format to produce a course database. This then allowed the print calendar to be produced from the database on demand.

Integrate corporate databases (e.g., human resources, student records) with the

course database.

Develop technologies to convert existing print, electronic and web resources into forms linked to and from the course database.

Develop Web-based authoring tools (e.g., wizards, forms etc.,) to allow staff to create static and interactive Web-based learning resources (e.g., HTML pages, discussion groups, quizzes, chat groups, etc.)

Provide Web-based systems that allow users to suggest changes to corporate information (e.g., course information, personal details).

Integrate new features as developed (e.g., administrative features, assignment submission, evaluation mechanisms, support mechanisms).

Secure all of the above with a consistent authentication mechanism, so students and staff need only one username and password for all resources and processes.

Link external services as appropriate (e.g., commercial book suppliers).

The UniSAnet provided a scalable and interoperable information management system that also afforded consistent interfaces for student learning. The process of developing a knowledge management strategy is further described by Reid.[12] In reflecting on the development of UniSAnet, it is clear that a number of fundamental changes were introduced. The use of standardised templates for both print and online resources allowed the convergence of print and online resources into interchangeable forms. Whereas in the past, online developments tended to be based on isolated individual initiatives, the mandated approach allowed staff development and technical support to be available to all staff wishing to teach online. By keeping the skill requirement low and devolving control over resource development and online interactions to individual academics, it was possible to move to the enabling model described above.

Intended and Unintended Consequences

UniSA's statement of strategic intent spells out the intended consequences of its adjustment to the impact of the environmental forces detailed at the beginning of this case study. UniSA's capabilities in mixed mode delivery have served as a platform for accelerated development in the variety and use of flexible program arrangements. This change was anticipated some years earlier when the University reconstructed its Distance Education Centre as the Flexible Learning Centre and opened up to all programs, services previously available only to external programs.

UniSA's intended to move its teaching and learning towards a learner centred approach and saw flexible approaches to delivering its courses, including online approaches, as a way to increase learner control over their learning, access and choice. Delivery mechanisms have served as a means to the end of learner centred-ness. At the same time, a powerful and practical driver for changing to online delivery approaches has been the need to market courses and teaching for profit. A practical consequence is that a delivery mechanism has become a means to efficient production, distribution, and teaching in ways that create a competitive market for educational commodities. Competitive pricing can result from adopting transmission approaches to teaching. Thus, competing in the market made possible by online approaches can produce products that work against educational goals of learner centred-ness, where courses developed for a competitive market are used within the institution.

Goals of learner centred-ness can be eroded. This is especially the case where pricing arrangements have been adjusted to suit the economic circumstances of clients and the materials and teaching approaches have been pared down to suit a costing framework. Transmission models provide few opportunities for students to develop a range of highly valued graduate skills such as critical thinking and problem solving, communication, working in groups and individually, operating as socially responsible professionals and bringing international perspectives to bear on their work. The challenge to institutions here is to be aware of such possible consequences and take steps to ensure that the capacities of online education are exploited in ways that preserve learner centred-ness.

Implications of Lessons Learnt with Regard to Distance Education, Open Learning and Flexible Delivery

In general, academic staff members regard increasing flexibility of program delivery as synonymous with the translation of teaching methodologies to an online environment. This translation involves using techniques of open and distance

learning within an electronic environment. Although, the teaching embedded within conventional distance teaching materials is seen as the key means of teaching, the communication capacities of the online environment are under-utilised. Nevertheless, the move to online is important because it forms the starting point for further developments that subsequently exploit the capacities of information and communications technologies.

A related lesson is that online materials and communications developments are likely to provide a common thread and organising factor for flexible delivery. It is our experience that where a course has a variety of student cohorts (i.e., onshore face-to-face, distance education, offshore involving a twinning partner) it is the online component that often provides information about the course and its objectives, assessment, access to key resources for learning, means by which advice on study skills and other facilitative advice is provided, mechanisms for student feedback on the effectiveness of the course, processes for submission of student assignments and so on. In this way online processes begin to shape major components of the learning experience. Because online components play this role, it is essential that the preconditions mentioned earlier are in place; without such conditions, the capability to integrate modes of delivery and achieve synergies and economies are lost.

The online environment provides academic staff with experiences that demonstrate how students exercise agency and responsibility over their learning. That is, many academics meet the notion of flexible learning through their interactions with online learners. When students choose to use the information and communications capabilities of the online environment in particular ways, they radically alter the traditional power relations between teacher and learner. For example, students can create new boundaries for the curriculum through researching and using Web-based resources that make them more knowledgeable than teachers in that area; learners can use the communications capacities to challenge the ways that they are treated as learners; students may challenge the need for face-to-face experience in conventional transmission mode classes simply because they prefer more enriching experiences delivered through the Web-based resources, and so on. That learners become partners, not dependents, is a key test for flexible learning.

Another lesson learned is that when an institution moves beyond hybridisation it can only do so if it is able to manage and coordinate simultaneous changes on a number of fronts. The teaching and learning environment of an institution responds like an ecological system - change in one area generates adaptive, and in some cases radical changes in other areas. The pace and extent of change can lead to change fatigue where individuals start to lose interest in or recast institutional visions into their own version of what is realistic. Difficulties in communicating the effects of multiple change, and limitation in the capacity of individuals to internalise the effects of change, can mean that they stop engaging in the learning processes that underlie successful change.

UniSA recognises that change at the pace and scale required in the current context involves all of its staff, as well as the organisation itself, to be engaged in learning processes (including learning through mistakes). To this end, UniSA has appointed a coordinator of organisational learning to assist in activities that analyse change processes, and integrate and communicate changes that are taking place within the University.

Moving beyond hybridisation can mean involvement in the "vertical disaggregation" of program delivery. Different functions may be taken up depending upon the nature of a particular business partnership and type of vertical disaggregation. For example, as a partner in Open Learning Australia, UniSA has enjoyed a strong producer role in course design, materials production and teaching, whereas in other partnerships, UniSA might take a stronger role in the areas of quality assurance, standards modification and accreditation, while partner institutions undertake the teaching roles. The capacity to be involved in activities globally is a function of the institutional capacities to deliver programs flexibly.

A final lesson is that moving beyond hybridisation will mean rebalancing the "clicks" and "bricks" components of an institution. The move to clicks may mean that physical amenities such as cafeterias, sporting facilities, and student association facilities become less used and valued. A clicks culture, however, can extend more readily to bring together alumni (or professional groups) thereby developing virtual communities with a continuing connection with the University. Developing a clicks institution has required that UniSA restructure its budget profile to bring about increases in funding for its library and information technology services and, as a corollary, to consolidate its brick structure by rationalising its campuses and upgrading its physical facilities.

Conclusions

The moves by UniSA beyond hybridisation to flexible delivery have been the result of a sustained process of change over the relatively short life of the institution. The moves have required the creation of a vision about its future teaching and learning environment, outcomes it seeks for its graduates, its relations with its students, and attention to how these visions are shared among stakeholders. It has required a determined and significant restructuring of its budget, construction of infrastructure to support online delivery across the institution, and invention and reinvention of aspects of its structure and functions. In common with many Australian institutions, UniSA has undergone and continues to undergo change of an unprecedented pace and scale, well beyond hybridisation of its traditional duality of teaching modes.

References

Busuttil A. (1999). *Report on the project Exploring Flexible Teaching and Learning Across the University of Western Sydney* (Vol. 1 & 2). Macarthur, University of Western Sydney: Centre for Enhancement of Learning and Teaching

Gallagher, M. (2000). *The emergence of entrepreneurial public universities in Australia.* Paper presented at the IMHE General Conference of the OECD, Paris, France. DETYA Higher Education Division Occasional paper series 00/E, [Online] Available at: http://www.deetya.gov.au/highered/occpaper/00e/00e.pdf

Gallagher, M. (24 July 2001). *Lifelong learning: demand and supply issues – some questions for research.* Paper presented at The Business/Higher Education Roundtable Conference on The Critical Importance of Lifelong Learning.

King, B. (1999). Distance Education in Australia. In Harry K. (Ed.) *Higher Education through Open and Distance Learning. World review of distance education and open learning* (264-276). Vol. 1. Routledge & The Commonwealth of Learning.

King, B., McCausland, H. & Nunan, T. (2000). Converting to online course and program delivery, global perspectives: the University of South Australia case study, *The International Review of Research in Open and Distance Learning*, 1, 2 (p. 25).

Nunan Ted (2000). Exploring the Concept of Flexibility (2000) In Jakupec V. and Garrick J. (Eds.) *Flexible learning, human resource and organisational development* (47-66). London and New York: Routledge.

Nunan, T., George, R., and McCausland, H. (2000). Implementing graduate skills at an Australian university. In Fallows, S. and Steven, C. (Eds.) *Integrating key skills in higher education* (57-66). London: Kogan Page.

Reid, J. (1997, July). *Summary of Discussions.* Paper prepared for the Higher Education Council and the National Academies Forum: Joint Seminar on the Undergraduate Curriculum. Canberra, New South Wales.

Reid, I. C. (2001). Knowledge: How Should Universities Manage IT? *Perspectives, 5* (1), 21-27.

University of South Australia (1997, February). *Corporate planning: Changing our budget profile* [roneo].

Woodhouse D (2001). *Australian Universities Quality Agency: Audit Manual*, Draft Edition version 0, p. 9.

Endnotes

1. For example, Considine, M., Marginson, S. & Sheehan, P. with assistance of Kumnick, M. (April 2001). The comparative performance of Australia as knowledge nation. Report to the Chifley Research Centre [Online] Available at: ftp://ftp.alp.org.au/pub/federal/reports/chifley_kn.pdf. Reid, J. (1997, July). Summary of Discussions. Paper prepared for the Higher Education Council and the National Academies Forum: Joint Seminar on the Undergraduate Curriculum. Canberra, New South Wales. Gallagher, M. (2000) The emergence of entrepreneurial public universities in Australia: paper presented at the IMHE General Conference of the OECD Paris. DETYA Higher Education Division Occasional paper series 00/E [Online] Available at: http://www.deetya.gov.au/highered/occpaper/00e/00e.pdf

2. Gallagher, M. (24 July 2001). Lifelong learning: Demand and Supply Issues - some questions for research. Paper presented at The Business/Higher Education Roundtable Conference on The Critical Importance of Lifelong Learning. [Online] Available at: http://www.detya.gov.au/highered/otherpub/lifelong/default.htm

3. For a review of structural change in Australian provision of distance and flexible education, see King, B. (1999). Distance Education in Australia. In Harry, K. (Ed.) Higher Education through Open and Distance Learning. World Review of Distance Education and Open Learning. Vol. 1. (264-276). Routledge & The Commonwealth of Learning.

4. UniSA 2005 [Online] Available at: http://www.unisa.edu.au/pln/Plans.htm

5. UniSA Teaching and Learning framework [Online] Available at: http://www.unisanet.unisa.edu.au/learningc

6. Nunan Ted, (2000). Exploring the Concept of Flexibility. In Jakupec V. and Garrick J (Eds.) Flexible Learning, Human Resource and Organisational Development (47-66). London and New York: Routledge.

7. King, B., McCausland, H. & Nunan, T. (2000). 'Converting to online course and program delivery, global perspectives: the University of South Australia case study', The International Review of Research in Open and Distance Learning, 1, 2 (p. 25).

8. Nunan, T.; George, R., & McCausland, H. (2000). Implementing graduate skills at an Australian university. In Fallows, S. and Steven, C. (Eds.) Integrating key skills in higher education. (57-66) London: Kogan Page.

9. UniSA recording of achievement [Online] Available at: http://www.unisanet.unisa.edu.au/gradquals/shapper

10. University of South Australia (1997, February). Corporate planning-Changing our budget profile [roneo].

11. Reid, I. C. (2001). Knowledge: how should universities manage IT? Per-

spectives, 5(1), 21-27.

12. UniSA Statement of strategic intent [Online] Available at: http://www.unisa.edu.au/pln/Reports/Intent.ht

Table 1

From: Teacher Centred	To: Learner Centred
Higher education for the elite	Higher education for the
Homogeneous student body	Diverse student body
Few international students – education as 'foreign aid'	Many international stude education as internationa
Small, domestic distance education operation for rural and remote Australian students	External study offering fl earner-learners worldwid
Mainly print based distance delivery	Increasingly online flexil
Relatively low student/staff ratios	Relatively high student/s
Communication and information technology for experts	Communication and info technology essential and
Collegial, discipline based decision making processes	The university as corpora
Local and internal accountability	Public accountability and
Main source of funding government	Main source of funding r government

Table 2

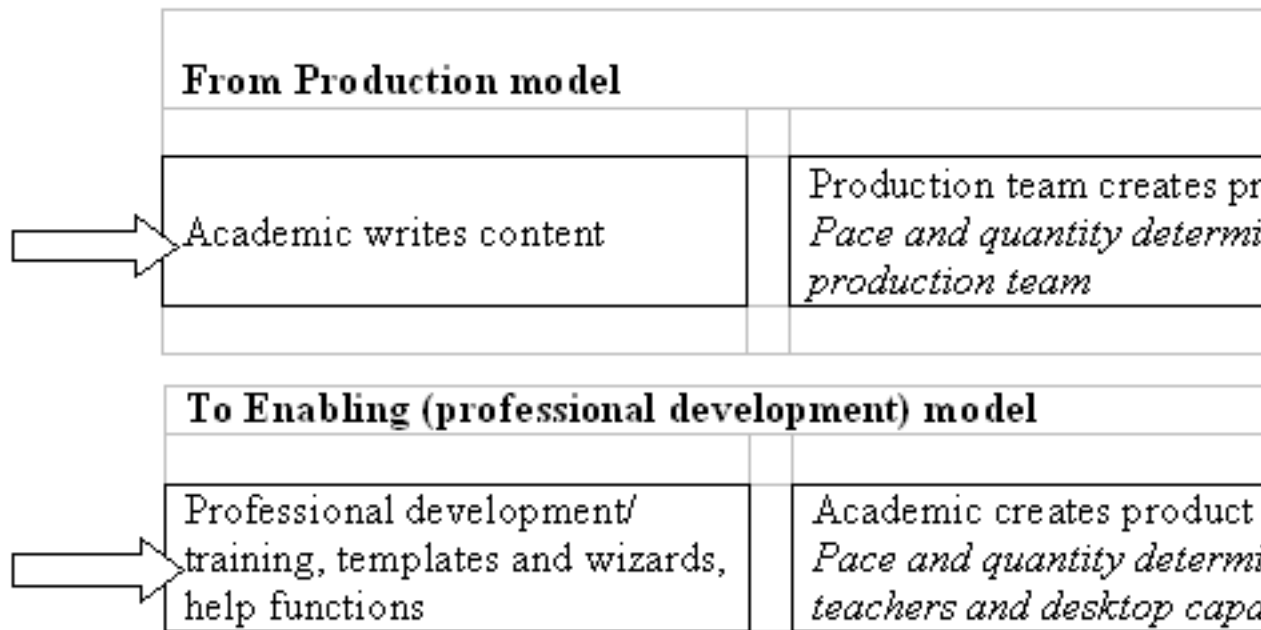| Policy area and date	Summary of scope and effect
Commercialisation, intellectual property, rewarding commercial activity: University Activities Policy (2001)	The scope of this policy covers staff activities inv generation. It deals with requirements of competi required by the Australian Trade Practices Act, qu associated with contractual work and consultancie accounting and the disbursement of profit. The po teaching and curriculum development for award a programs and courses regardless of location or mo The effect of the policy brings together the issues associated with development and ownership of res courses, management and teaching costs and plac quality assurance and accounting procedures.
Copyright: Policy and guidelines relating to copyright and licensing arrangements arising from Digital Amendment Act, 2001	The Digital Amendment Act and likely changes ir and costs of licensing arrangements for copying a copyright materials may impact significantly on c universities. This is providing the impetus for stra of institutional policy and guidelines on using cop resource based teaching and learning.
Regulation of contractual relationships when operating with educational brokers/agents/ external parties (2001 and 1999 -- within program approval processes)	This area has become a major part of the program where Academic Policy Review Committee consi their delivery arrangements. Key areas of concen induction and quality assurance of teachers who a external agents, quality control/moderation of faci examinations, contractual arrangements regarding and use of course materials.
Quality assurance and improvement of programs, courses and teaching (currently under review)	Generation of new programs and specialist offsho income generation means that resources are used of existing and development of new programs. Th resources strategically means paying attention to t viability of programs and resources used for alter mechanisms. The policy will include a program v derived from a number of indicators. Academic a viability reports for programs that are identified by likely that the use of this measure will bring into s competing interests arising from commercial cons

Figure 1

From Production model

Academic writes content	Production team creates pr *Pace and quantity determi* *production team*

To Enabling (professional development) model

Professional development/ training, templates and wizards, help functions	Academic creates product *Pace and quantity determi* *teachers and desktop capa*

Table 3

Face-to-face education (Teacher centred)	Distance education (Resource centred)	Online educa (Learner cen
Instruction based on teacher performances	Instruction contained in materials	Instruction based on acce interactions – all can be cu
Located in time, place and with fixed groups of people	Time and place more flexible	Flexible personal access, time or space
People are scheduled	Materials are scheduled	Asynchronous opportunit determines
Ephemeral experience	Lasting resources	Ephemeral or lasting
High marginal cost limits scalability	High fixed cost requires large scale operation	Variable fixed and margin
Materials support teacher	Materials support learner	WWW-based resources p time by (and for) teachers

Open University Center of the Pontifical Javeriana University, Colombia.

Omayra Parra de Marroquin

Lina Claricia Corredor Moyano

Abstract

According to García Canclini, there is the assumption that Colombia is a hybrid society. Upon this standpoint, and within a traditional higher education structure characterized by being fundamentally conventional or campus based, the Open University Center of the Pontificia Universidad Javeriana was created as an education program that breaks with every traditional scheme, which in turn, encourages a new learning pattern. The Open University Center emerges as a "social response" focused on the "here and now" of today's society in Colombia.

The Javeriana University (a hybrid university) can be placed in this context as well as the Open University Center, as a part of it. Since its creation, through its programs this center offers education to the most vulnerable of Colombia's population, contributing to raise their quality of life.

In this article, the authors outline the Open University Center's place in the University's context: its historical development and its structure concerning students, programs, regulations, infrastructure and technological equipment. They also identify the implications and relationships of the traditional education proper of the Pontificia Universidad Javeriana, as well as the projection and contributions of the Open University Center to the University's future in the pedagogical order of distance education towards virtual education.

According to Garcia Canclini (1990) Latin American countries are a synthesis that intertwines vestiges of indigenous cultures and colonial Catholic Spanish traditions with current political, educational, and communication developments. From this dynamic, traditional cultures are melded with modern-day influences to create a modern day culture in which to be educated means one knows how to incorporate advances in technology with art and literature of the vanguard to create a traditional setting of social privilege and symbolic distinction. The multi-temporal heterogeneity of modern culture, therefore, is a consequence of an historical condition in which modernization complements, rather than replaces, the traditional and ancient (Garcia Canclini, 1990, p. 45).

From the foregoing, we can say that Colombia is comprised of a society that has, in the past, whole-heartedly embraced traditional higher education structures.

As a result, new educational programs that fundamentally break with traditional expectations, well necessary and welcomed, signal a fundamental shift in this country. One such fundamental shift can be witnessed in a new program called *Distance Education for Primary Education Teachers*, a program designed specifically to seek out and address problems experienced by teachers in their classrooms. Developed for teachers who cannot move to the city (location of the University) to pursue formal higher education studies, this distance education program has altered in the perception of what university is all about, thereby creating a viable and alternative social response to the "here and now" of Colombia's social, economic, labor, and educational contexts.

Colombia: A Hybrid Society

In Colombia, poverty in its different dimensions coexists with policies that promote and embrace the latest communication and information technologies available (*República de Colombia, Departamento Nacional de Planeación*, 2000). To understand this contradiction, however, one must first identify the principal characteristics and contradictions of our society.

Colombia is currently in the grip of an armed conflict. Guerrilla and paramilitary forces have created generalized and widespread violence that has displaced large segments of Colombia's rural population into the nation's cities, creating perilous conditions of urban poverty. Drug trafficking has contributed greatly to this dire situation as well as to the environmental degradation of great expanses of farmland. Although Colombia enjoys an enviable geographical location and is blessed with possibly the greatest biodiversity on the planet, most of its people live in poverty.

To place the Open University Center (OUC) of the Pontifical Javeriana University *(Universidad Javeriana)* into context, the demographic characteristics of Colombia will be outlined in terms of population, employment, education, and poverty. For this purpose, we will summarize information prepared by Colombia's National Planning Department.

According to official projections, by 2005 the country will have an estimated population of 46,039,144, of which 33,371,138 will live in urban centers, and 12,668,006 will live in rural areas. In 2000, citizens age 17 to 24 numbered 6,385,636; this number is projected to increase to 6,660,422 by 2005 (Corredor, 2001, p. 2).

Compared to other Latin American countries, Colombia faces the most critical situation with respect to employment, a basic fundamental that affects national living standards and levels of poverty (Corredor, 2001, pp. 7-8). Between 1993 and 1999, the national employment rate dropped from 53 to 50 percent, whereas the unemployment rate increased from 7 percent in 1993 to 16 percent in 1999.

Particularly hard hit were women (from 11 to 22 percent) and rural populations (from 5 to 11 percent). In the third quarter of 2000, the national unemployment rate reached 20 percent.

However, there are some positives to highlight. From 1993 to 1999, the national illiteracy rate declined from 10 to 8 percent. For example, urban illiteracy rates declined from 6 to 5 percent, whereas rural illiteracy rates remained constant at 18 percent.

During this time frame, 90 percent of children age seven to eleven attended school (in the lowest stratum of society the attendance rate was only 67 percent). Eighty-three percent completed primary education and 62 percent finished secondary school. However, according to Ministry of National Education figures, the quality of basic education remained flat and has failed to meet projected targets in terms of learning outcomes for different grade levels in spite of the advances listed above (Corredor, 2001, pp. 12, 16).

Fifty percent of Colombia's population currently lives below the poverty line. More significantly, in terms of malnutrition and sickness, 20 percent live below the line of indigence. A Geni coefficient of .57 reveals inequitable distribution of wealth, with poverty having the upper hand. In 1985, 46 percent of the population lacked at least one of the basic necessities. Although this percentage dropped considerably after 1985, a 1998 report revealed that one of every four persons (26 percent) still lacked at least one basic necessity, and one person out of every twelve (8 percent) lacked two or more basic necessities. Simply put, large numbers of nation's population are still living in misery (Corredor, 2001). Still, advances have been made, such as the positive increases made in the Indicator of Life Conditions (ICV in Spanish) from 60.0 in 1985, to 73.0 in 1998. Currently, the city of Bogotá reports the best ICV of 87.71 (Corredor, 2001, p. 26). However, according to the 1997 Index of Human Poverty (IPH), a measurement that reflects basic living standards and a life expectancy of age forty, the greatest deficiencies in Latin America were nonetheless recorded in Colombia with an IPH of 8.9. According to this index, more than 15 percent of the country's population lack clean water, medical care, will likely die prematurely, suffer malnutrition in children under five years of age, and experience high illiteracy rates among adults age fifteen or older. Another factor that greatly exacerbates this index is the reality that in recent years, Colombia has been gripped in a continuous state of war.

In spite of the foregoing, Colombia's population is nonetheless characterized as being hardworking, seeking intellectual and economic improvement, proud of their cultural heritage, and desirous of peace and better living conditions. For all of its enormous contradictions and pitfalls, Colombia remains open to the world and strives to incorporate modern-day scientific and technological advances into its culture. Built upon a foundation of indigenous and Hispanic inheritance, Colombia is a hybrid culture that boasts of many positive elements that are important to explore, one of which is its education system.

According to the National Department of Planning, Colombia has of over 100,000 schools, 470,000 teachers, and 9.8 million students. In contrast to other countries in the region, participation in private education is high with enrolment growth rates of approximately 20 percent in primary schools, 32 percent in secondary education, and 67 percent in higher education.

According to current figures from the Colombian Institute for the Development of Higher Education (ICFES), the country has 306 registered higher education institutions, of which 57 are technical schools, 83 university institutions, 52 professional schools, 14 special purpose schools, and 100 universities. Sixty-one higher education institutions offer 571 programs, principally in the following fields: education (291); economic and administrative sciences (43); basic sciences (31); medicine (13); environmental and rural studies (13); and social sciences (11) (*Centro Universidad Abierta*, 2001).

Colombian universities in general, and the *Universidad Javeriana* in particular, are fully cognisant of the role they play in addressing and resolving many of society's problems. Since its establishment, the Open University Center (OUC) of the *Universidad Javeriana* has sought to provide educational opportunities to the nation's most vulnerable population, thereby contributing to enhancement of their quality of life.

In this context, we will now survey the current offering of distance education programs, specifically in the area of education, a field in which the OUC has specialized during its 29 years of operation. Currently, the OUC is concentrating principally on undergraduate programs (221 by distance and 51 semi-face-to-face) and postgraduate programs at the level of specialization (61 semi-face-to-face and 43 by distance) (OUC, 2001).

The Open University Center (OUC) in the Context of a Hybrid University

With respect to the different and coexisting educational modalities and pedagogical structures, the *Universidad Javeriana* can be considered a hybrid university. On one hand, the University is fundamentally a conventional face-to-face institution, in terms of its academic culture and administrative structure. Study takes place on the University's main campus and classes are offered and completed on a pre-determined schedule. Within this traditional university setting, however, and in accordance with liberating and humanistic principles to which it adheres, the OUC has designed and consolidated a new modality of distance education that promotes the schema of self-management, an educational concept that is fundamentally different from the rest of the university.

In contrast to conventional instructors, OUC teachers carry out through mediated distance education technology, programs of instruction that reflect the

University's social commitment. Curricula are constructed on the basis of flexible conceptual axes, which adhere to criteria of excellence common to all conventional university programs. Additionally, the OUC system of evaluation goes beyond basic conceptual mastery to include project proposals initiated by students. OUC has established a normative system that makes possible an academic organization and supportive processes that, due to current conditions of social unrest in our country, is in a perpetual state of construction and reconstruction.

OUC has developed a decentralized administrative system designed to serve students in distant locations and communities. Even in areas without basic services such as electricity, the OUC has implemented viable administrative procedures for registration, admission, timely dispatch of course materials, and ultimately graduation ceremonies.

One of the OUC's most important achievements, however, has been the development and consolidation of a distance education model premised on the ideal of regarding students as initiators of positive change within their particular community. To achieve this goal, OUC has developed flexible curricula reflective of educational needs of the population at whom it is targeted. Central to the development of curricula is the treatment of the students as autonomous adults, capable of self-directed learning within the context of enriched learning environments that enhance interaction and make possible cooperative learning processes.

The distance learning model described above draws upon four dimensions: (1) Strategies to facilitate interaction, among which the tutorial is the most frequent form of instruction. Strategies also include mechanisms that promote self-education. (2) A combination of media selected to enhance learning experiences on different cognitive levels is sought to responds to the demands of both course content and student working conditions. (3) Evaluative strategies are employed to form baseline-learning outcomes, ranging from traditional face-to-face evaluation where students attend regional instructional centers, to open evaluations administered to students at a distance using reading materials. (4) Study projects (research and involvement) to develop critical and creative competencies relevant to student reality and daily routine.

As offered by the OUC, six fundamental aspects characterize distance education:

> 1. **Democratization of knowledge**: Distance education provides universal access to educational opportunities that otherwise could not be achieved using traditional campus based means. This modality promotes development of pluralism, mutual respect, tolerance of opinions, consensus, participation, and other normative values essential to the efficient operation of democratic systems.

2. **Context of knowledge**: A fundamental social function is to accommodate student's cultural needs and worldviews, achieved via curricular design and the subsequent assimilation of knowledge by students.

3. **Objectification of knowledge**: This is a process through which a given society places and consigns its knowledge in "objects" independent of time and space of whoever possesses the said knowledge.

4. **Research**: Distance education puts in to context and appropriates knowledge on the basis of underlying realities.

5. **The organizational conception**: The logic of the administrative and academic processes of distance learning yields a series of learning factors that are structurally unattainable in conventional face-to-face education.

6. **Systematic use of information and communication**: Distance education administrative and academic systems and processes must be of sufficiently large scale to ensure timely, accurate and reliable distribution of information.

Socially Sensitive Mission

The social mission of the OUC of the *Universidad Javeriana* is to create, organize, and disseminate different curricula, programs, and projects that are relevant to, and address, the contemporary educational needs of Colombians by providing access to those who would not otherwise engage in conventional higher education. To accomplish this mission, the OUC uses the following processes.

- As per the *Javeriana* Educational Project's mission, provide universal access to education through the different curricula.

- Encourage and promote distance education research.

- Use and develop new technologies to modernize and enhance the different processes of Colombia's distance education system.¡SUP¿3.

Historical Approach to the Open University Center

The OUC can trace its origin to the 1972 television program: "Educators of New Men." Based on this experience, the Faculty of Educational Sciences created

the *Javeriana* Model of Distance Education in 1974, one that incorporates the pedagogical elements required to provide university options that enables student teachers to update their qualifications. Other programs followed: (1) degree program in Primary Basic Education in 1983; (2) Bachelor's degree in Pedagogy in 1984; (3) specialization in Religious School Education and Catechism in 1998; (4) Master's degree in Education in Advanced Pedagogy for Coexistence in 1999; (5) the specialization in the Prevention of Child Abuse and the degree in Basic Education with Emphasis in Humanities and Spanish Language in 2000. Since 1994, the *Universidad Javeriana* has organized and hosted four bi-annual International Symposiums of Distance Education in Bogotá, to address issues of interest for the field.

On May 24, 1995, the Open University Program became the Open University Center (OUC), and was given the immediate responsibility for operational planning, management and administration of undergraduate, graduate, and other academic distance education programs developed by the *Universidad Javeriana*. The OUC now has financial responsibility for these programs, as well as for coordination of all the University's distance education activities.

Structure of the Open University Center in Relation to Colombia's Culture and Context

The OUC operates with two governing councils. In accordance with the statutes and general regulations of the *Universidad Javeriana*, the DE counsel is responsible for orientation and general management, as well as integration of teaching, research, and service functions. The Council of the OUC is a central management advisory team comprised of a General Director, three Deputy Directors in Academic, Social and Administration, Associate Directors, Academic Program and Unit Directors, two Regional Center Directors, plus tutor and student representatives.

Answering to the Academic Vice-Rector of the *Universidad Javeriana*, this management team sets the policies of the OUC and is responsible for planning, organization, management, and control of the academic and administrative processes at both the central and regional levels. The following committees advise the central management: Curricula, Research, Library, and Web Pages.

With central management, the Academic Deputy Director determines the pedagogical policies and services (curricula, educational materials, evaluation, and tutoring) for OUC academic programs. The Office of the Deputy Director, Administrative, develops and establishes administrative policies and procedures for finance, personnel, physical plant, and materials distribution. This Director also oversees both the Educational Media Design Unit and the Computer Systems Unit.

The Office of the Deputy Director of Social Action is responsible for encouraging an organizational climate that supports and enhances student and employee performance. This Office is also responsible for the Community Promotion Unit, a team that communicates and promotes OUC activities in local communities, as well as facilitates environments that encourages students to participate in the two-way flow of communication for the underlying purpose of creating vigorous community values.

OUC also works to maintain good relations with various academic and scientific communities via the following networks: International Council for Distance Education (ICDE), *Consorcio Red de Educación a Distancia* (CREAD), *Asociación de Televisión Educativa Iberoamericana* (ATEI), and *Asociación Colombiana de Instituciones de Educación Superior con Programas a Distancia* (ACESAD).

Subsystems: Students

According to the OUC mission, students are the most important subsystem. Students are the *razón de ser* of every academic, social, and administrative activity at the university, simply because the professional education of undergraduate and postgraduate students contributes to the needs of the Colombian society. Currently, 5,316 undergraduate and 190 postgraduate students are enrolled. Broken down by program of studies, student enrolment is distributed as follows: 4,033 in the *Licenciatura* in Basic Primary Education and 1,283 in the *Licenciatura* in Basic education with Emphasis in Humanities and Spanish. Of the postgraduate students, 154 are enrolled in the Specialization in Religious School Teaching and Catechism, and 36 are enrolled in the Specialization in Prevention of Child Abuse. The average age of students enrolled in these programs is 43.

For 20 years, the OUC has offered its programs to the entire Colombian population through 17 regional centers and 13 support centers. In 1999, the OUC operated in 729 municipalities with a total of 5,664 active students. The OUC boasts of 19,768 graduates to date.

Subsystems: Programs

***Licenciatura* in Basic Primary Education:** This is an undergraduate degree offered by the OUC, the objective of which is to provide holistic distance education opportunities for education practitioners so that in accordance with current ethical considerations (e.g., the promotion of respect and mutual dignity), graduates may contribute to the positive transformation of Colombian society through education. Via its focus on instruction, research, and service, this program is designed to achieve the following objectives:

- A personalized pedogogal approach provides professional development opportunities for basic and primary education teachers.

- Contribute to the qualitative improvement of primary education by having teachers trained to identify and respond to the educational needs of children living in the country's more impoverished regions.

- Formally recognize teachers as professionals through the provision of professional development opportunities that help increase their level of expertise.

This 16-semester program is comprised of the following: Pedagogical Foundations, Pedagogical Methodology, and Pedagogy of the Sciences. Each area is composed of various subjects, including a series of courses developed using a multimedia system consisting of educational material, individual work, face-to-face sessions, tutorials, and study-group projects called *Interaction Nuclei.*

The curricula of the *Licenciatura* offers a set of experiences designed to enable educators to:

- Communicate effectively on both public and interpersonal levels, helping teachers develop a sense of individual autonomy, while remaining responsive to their respective historical and geographical contexts.

- Identify and analyze cognitive and learning processes to help students to socialize and interact more effectively.

- Build skills and knowledge competencies in planning processes such as curricula development, instructional design and community development.

- Conduct research in specialized areas such as: creative learning, adaptation of curricula, and the development of educational content designed to address the needs of students and the community.

- Develop attitudes of commitment toward moral, religious, aesthetic, civic, and political standards.

- Generate changes in the educational system, such as the creation of a more just and humane Colombian society.

Licenciatura in Basic Education with Emphasis on Humanities and Spanish: This *Licenciatura* gives teachers conceptual tools and experiences premised on holistic education practices and continuing pedagogical research, a process that helps teachers to think critically about school mechanisms, the study of Spanish, and of their own discursive practices. This program seeks to achieve the following objectives:

- Articulate concepts from the different fields of study, grounding them within the context of their personal and academic life.

- Advance new educational forms. Instruction in the administration and mediation of social processes that facilitate student achievement.

- Promote investigative and innovative education via pedagogical research and language development skills.

- Provide relevant research approaches to the use of new multimedia in such fields as: computing science, business, arts, and languages.

Students who are engaged in this 12-semester program proceed through three distinct stages:

- **Initiation Stage:** Concepts that introduce students to the principles and criteria of curricular construction help make the "rules of the game" explicit.

- **Common Stage:** Concepts considered fundamental to basic education teachers are offered in such a manner that problematizes the school institution, thereby contributing to pedagogical discourse.

- **Emphasis Stage:** Concepts are presented that relate specifically to Humanities and Spanish.

Specialization of Religious School Teaching and Catechism: This is a postgraduate degree that provides teachers of religious schools, clerics, catechism instructors, and persons interested in spiritual growth, with a solid theological, pedagogical, and research education. In turn, this education permits students to both certify their educational activities and become agents of change within the context of their religious affiliation and communities.

The program seeks the following objectives:

- Educate religious teachers and instructors so that they can instil in themselves, their families, and community, moral values of humanity, tolerance and solidarity as based on the Gospel.

- Provide clerics with the education necessary to help establish catechistic leadership within their parishes and other Church areas.

- Reinforce theological education principals in students that will enable them to: explain and understand their faith in Jesus Christ; build a foundation for their educational practice and catechism as required by the mission of Christian teachers and Church catechists; know and utilize pedagogical media, catechistic models and specific didactic strategies

of religious school and catechism instruction; provide access to information and documentation based on reflection and analysis; and examine the methodological design of educational research, permitting students to describe diagnostic evaluative processes of their reality as Christian educators and redefine methodological and practical processes to improve religious school instruction and catechism.

Among the curricular components of this six-semester program are:

The Postgraduate Specialization in Prevention of Child Abuse: This specialization has the following objectives:

- Contributes to the understanding of child abuse and intervention techniques designed to identify and positively transform power relationships between adults and children.

- Promotes professional expertise in the field of child abuse prevention (this helps the University realize its social mandate, regionally and nationally).

- Utilizes conceptual and operational references that permit re-definition of child abuse issues, and provide subsequent solutions to previously hidden instances of child abuse.

- Conducts applied research in areas such as alternative intervention, construction of knowledge and transformation of realities.

- Grounds explanations within the context of students' culture, experiences and worldviews so they can identify, plan, and execute viable intervention strategies.

This six-semester program is composed of the following core elements:

- **Infancy:** This element focuses on the concept of infancy, from both current and historical perspectives.

- **Representations:** This element focuses on the construction of shared beliefs and the appropriation and measurement as a basis for imagination, expectations, beliefs, fantasies, and practices within the context of inter-subjective relationships.

- **Bonds:** This element encourages reflections about ways in which human beings form bonds and interact with each other by emphasizing emotional ties, as well as consequences of forming relationships.

- **Space for education:** Because this specialization focuses preventive intervention, this element examines the contextual role played by families, education, and the workplace, along with the role the state plays in the formulation and execution of childhood policies.

- **Research/Intervention:** This element surveys research and intervention models.

Continuing Education

The OUC also offers non-credit courses and diplomas through its Continuing Education Unit, with the underlying objective of providing educational alternatives for university, industry, and professional development in the distance modality. Charged with the mandate of planning, disseminating, and developing training programs that correspond to the needs of Colombians living in the country's diverse regions, the Unit organizes and works with interdisciplinary teams to meet its objectives. For instance, the Unit seeks to promote lifelong education amongst the country's education professionals, thereby creating an overall positive effect on regional and national levels.

Projects Unit

The Projects Unit is a joint academic/administrative venture that focuses on the development of distance education projects. This unit articulates and shares the University's academic experience with other spheres of Colombian society. It also provides educational alternatives, principally in the field of distance education, to other academic institutions, public and private sector organizations, and to marginalized populations seeking to better their lives. It also conducts distance education research, primarily in the area of education processes. The unit has developed a variety of strategies designed to develop and strengthen its relationships and reputation at a regional, national and international level. At the OUC, for example, the Projects Unit has entered into agreements with UNICEF, the Foundation for Education Superior, the Company of Jesus for a Program for Peace, the National Conference of Catholic Bishops, the National Police, the Executive Secretary of the *Andrés Bello-SECAB*, University of Chile, the International Colombia Resources Corporation (INTERCOR), the *Saldarriaga Concha* Foundation, the British Council, and the British Embassy.

Subsystem: Regulations

The General Statutes and Regulations of the *Universidad Javeriana* govern the OUC. There are also regulations pertaining to specific aspects of distance education such as open admissions, tutoring, follow-up and evaluation.

Subsystems: Infrastructure and Technology Base

The OUC's administration is headquartered on the main campus of *Universidad Javeriana*, in the city of Bogotá. Three supporting units constitute the technological infrastructure and foundation of the OUC: Media Design Unit, Computing Systems Unit, and the Regional Centers. For example, the Media Design Unit produces course materials using print, audiotapes, television, and more recently, multimedia.

The Computing and Systems Unit provides the OUC with a reliable information and communication infrastructure including the design and programming of systems required for the effective administration of academic programs in functional areas such as registration, finance, administration, and its course offerings. Software used includes both legacy (4th Dimension, Oracle, and Access) and break though (Internet and Web) technologies, systems that give some students access to multi-media content such as video-conferencing, virtual text, and e-books delivered via both Mac and PC platforms.

Currently there are 17 regional centers located across Colombia: *(Antioquia, Atlántico, Boyacá, Caldas, Caquetá, Cauca, Córdoba, Cundinamarca, Chocó, Guajira, Guapi, Huila, Llanos Orientales y Amazonía, Nariño, Santander, Tolima and Valle del Cauca).* By anticipating the educational needs, interests, and expectations of its local citizens, each Regional Center acts as an interpreter of its own local cultural milieu and contributes to the overall improvement and quality education at a grassroots level. By personalizing the OUC's distance education system, the regional centers address student needs. Building upon specific, collective and individual experiences, students achieve growth through *"nuclei of interaction"* group-study projects mentioned previously.

Performance Indicators

Because a systematic follow-up has yet to be conducted, we only have partial indicators of the social impact of the OUC's educational programs at this time. Because a data vacuum exists with respect to our programs vis-à-vis our graduates' professional performance, it is difficult to accurately determine the intended and unintended consequences of the OUC's academic programs.

The *Universidad Javeriana*: Implications and Relationships

In spite of the advances of the OUC, there remains a generalized ignorance of distance education throughout the organization. Indeed, distance education is still considered by many to be an inferior form of education, a mode not on par with

traditional forms of face-to-face university education. However, with advances in information and communication technologies becoming more apparent, this perception is starting to change; distance education is now viewed by many as a way to realize changes needed to achieve the ideal of "virtual" education. As a result, the OUC is becoming more widely recognized for its pedagogical model based on distance education processes – processes that nonetheless conform to and complement the principles and values of the *Universidad Javeriana*. Given the academic experience and the presence of the Center, it has become a visible champion and advocate of advanced education via distance education in both urban and rural settings. Working collaboratively with different faculties in the adaptation, design, and launch of new distance education projects, the OUC helps ensure that the educational needs of Colombia's diverse population are met, particularly working adults and marginalized groups for whom education opens up new possibilities for improvement of the quality of their lives.

The Future of the University and the Future of Virtual Education

The OUC has developed and consolidated a distance education model that is considered its main strength. Hence, the Center is in a position to contribute to university-wide development of virtual education solutions, principally by building upon the theoretical and practical constructions it has already achieved. Viewed as an alternative to traditional forms of university work, professors can now utilize pedagogical thought as a fundamental criterion upon which to make decisions related to the implementation of modern virtual teaching technologies. The Center strives to engage in critical utilization of such technologies in order to, on the one hand, facilitate teaching, and on the other, guide academic decisions in the quest to accomplish authentic university work (Parra de Marroquín & Barbosa, 2001, p. 2).

For the OUC, learning ideally takes place in an environment that: (1) is responsive to a social and cultural context (justification); (2) addresses specific necessities and issues (purposes); (3) is based on academic and cultural knowledge (knowledge); (4) involves teams in the determination and use of technology; and (5) facilitates the formation of virtual social groups (Parra de Marroquín & Barbosa, 2001, p. 4).

Future Consequences

The major challenge facing the OUC will be to continue providing open study opportunities that will enable its students to elevate their standard of living and rise above poverty. However, to achieve this goal, the OUC must manage escalating program design and delivery costs on the one hand, and respond to

advances in new information and communication technologies, on the other. It is a delicate balancing act. Therefore, the OUC is collaborating with other public and private universities and organizations, to build a viable communication network on a national level that will address the needs of Colombia's most impoverished populations. Like in other Latin American countries, the OUC faces the challenge of proposing and developing a range of undergraduate and postgraduate educational alternatives in all disciplines. In the same manner, it faces the challenge of proposing and developing a wide range of alternatives education solutions – both undergraduate and postgraduate – that address the needs of our country and our people.

References

Canclini, Néstor García (1990). *Culturas híbridas: estratégias para entrar y salir de la modernidad.* México: Grijalbo/Consejo Nacional para la Cultura y las Artes.[*Brazil*]

Corredor, Lina, Claricia (2001). Investigación de Factibilidad. Análisis de Necesidades y Tendencias. Centro Universidad Abierta.

National Planning Department (2001). *Sistema de Indicadores Socio-Demográficos para Colombia.* [Online] Available at: http://www.dnp.gov.co/.

República de Colombia. Departamento Nacional de Planeación. (2000) *"Agenda de Conectividad,"* Documento Conpes 3072. Bogotá, Colombia. [Online] Available at: http://www.dnp.gov.co/ArchivosWeb/ Direccion_Infraestructura _Energia/Telecomunicaciones/Documentos/ Conpes_3072_Agenda percent20de percent20Conectividad.pdf.

Centro Universidad Abierta. Investigación de Factibilidad. Unidad de Proyectos. (2001). Listado N° 10: Número de programas por país donde se ofrecen, Listado N° 9: Total de programas por países y campos de conocimiento y Listado N° 10: Número de programas por país donde se ofrecen.

Parra de Marroquín, Omayra and Barbosa, Juan Carlos (2001). *El Diseño Pedagógico con la Inserción de las Tecnologlías de Información y Comunicación.* Paper presented at the Conferencia Internacional sobre Educación, Formación y Nuevas tecnologías: Virtual Educa. Madrid, Spain.

Parra de Marroquín, Omayra and Barbosa, Juan Carlos (2001). *El Diseño Pedagógico con la Inserción de las TIC.* Paper presented at the Conferencia Internacional sobre Educación, Formación y Nuevas tecnologías: Virtual Educa. Madrid, Spain.

A New Learning Model for the Information and Knowledge Society: The Case of the UOC

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Abstract

When it was created in 1995, the *Universitat Oberta de Catalunya* (UOC) served only 200 students and offered two degrees. Today, it has expanded its activities to serve over 20,000 students and 16 official degrees. UOC also offers more than 250 continuing education courses for those wishing to pursue learning opportunities outside of UOC's official degree programs. As an innovative university, UOC offers a new way of experiencing education, one that is capable of providing answers to an emerging global and universal knowledge society.

Today's rapidly changing world requires revised learning models that allow the widest possible access to knowledge throughout life, in a continuous, comfortable, and simple manner, irrespective of the geographical constraints. Capitalising on the intensive use of new information technologies, UOC is proactively breaking the barriers of space and time by offering an educational model of distance education based on the use of the Internet. Students of UOC's Virtual Campus now have easy access to a useful and dynamic learning experience wherever they may be. More significantly, each student becomes the centre of a completely personalized educational process. All receive guidance from an accredited teaching team and have access to some of the most innovative didactic resources and services currently available.

From the start, UOC was designed to be an exemplar of a new generation of distance education providers capable of creating cooperative interaction not only between students and professors, students and learning materials, but also among students themselves. To support this goal, flexibility, cooperation, personalisation and interactivity are the four pillars of practice upon which UOC's model is founded.

Research is also one of the main objectives UOC has achieved in recent years. Through the creation of the IN3, a research Institute focused on analysing the impact of the Internet on society, the institute is home to a virtual Ph.D. programme, and Edu Lab, which is a laboratory of educational innovation that researches the use of e-learning.

The UOC is open to the world, having achieved this objective by maintaining contacts with the principal international knowledge networks. As a result, it is anticipated that the UOC will become an important actor in future e-learning initiatives.

Introduction

Unlike a number of Virtual University[1] projects, the *Universitat Oberta de Catalunya* (UOC)[2] did not evolve from traditional face-to-face university. Sponsored by the Catalán Government, UOC was instead designed from the outset as a distinctly new virtual university teaching initiative.

The institution was developed in partnership with key stakeholders from Catalonia's public and private sector. The intent was not only to be distinct from, but also to complement the traditional Catalán university system. Within Catalonia's higher education environment, UOC's unique contribution is to provide access to higher education university studies available to any member of society who, because of work, residence, age or other factors, must opt for more flexible learning systems to achieve their educational objectives.

History of Catalonia's Higher Education System and Case Study Organisation

This case study offers an overview of the genesis, development and subsequent consolidation of the *Universitat Oberta de Catalunya* (UOC), the first fully distance teaching university in Spain to deliver higher education via the Internet. However, to fully understand and appreciate the distance education experience in Catalonia, we must step backwards in time to the 1930s, when the *Mancomunitat de Catalunya* created the *Extensió Tècnica Professional*, a classical correspondence school focused exclusively on vocational studies. Nonetheless, prior to 1975, Catalán was not an officially recognized language in Spain, and therefore independent initiatives were simply not possible. But times have changed. Today, people from different regions of Spain live in Catalonia. More significantly, for the past two decades, an autonomous government called *Generalitat de Catalunya* has guided Catalonia, making it a unique and important region within the boundaries of modern day Spain.

Due to its geographic location in the northeast region of Spain, Catalonia has also become a melting pot. As the region of Spain that both borders the Mediterranean Sea and is closest to the rest of Europe, Catalonia has played a strategic role in the development of maritime commerce. More importantly, Catalonia is unique in that it has its own distinct culture and language called Catalán. Both Catalán and Spanish are spoken fluently; Catalán is understood by the 99 per cent of population, while 100 per cent speak Spanish.

Until 1995, the only distance education provider in Catalonia was the Spanish National Distance University (UNED), which began in 1972. However, because of its unique regional culture, linguistic history, and newly autonomous govern-

ment, Catalonia now provides quality traditional education, as reflected by its conventional universities such as: the *Universitat de Barcelona*, the *Universitat Autònoma de Barcelona* and the *Universitat Politécnica de Catalunya*. More recently, the *Universitat Pompeu Fabra* was created, while territory-focused universities such as the *Universitat Rovira i Virgili*, *Universitat de Girona* and *Universitat de Lleida* have also gained their independence. Since 1990, private universities have also been legally recognized in Spain. For instance, *Universitat Ramon Llull*, *Universitat Internacional de Catalunya* and the *Universitat de Vic* were all established in 1995. But when UOC came into existence in 1995, none of the above mentioned institutions offered virtual learning programmes.

We will now explore the university in greater detail. First the societal and institutional environments that influence UOC will be examined, including structural elements designed to manage UOC's new university model, the culture that must ultimately support and sustain it, and the processes that help guarantee UOC's quality of teaching, learning and research. The main focus of this institutional case study is the UOC Virtual Campus, the first of its kind – a truly virtual learning environment that has allowed the University to significantly increase its student enrolment numbers, without experiencing significant technical problems.

Following this analysis, the main aspects related to the evolution of the UOC, its pedagogical model, and its user community will also be examined. Important lessons learned by the UOC, and how these lessons are likely to guide further development in coming years will be examined. Finally, this article will end with a brief overview of future projects.

Modern History

In 1999, the Catalán Government officially endorsed a strategic plan called "The Digital University," designed to facilitate university initiatives. A wealth of experience has subsequently been gained, and continues to be gained, in sharing courses in the same virtual space.

Institutional Environmental Demands at UOC

Faced with the challenge of establishing an innovative system of distance education to address emerging needs of its citizens, the Catalán Parliament approved the establishment of the *Universitat Oberta de Catalunya* (UOC) in March 1995. Headquartered in Barcelona, this new university was to be distinct from all others in that it was to focus exclusively on virtual education, a delivery mode that allowed previously shut doors to be opened to large segments of so-

ciety who, by necessity or inclination, chose to combine work, family, particular lifestyles or personal factors with virtual learning to achieve their educational objectives. This new university was also designed to complement to Catalonia's existing university system. As a fully accredited university, the goal of the UOC is to provide the highest quality university education based on distance learning, using the latest information technologies delivered via the Internet. UOC's students reside not only in Catalonia, but also throughout the world.

In recent years, society has become increasingly aware of the need to base education not only on traditional face-to-face interaction between a teacher and a student, but also in virtual classroom settings. In Europe, as elsewhere, a new paradigm is being consolidated and adapted to respond society's emerging needs, changeable and diversified in terms of age, activity, economic level, place of residence, and personal situation. UOC was created to address emerging needs related to the transition of Catalonian society towards lifelong learning. Based on a flexible and open education model, one designed to maximize advantages of current and emerging information society technologies, UOC was to be an efficient alternative of distance higher education with the following characteristics:

- A commitment to be rooted in the cultural, social and linguistic reality of Catalonia, while remaining open to the world

- Knowledge availability for everyone, despite time and space constraints

- A special focus on lifelong learning

- Use of high quality and innovative teaching and learning models

- Intensive application and use of new information and communication technologies

- A commitment to research and development in the emerging information society

- Service to the student and the society

- Cooperation and coordination with the country's university system

- An ethical commitment to society

- A new university organisational model

UOC has a clear worldwide service vocation. For this reason, in the year 2000 the university started offering courses in Spanish, allowing it to expand its academic boundaries to include the rest of Spain and to penetrate new markets in Latin America. English language course offerings are also coming soon to UOC.

The educational model used by UOC is based on an innovative teaching and learning system, which encourages students to feel part of the university community in terms of communicating and learning with others. Therefore, students acquire knowledge not only through what it is taught to them, but also by means of the interaction and co-operative work with other members of their academic community.

Distinguishing Structure, Culture and Processes of UOC

It was clear from the beginning that in order for UOC to succeed, it had to be agile, flexible, competitive, and cooperative and therefore, could not be organised as a traditional university. Rather, it had to be organised with an eye towards the future – a future in which the university would be responsive to both innovation and systemic improvement. Functioning as a not-for-profit foundation, the Catalán Government held the majority in its trusteeship. Other important trustees included the Catalán Chamber of Commerce, the Savings Bank Consortium, the Catalán Broadcasting Corporation, and a number of publishing companies. In response to previous proposals forwarded by the Foundation's trustees, the UOC's current Rector, Gabriel Ferraté, was appointed by the Catalán Government in 1995.

UOC Structure

As mentioned previously, the organisational structure and working style UOC differs in its organisation and working style from traditional universities. To achieve the flexibility necessary in its human resource allocation, UOC has adopted a "shamrock" organisational model shown in Figure 1.

. **Figure 1. UOC's HR organisational model**
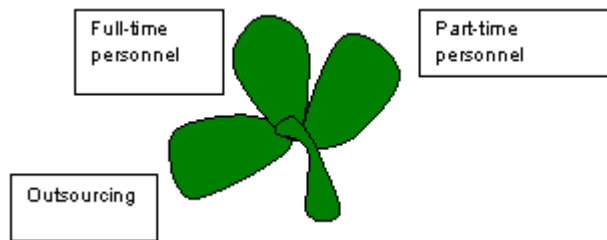
In terms of fees paid by students, UOC is a state university, but in terms of its

internal operations, UOC is run more like a private company than as a traditional higher education institution. Recognising the need to be flexible enough to respond to the demands of a rapidly changing society, the university has adopted a new management and organisational model based on a process management system (PMS) that is implemented by three commissions: (1) Strategic Commission, (2) Educational Programmes Commission, and (3) Operational Commission.

The main reasons for adopting this model are: (1) to increase its client-oriented philosophy; (2) to avoid barriers by adopting a horizontal communication structure; (3) to generate better staffing systems to participate in the success of the project; (4) to improve internal information and communication systems; and (5) to promote quality assurance for all processes.

This non-bureaucratic management system implies agile co-ordination, generates participation and empowerment amongst staff, ensures communication and facilitates workflow, makes possible the integration of client and marketplace voices, and encourages continuous improvement procedures. In simple terms, it is vital that the PMS model be periodically updated and be public and collective. In light of changing organisational requirements, it also involves revisiting the institutional mission from time to time, periodic evaluation of management to implement improvements, and continuous self-assessments to optimise quality assurance.

The day-to-day business of teaching and learning is structured in the following ways. UOC's faculty is comprised of three different types of educators who carry out distinct teaching activities. Professors, for instance, are full time teachers who design the teaching plan of each subject and are responsible for overall course content. Counsellors are distance mentors who guide students through their studies. Tutors are distance teachers who are experts in given subjects. Instead of having usual face-to-face contact with students, UOC faculty members use communication technology to provide guidance, advice, and the tools to help students carry out their own learning. Instead of acting as sources of information, they act as facilitators of learning.

Depending on the number of students enrolled, counsellors and tutors are usually faculty from other universities or professionals within their fields of expertise who are contracted on a flexible term-to-term basis. Teaching coordinators train and coordinate full-time teachers, counsellors and advisors. Instructional designers who design the learning materials from a pedagogical and methodological point of view also give guidance to authors. UOC's management work as a team in subscribing to the EFQM,[3] a business model designed specifically to help European businesses to make better products and to deliver improved services (in this instance, virtual education) through effective use of leading edge management practices.

Faculty and Staff development

The Human Resources Department operates a training plan for UOC staff that must be flexible, wide in scope, and structurally open in order to incorporate the new educational necessities as they emerge. The structure of UOC's training plan consolidates specific fields of knowledge corresponding to the evolving necessities of the organisation. Training programs are divided into areas such as development, abilities and techniques, training new staff, and languages.

Different modalities of the training plan may be classified into three areas. First, taking place during working hours, internal training addresses the needs of UOC staff who share the same technical or organisational skills. Second, external training is organised by other institutions for specific purposes. Third, professional training includes professional development seminars, congresses, learning exchanges with other institutions, short courses, and related activities.

Costs and Financing

UOC receives financial support from a number of sources. The Catalán Government covers part of the students' cost, accounting for about half of UOC's income. Student tuition and fees contribute a third of the total cost. The university makes up the remainder through provision of consultancy services, the management other programmes, and transfer of its business model and assessment structure to other institutions.

Research is funded by agreements with companies and by various public administration entities (Catalán, Spanish and European), mainly through research and development programmes. Companies also contribute to research programmes by sponsoring chairs, observatories and research projects. UOC has also signed agreements with public and private institutions in the region in order to share such resources as teaching staff, library resources and buildings. An important part of the investment budget is dedicated to production of content. Over the past six years substantial investments have been made in development of new multimedia teaching material as the core basis of its provision.

UOC has formed a partnership with a publishing company to meet the demands of moving into Spanish-speaking markets beyond Catalonia. Because there will be no public funds for this project, this initiative will be funded by student fees.

UOC Virtual Campus and its Technological Infrastructure

The *Campus Virtual*TM is an Internet based e-learning delivery and support system. It uses client-server Web technology and common interface to integrate a series of services and applications. Developed by the Information Systems Department at UOC, all *Campus Virtual*TM applications provide an efficient environment for tele-cooperation and e-learning, including a series of functions that parallel the structure of a traditional university. These functions include: access to online educational materials, library resources, and general academic and cultural information; student management enquiries service; and interaction with professors and other students through pre-defined communication channels (e.g., forums, activity spaces).

The software creates a widely shared learning space, fostering a sense of educational community where students connect to a virtual community from their homes; receive personal attention; interact with classmates, counsellors and tutors; gain access to university services; participate in virtual work or debate forums; and have the opportunity to come into contact with the Web's extensive university scientific and cultural community. The continuous assessment and development of this platform has allowed UOC to develop a marketable product that can be adapted to a variety of educational contexts. As such, this platform is of considerable interest to other institutions wishing to provide virtual university services.

There are two main characteristics to this platform, called IDEASolutionsTM. First, IDEASolutionsTM has been designed specifically for e-learning via the Internet. The tool allows the creation and management of complex training programs geared towards study, subject areas, and learning modules. In terms of ergonomics and intuitive interface, it is designed to be an easy to use environment for students, professors, managers, and administrators. The IDEASolutionsTM administration tool aims to be flexible enough to manage learning environments across a range of company or departmental contexts, and it has a customisable interface. Moreover, it is language independent. Second, because it is installed on an Oracle Database, Oracle Application Server and Netscape Web Server, it has been developed with the most frequently used programming languages on the market and uses TCP/IP and HTTPS Internet protocols. It is adaptable to the Instructional Management Standard (IMS) for the management of training programs.

As a platform, IDEASolutionsTM aims to provide a scalable, robust, and secure environment that allows for growth as the organisation increases the number of students, professors, managers, and courses online. It has an application programming interface (API), that allows the integration of external applications within the tool, and standardises access to the database. It also has a cus-

tomisable graphic user interface and allows input of various types of teaching materials.

Table 1. Functionality and Features of the UOC *Campus Virtual*TM

Functionality	Software Modules
Interpersonal communication and interaction between online members (individual, group, classroom, community)	Electronic messenger service, chat, debate systems and forums, message monitoring system at user level
Environment structure management, direct access to courses, modules, and work tools	Environment domain administrator
Advanced user management (student registration and modifications)	Administrator of environment users
Single-key, centralised access control to the environment and all its applications	Administrator of environment assignments, license modules, and access key and session key expiration; user validation system (user name and password)
Content management at user level	Remote personal disk system
Classroom-level repository of resources and information	Shared disk
Content management (teaching materials and common spaces) from the environment	Content manager
Integration of external applications	Application Programming Interface (API) system

Software Architecture

As demonstrated in Figure 2, IDEASolutionsTM software is structured through layers and modules that embody user functions (messenger service, personal disk, chat, etc.,) and additional applications (publications manager, help module, training program catalogue, multimedia resource manager). The layers interconnect the modules, control internal and external data transmission, and give support to transversal user services (e.g., graphic interface, integration of external applications through an API, access control, and security).

Figure 2. Modular scheme of IDEASolutionsTM software
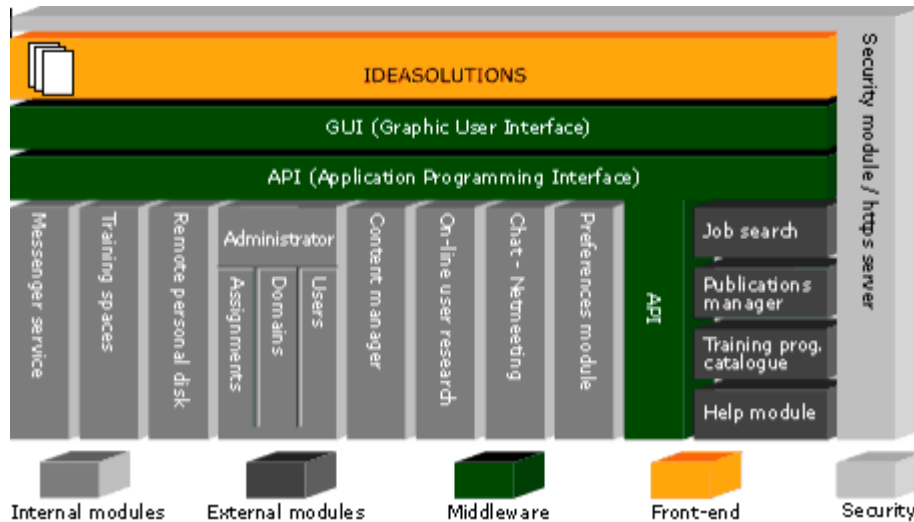
Hardware and Communications Architecture

The system uses one or more SUN servers connected to the Internet. Connections are made through the basic telephone network, ISDN, GSM cell phones, cable, and ADSL, among others. The system can therefore be accessed in remote environments, requiring only an Internet connection and a browser.

Evolution of UOC and Its Community

UOC initially offered two accredited degrees, Psychopedagogy (Educational Psychology) and Business Studies. Today, UOC course offerings include: Education, Business and Economics, Computer Science, Law, Humanities, Information Studies, Languages and Literature, Multimedia Studies, to name just a few. UOC also offers more than 250 different continuing education courses as Masters and Postgraduate Diplomas in the same fields.[4] An international and interdisciplinary Ph.D. on Information Society has also been offered since 2000.

UOC course offerings are mainly based on the needs and demands of Catalán society, as well as the possibility of virtual delivery. One important aim of *Campus Virtual* UOC's Virtual Campus, therefore, is to give former students the option of completing any unfinished studies.

An important challenge is to develop a new pedagogical model that gives pri-

ority to learning over teaching. In this model, the teacher is no longer a mere transmitter of knowledge, but rather a guide in the learning process for which the student is ultimately responsible. The *Campus Virtual* (VC) platform allows for a widely shared training space. The need for a virtual community offering a group learning space that makes possible the creation of an active educational community, was viewed and supported from the beginning in order to allow all members of the community to interact through the VC. From their homes, by means of the VC, students receive personal attention, contact their classmates, counsellors and tutors, have access to university services, participate in virtual work or debate forums, and have the ability to contact with the world's university scientific and cultural communities.

The VC has evolved significantly from its inception in 1995. For example, traditional first-class mail was used for the University's original 200 students. By 1996, email provided a more integrated service for faculty and students. Between 1996 to 2000, additional technological improvements focused on supporting simultaneity of thousands of people in terms of content protection, teaching agenda, personal Web sites, more functional features to develop statistics, students follow-up, etc. Students can participate in the University's different social, cultural and academic activities, as well as access the University's administration services. Students can send messages at any time of day to classmates and professors, allowing them to share experiences, ask for clarification, or make suggestions.

Teaching and Learning Model

Traditional universities are beginning to realise the advantages of these new technologies, and how distance higher education institutions are developing and using them to their advantage. The differences in the application of the technologies leads to three possible models focused on three main variables: (1) students, (2) faculty members, and (3) technological media. Three models evolve from this point of view (Sangrà et al., 1999): media-centred, teacher-centred, and student-centred. UOC has adopted a balanced model centred a little more on the student than on the teacher, and a little bit more on the latter than on the technologies, which must remain a mere tool serving the other two elements. Interconnecting university students, professors and central services, UOC's main objective in establishing this virtual campus model was to overcome time and space barriers, thereby offering students the highest degree of flexibility in order to carry out their studies.

UOC 's Educational Model

Student-centred models endow students with enough freedom to take advantage of the support offered, to plan their learning process and to regulate their own working rate. Every element in the pedagogical model is designed to serve students, allowing them to develop their own learning skills. In order to reach this objective, high pedagogical quality and emphasis on personalised support should be taken into account.

Figure 3. UOC's Student Centred Model.
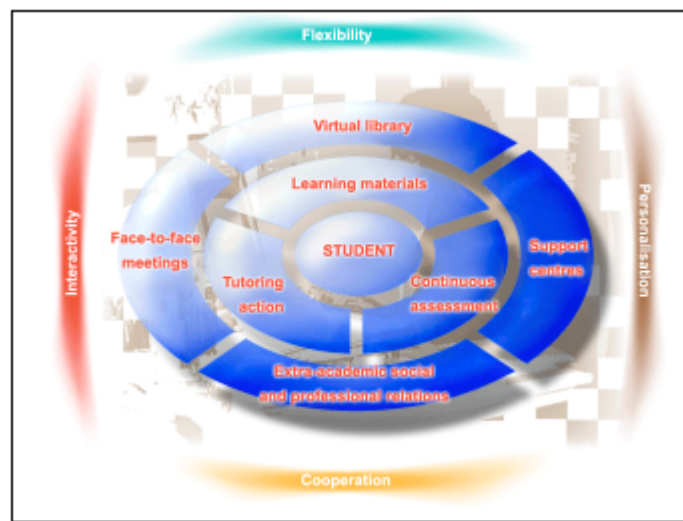
Students

The profile of a typical UOC student is the profile of an adult, one who can complete a degree at the same time that professional students do. Today, five years later, the first cohort of 200 UOC students are in the process of completing their degrees.

However, in continuing education programs perceptions are quite different. These shorter courses are market-oriented in their approach. With a 15 per cent dropout rate, a high degree of student satisfaction, good value, and positive recognition from stakeholder companies, the UOC considers these programs as highly successful.

Since the UOC is not a standard university per se, it is important to consider the particular nature of its student community, primarily an adult population.

Table 2. UOC Student Enrolment 1995 to 2000.
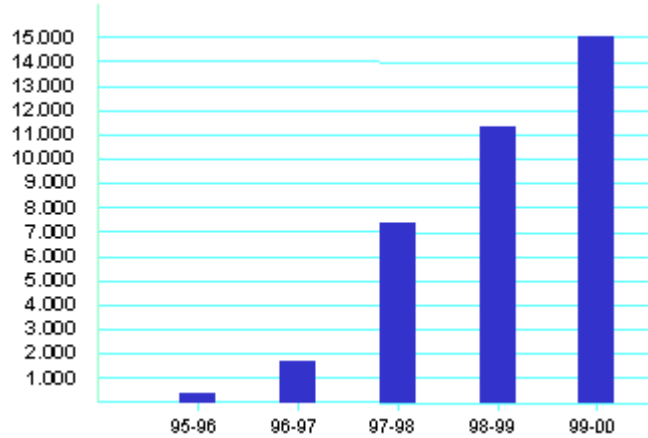
Most UOC students are adults between 25 and 45 years old (78 per cent), most work (95 per cent), and four out of ten have children. Sixty-five per cent have participated previously in university studies, which means that most are experienced students. In recognition of this, UOC is currently promoting a project called RAEP, the objective of which is to recognise and accredit learning students have acquired through prior experience. In this context, there is some history in Anglo-Saxon countries; nonetheless, in the rest of Europe, it is considered a major innovation. A RAEP pilot group was launched in September 2001, and expansion in coming academic periods is anticipated.

Learning Materials

The main role of the learning materials is to gather and transmit the basic content of the course and to present basic objectives, self-evaluation activities, summaries, etc. In short, they are designed to simplify and stimulate the learning process.

When the UOC was established 1995, the Internet, and especially the Web, could not deliver multimedia materials. For this reason, UOC initially sent traditional paper-based materials to its students. However, as technology progressed in terms of delivering rich information in a variety of formats, the University increased its use of CD-Roms and Web-materials, and teaching materials created by collaborative teams of designers and technological specialists (Guàrdia, 2000). Materials can be paper-based or multimedia. To date, more than 650 course materials have been developed by UOC.

Continuous Assessment

To assist students to achieve their learning objectives, the university employs a continuous assessment (CA) system during each semester. This evaluation is optional, as all students still must sit for their final exam(s). To achieve balance, course results are weighted between the assessment of the entire course and final exam results. UOC is currently testing new assessment models in order to increase its flexibility.

Students and professors have the chance to meet face-to-face twice each semester. The first meeting at the beginning of the semester serves as an introduction to the course, and the second meeting at the conclusion of the semester serves as a round-up session.

UOC is setting up a network of local support centres located throughout Catalonia as well as in Madrid, Seville, Valencia and Brussels. Each centre has a media library with all of UOC's multimedia and reference materials, as well as computers connected to the Virtual Campus. Local support centres also have meeting and study rooms students can use upon prior reservation.

The virtual library supports student training and allows students access from their homes to specific resources such as digital libraries, databases, etc., and information services such as documentation, UOC's virtual desk, and materials developed by the UOC Library. Students can also access other Catalán university libraries and services, or navigate through the World Wide Web.

For the UOC, the ideal is to create a learning system where students not only acquire knowledge and build their skills, but also learn to learn. Essential to attainment of this ideal is high quality materials that are carefully designed to be dynamic, intuitive and self-explanatory for students working within a distance education environment.

Intended and Unintended Consequences

UOC is carrying out a long-term study of their initiatives and the results should be available within the next two years. In general, the experience of the UOC suggests that a new type of learning organisation requires a new type of organisational structure, with its staff fully concentrated on a virtual or Web-centric approach to learning. In short, our view is that it is difficult to build up a new university based on an old-fashioned structure. As an e-university focused exclusively on providing learning experiences within the context of e-learning, UOC also benefits from solid support from public administration and from the complete commitment from its senior management at the strategic level. UOC uses a modern and innovative methodological teaching model supported by pow-

erful communication tools as a core effort in the creation an authentic sense of community amongst its students.

Because knowledge creation is considered one of the most important success factors, UOC is also promoting excellence in its field of expertise, namely ICT and its influence on society with special emphasis on e-learning: new ways of delivering learning in an interconnected world. However, this objective can only be achieved through collaboration with other universities, institutions and companies. In short, co-operation underlies all UOC's activities.

Other factors contributing to UOC's success include:

- Its consolidation in Catalonia

- Its is a pioneer in offering fully online accredited courses

- It is the only virtual university offering courses in Spanish

- It offers programs that meet market demand

- It entered the marketplace at a key moment of Internet history

Implications of the UOC's Experience

Currently, the University's first priority is to increase student numbers in Spain and South America. Therefore, UOC will concentrate on the subject areas of business, technical studies and continuous training. It is anticipated that this goal will help break down barriers of time and space, enabling UOC to become a major player in Latin American higher education. In Catalonia, UOC aims to increase the number of courses offered and to maintain its status within the Catalán university system. Likewise, efforts will be focused on research through the IN3 Institute.

UOC is now at a stage in its evolution when quality concerns are pre-eminent. In recent years, traditional universities have witnessed increased demand for online learning, something they view as a threat. These same universities also question whether virtual universities can meet good quality education standards. To address these concerns, UOC has faculty and other personnel involved in support services. As well, university management is looking for and establishing quality indicators to measure UOC's contribution to education. A list of UOC's contributions, as well as its leadership in a European project called "Benchmarking of Virtual Campuses" (BENVIC) can be found at *http://benvic.odl.org*. To create a favourable image and brand recognition for the university, UOC's faculty and staff are also working with key universities and research institutes from several European countries including the United Kingdom, Italy, Finland, Germany, Switzerland and Belgium. Furthermore, some new European and American

universities are in the process of joining UOC. It is anticipated that these efforts will contribute to a complete and reliable picture of distance education as a whole.

Increased flexibility is one of the major issues faced by traditional universities today. Indeed, all students – including those who study at a distance – encounter challenges during the study process. To increase student program completion rates, traditional universities could extend the same kind of flexibility that the UOC model offers. They could also achieve this flexibility by encouraging cooperation among students, raising levels of interactivity of learning materials, and personalising student work plans and curricula.

Currently, the concept of the *Metacampus* is being developed through advances in technology. As such, automatic translation and a multi-dimensional approach, the virtual campuses (Cabrera & Sangrà, 2000) are being examined, as reflected in a two year long project supported by the European Commission.

The development of a new version of UOC's Virtual Campus is another important projects to be undertaken in coming months. Because it is likely student numbers will continue to rise, the Virtual Campus will need to be able to respond to requirements for new levels of functionality. Furthermore, the new version will be adapted to integrate emergent technologies, such as increased bandwidth, mobile telecommunications, etc. With this upgrading of the *Campus Virtual*, UOC's management faces the challenge of managing knowledge inside the organisation itself. Accordingly, UOC has launched the "K2 Project," the objective of which is to organise a virtual space where shared knowledge is easy to find and easy to manage. The K2 Project will achieve this objective by focusing on standardisation and re-usability of the learning material contents ("learning objects").

Although UOC's Virtual University is still in its infancy, its experiences are both broad and enriching. Backed by the confidence of the Catalonia Government, diligent work of the University's personnel, and growing student participation, UOC is achieving its goals and realizing its mandate premised on being agile, flexible, competitive and co-operative. UOC views its future as an opportunity to continuously innovate and improve upon its system.

Conclusions

E-learning is experiencing tremendous growth in Spain. This dynamic is driven by a number of factors, the first and foremost of which is an increasingly competitive society's need for greater and more flexible learning opportunities to achieve continued growth. This explains why so many companies, especially those related to technology, are focused on training. Second, Spain's decreasing birth rate is threatening to lower student enrolments in coming years. While

some believe this will be an opportunity for universities to reduce student/tutor
ratios, more realistically, it will likely result in a dramatic reduction in public
funding. Therefore, most public universities are looking to widen their customer
base and to establish new programmes in the private sector. Third, without
abandoning face-to-face models, conventional universities will introduce ICT in
the classrooms, offering "virtuality" as part of their curricula. As Tait and Mills
predicted in 1999, the hybridisation and convergence between traditional and
distance education will become a reality. Fourth, accessibility to communica-
tions is becoming much easier for many people. Costs are dropping and the
number of Catalonians with home Internet access is rising daily. It is currently
believed that regional bandwidth problems will be eradicated within two to
three years and the rapid spread of mobile communications is expected to bring
new possibilities for e-learners.

As a pioneer, UOC expects to be one of the most important players in the
rapidly growing world of e-learning. UOC can fully contribute to the growth
of e-learning by sharing its experience with others. The university is rapidly
becoming a relevant and profitable partner not only for its e-learning initiatives,
but also for its research initiatives through IN3, its research institute.

References

Cabrera, N. and Sangrà, A. (2000). Teaching and Learning in Virtual Campuses: the *Metacampus Project*. Proceedings 6th ALN Conference, College Park, Maryland.

Guàrdia, L. (2000). El diseño formativo: un nuevo enfoque de diseño pedagógico de los materiales didácticos en soporte digital. In Duart, J.M. and Sangrà, A. (Eds.) *Aprender en la virtualidad*. Barcelona: Gedisa, pp.171-188.

Sancho, T.; Masià, R.; Santamaria, E.; Mas, X. (1999). *Discrete Mathematics: A Web-Based Approach*. Proceedings 19th ICDE World Conference, Vienna.

Sangrà, A.; Duart, J.M., Guàrdia, L. (1999). *Putting the student first: when an innovative model leads to a new way of learning*. *Proceedings 19th ICDE World Conference*, Vienna.

Sangrà, A.; Duart, J.M. (2000). Formación universitaria por medio de la Web: un modelo integrador para el aprendizaje superior. In Duart, J.M. and Sangrà, A. (Eds.) *Aprender en la virtualidad*. Gedisa: Barcelona: Gedisa, pp. 23-50. [Online] Also, available at: http:// www.uoc.es/Web/esp/ articles/duart/duart_pdf_esp.html.

Tait, A. and Mills, R. (1999). *The Convergence Between Conventional and Distance Education*. London: Routledge.

Endnotes

1. As Virtual University we mean a fully distance teaching university, delivering education through an asynchronous mode based on the Internet.

2. It is the original name of the university, written in Catalán. It means "Open University of Catalonia." The acronym UOC will be used along this article.

3. European Foundation for Quality Management (www.efqm.org)

4. http:// www.uoc.es/fcontinuada/esp/ index.html.

Ukraine Open University: Its Prospects in Distance Education Development

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Abstract

The genesis, initiation, and expansion of distance education at the Ukraine Open International University for Human Development, located in Kyiv, will be examined in this case study, starting with a brief look at the positive changes taking place in Ukraine's traditional educational system, as well as recent developments in the country's distance education (DE) system. To help readers understand the University's development from an insider's perspective, societal factors that currently influence its inter- and extra-institutional environment will also be examined. Next, the history, organizational structure, institutional activities, and background of the Ukraine Open International University for Human Development, along with the reasons driving the University's dual mode activities - both traditional and distance education - will be briefly analyzed. Included in this analysis is a summary of the challenges surrounding the application of both traditional and distance education models.

The author concludes his case study by reflecting upon Ukraine Open International University for Human Development's experiences within the context of its being both a traditional education provider and new dual-mode distance education provider. Also discussed are some key indicators and predictions about what the future may hold for the University.

Introduction

The history of distance learning (DL) development in Ukraine can be divided into three stages of innovation: (1) correspondence; (2) mail and television/radio/satellite; and (2) the Internet and the World Wide Web (Matthews, 1999). The first stage was comprised of print-based correspondence courses that have been in use since the late 1920s. The second stage, spanning from the early 1980s to the present, used emerging technologies that combined television, radio and telephone with print. Heralding the arrival of the third stage, Ukraine's higher educational institutions are now introducing Internet and World Wide Web technologies into its educational processes in response to emerging needs of full- and part-time students, as well as for the country's distance learning students.

To help readers understand what is happening in Ukraine today with regards to distance education, this case study will explore the experience of one institution: the Ukraine Open International University for Human Development (Ukrainian abbreviation is VMUROL) and its attempts to position itself in the face of rapid changes underway. The developments described in this case study go beyond mere hybridization of distance with traditional face-to-face forms. Rather, it focuses on the evolution of new forms of learning enabled by new information and communication technology. The University now finds itself planning for future learning environments, situations that encompass both hybridization and increased flexibility in the provision of distance programs.

Higher Education in Ukraine

To understand the changes occurring at VMUROL, it is important to appreciate the various contexts in which the University operates and from which the drivers for change derive. Since gaining its independence in 1991, Ukraine has been forging ahead to develop its own educational system to match and meet its own needs. In recent years, Ukraine's universities have become pioneers in introducing distance education in this country.

Today, Ukraine's educational system can be divided into the following structures: (1) basic schools; (2) vocational and technical secondary schools; and (3) higher schools that offer four levels of accreditation. As of 1998/99, there were 653 institutions at the first and second levels of accreditation, and 298 institutions at the third and fourth levels of accreditation (institutes, academies, universities). These educational institutions served 503.7 thousand and 1,210.3 million students respectively (Osaulenko,1999).

Since 1991, tremendous and positive changes have taken place in Ukraine's educational system. They are as follows:

- Non-state (private) educational institutions have appeared.
- All state educational institutions have a right to develop their non-state or private sector. (The state only pays for training academically advanced students, while the remainder are financially responsible for their own tuition).
- Institutions have more rights and choices in the organization of their teaching/learning activities.
- A new educational system that coincides with the western one is also being introduced.

Prior to 1991, students studied for five years at the higher schools to become specialists in fields such as engineering, education, and medicine for example,

after which, and depending on their previous academic speciality, they could engage in post-graduate studies to obtain a scientific degree of Kandidate Nauk (Sciences) in technology, medicine, philosophy, or philology. Finally, students could proceed to research and write their doctoral thesis.

Today, Ukraine's universities offer a combination of its previous educational system and the western one: Bachelor's degree (4 years); Master's degree (+ 1-2 years), then *Kandidate Nauk* (+3 years); and finally, *Doktor* (+3 years). Academics who have obtained the status of *Kandidat Nauk* can work in Ukraine's educational institutions, where they will likely have the position of Docent; at research institutions they will likely hold the position of senior researcher. Academics who have obtained the status of Doktor may either hold a position of Professor in one the country's educational institutions or a lead researcher at one of its research institutions.

Other positive changes include:

- Students can now study abroad.

- Foreign educational institutions, as well as joint ones, can now work in this country.

- International cooperation in training specialists and compiling educational materials with our foreign partners has increased.

- Introduction of new teaching/learning technologies in Ukraine's educational institutions has moved the educational process from a teacher-centered to learner-centered orientation.

- Students have a wider choice in place, time, language, etc., of learning

From an historical perspective, Ukraine has always been well known throughout the world for its fine system of universities. *Kyiv Mohyla Academy* (1632), the *University of L'viv* (1661), the *University of Kyiv* (1834), and the *L'viv Polytechnic Academy* (1844) were some of first higher educational institutions in Europe and the world. These universities are currently able to meet the demands of Ukrainian society as reflected in student enrolment. However, their ability to enrol students in the future will be limited, due to rapid changes occurring throughout Ukrainian society. To remedy this situation, new education technologies are being introduced in different science and technology programs. As well, new professional programs are being introduced into Ukraine's university system to help address the emerging needs of our country's industrial, agricultural, professional and business sectors. In short, Ukraine's citizens now require training and retraining to meet the growing demands occurring in Ukrainian society. In response, newly founded state and non-state universities, academies, institutes are beginning to appear in Ukraine's cities, with affiliates located in small towns and abroad.

In spite of all the changes currently facing Ukrainian society, government funding for higher education has diminished considerably, requiring public sector educational institution to secure new sources of revenue to fund future growth. As a direct result, the majority of newly founded institutions are not public institutions, but instead non-state or private sector ones, including the subject of this case study, VMUROL.

In comparison to well-known state institutions that use traditional methods of teaching and learning, the newly emerging private sector institutions have more flexibility regarding expenditures to increase their competitive advantage in the Ukrainian education marketplace. One such cost effective measure is the introduction of innovative technologies that support distance-learning initiatives.

However, until the year 2000, there was no legal provision in Ukraine for its education institutions to pursue distance-learning initiatives. This situation changed in the summer of that year with the signing of legislation intended to foster the development of distance education: the "Decree of the President of Ukraine: Measures to Develop the National Component of the Internet Global Information Network and Provide Broad Access to this Network in Ukraine," and the "Order of the Ministry of Education and Science of Ukraine" (Minister order #293, July 2000). In connection with the creation of the Ukrainian Distance Education Center at the National Technical University in Kyiv, and International University of Finance, the main objective of this legislation was to create a viable system of post-secondary distance educational options throughout the country in accordance with the mandate of the National Program of Information.

In reality, however, distance education had been developing in Ukraine for nearly two decades before this "official legislation" was signed into effect. For example, 1996 saw the first international project (UNESCO/IIP) on distance education, launched by the International Research and Training Center of Information Technologies and Systems (IRTC). Headed by Dr. Olexyi Dovgialo, the Center was founded in 1986 on the basis of research conducted at the Department of Dialogue and Educational Systems at the Hlushkov Cybernetics Institute. As well, the IRTC had been cooperating with UNESCO since being founded in 1986 and was a co-organizer of the second UNESCO Congress "Education and Informatics," held in Moscow, Russia in 1996 (Dovgialo et. al., 1996). On the basis of these developments and of the ongoing work performed at IRTC, the International Center of Distance Education was founded in October 2001.

The Problem Laboratory of Distance Education, headed by professor Volodymyr Kukharenko of the Kharkiv National Technical University, is another well-known distance education research center. Located in the eastern part of Ukraine, the laboratory was founded in 1997, although the basis for the organization of DE at the University was developed in the 1991-1996 time frame. The chief aims of the laboratory are the development of distance courses, software, methodological materials, and to research challenges currently facing distance education. Since

1997, the University has been conducting an online seminar, "Methodological Problems of Distance Education."

The Technology Promotion Center at L'viv Institute of Management (LIM), situated in the western part of Ukraine, is likewise a reputable source of distance education research. LIM is a privately owned higher educational institution that, in spite of its private status, cooperates with many state and non-state institutions in the eastern and western parts of Ukraine, as well as abroad.

Although too numerous to list here, there are several other higher education institutions currently engaged in researching and developing distance education in Ukraine, most notably: Taras Shevchenko National University of Kyiv, Kyiv National University of Trade and Economics, Kharkiv Technical University of Radioelectronics, Lvi'v Polytechnic National University, Donetsk National University, and the Vinnytsia State Technical University.

The Ukraine Open University

The Ukraine Open International University for Human Development (Ukrainian abbreviation is VMUROL) is the first truly open university of its kind in the country. Registered as a not-for-profit private sector institution in 1998, VMUROL's founders are the Kyiv State Administration, the Ukrainian League of Invalids, the International Centre of Human Development, and various regional state administrations.

VMUROL's main premises are currently housed in a three-story building located in downtown Kyiv. Other buildings currently rented are located in different areas of Kyiv. Recently, the State Administration of Kyiv has allocated an additional 14.5 acres for a new campus, that is currently under construction, and will include several two, three, and five-story buildings totalling 10,000 m2. It will also include lecture rooms and laboratories that will enable VMUROL to establish and deliver specialized services such as a career centre, rehabilitation centre, library and information centre, engineering laboratories, design laboratory, computer laboratory, social studies centre, and law centre, to name just a few.

The mandate of VMUROL is as follows:

- To provide access to higher technical and humanities education to any person, residing in any region of Ukraine.

- To widen access to higher education, especially for the disabled and for those residing in isolated rural areas.

- To modify examination and study regulations in recognition of people with

> special needs, especially those with disabilities who must be given equal opportunities to participate.

- To initiate curriculum development and integrate it into the European and world educational community, using new and emerging teaching technologies.

- To integrate people with disabilities into society (especially under market conditions), by providing access to good professional training at the institution oriented at this specific segment of population.

- To conduct preparatory and career guidance courses for entering higher educational establishments.

- To initiate and engage in research.

Currently, VMUROL offers students 31 degree programs in the following fields of study:

- Humanities (Social Work, Psychology, Languages, Publishing and Editing)

- Law

- International Relations (International Law, International Information, International Economics)

- Medicine (Physical Rehabilitation, Medical Engineering)

- Economics and Business (Banking, Accounting and Auditing, Marketing, Trade, Environmental Economics)

- Engineering (Computers, Everyday Electronic Equipment, Catering, Technology of Building Constructions and Materials).

With the mission of serving educational and training needs of Ukrainian people, industry and business on a region-by-region basis, VMUROL affiliates are located in all regions throughout the country. VMUROL also cooperates with the Higher School of Business (*Wyzcza Skola Biznesu*), in Ostrowiec Swietokrzyskiego, Poland and the University of Applied Sciences in Heidelberg, Germany.

Course Subsystem

To be a leader in higher education delivery means today's universities must employ the newest teaching and learning technologies to their strategic advantage.

One such technology used in the delivery of distance education is the World Wide Web. However, despite the above listed technological advancements, it is still difficult to find a new distance education model that fully addresses the unique needs of Ukrainian society, primarily because of the current economic climate in the newly independent country. As a result, VMUROL relies heavily on traditional education models and established elements of distance education technology such as audiocassettes, video-films, CD-ROMs, and electronic textbooks, to meet the growing demands of its students. This is especially true for part-time students enrolled at the University and its affiliates.

Nonetheless, top calibre instructors, programmers, and engineers are invited to work at the University, some coming from well-known Kyiv universities. As well, many of VMUROL's faculty come from other regions in Ukraine, as well as other countries. Currently, teams of instructors, programmers, methodologists, psychologists, and course designers are compiling distance courses for all subjects taught for first and second year students specializing in nine of the 31 degree programs mentioned above. It is anticipated that next year many of VMUROL's first-year students studying these nine specialities will enjoy the use of a distance education model that addresses their unique needs as Ukrainians. Distance courses developed in other Ukraine universities and abroad are also being purchased by VMUROL.

Unfortunately, VMUROL does not have much experience compiling distance courses on its own at this time and the underlying standards or criteria for evaluation have yet to be agreed upon. This is why VMUROL is partnering with foreign educational institutions, creating research and design teams whose objective is to compile distance education courseware designed to address the unique needs of Ukraine's citizens and, where applicable, licensing these courses for use at home in Ukraine and in other countries. For example, the author is currently designing a distance course for students studying English at VMUROL, using a textbook entitled: "Getting on in English" (Corness & Haiduk, 1998) as the basis for its curricula. Produced jointly by VMUROL's faculty of Foreign Languages, the Lviv Polytechnic National University, Ukraine, and the School of International Studies and Law, located in Coventry University, U.K., this text was also funded with the assistance of the European Union-sponsored Tempus-Tacis Joint European Project. The next step in this project is joint compilation of the distance course.

Another important objective for international cooperation is compilation of distance courses for the disabled. Such courses will be planned and compiled in cooperation with partners from the USA, UK, Norway, Netherlands, Poland and other countries that have a wealth of experience to share and transfer. VMUROL is also developing a traditional education model, signalling its intent to be a dual mode university in the near future.

Student Subsystem

VMUROL is open to applicants who have earned their Secondary Education Certificate. The year 1999 saw the first cohort of full-time and part-time students enrolled in a four-year Bachelor's degree program (a one-year Master's program will be offered in the near future). The University does not discriminate on the basis of gender, race, nationality, religion, either in the recruitment of teaching staff or in the admission of students. A written entrance exam takes place during the July - September time frame each year. To gain admission to VMUROL, prospective students must pass rigorous testing in Ukrainian language or literature, Ukrainian history, plus one subject in biology, chemistry, mathematics, or English, depending upon their choice of academic speciality. To date, VMUROL's student body has grown dramatically, and the University has managed to establish a solid reputation with its partners in business, innovative technologies, and engineering.

VMUROL operates on a trimester system, wherein students attend classes from October to December, January to April, and May to July. Currently, the number of full and part-time student enrolees stands at about 11,000, ten percent of whom are considered disabled in areas such as: vision, auditory, spastic, and/or other medical restrictions. Considering that in Kyiv alone the number of disabled students attending university exceeded 35 percent for the academic year 2000 - 2001, VMUROL is clearly making an important contribution to society.

VMUROL deploys several methods of learner assessment and evaluation.

- Modular system of knowledge assessment
- Course projects
- Individual tasks in the form of lab works and essays
- Student's scientific work in the form of writing articles and conference reports

To obtain funding, VMUROL cooperates with various government agencies, universities, international organizations, and individual donors, all of which encourage the application of new educational technologies to help solve social problems. Such donors have been conferred the rank of Honorary Founder of VMUROL. Municipal government grants and Kyiv State Administration also step in to provide grants for disabled and socially unprotected students, whereas the Ukrainian League of Invalids and donors provides grants for students with disabilities in regional affiliates. Other sources funding include payments to students for fees awarded by juridical and physical entities and firms, and grants.

The University's main expenditures include the creation of the material and technical base of the University, provision of educational and methodological

processes, staff salary, and study payments of medal-holders and winners of international school contests.

Faced with information overload in the form of new and different subjects, as well as a dearth of textbooks and other educational media to facilitate learning, Ukrainian students are working towards earning their degrees despite these obstacles. One of the purposes of our Distance Education (DE) Center is to help students overcome these obstacles. For example, VMUROL students have access to audiocassette, video, CD-ROM, electronic versions of their lecture courses, textbooks and other materials. These materials are currently the mainstay of our students' library, computer and language laboratories, all of which can be accessed by students who have computers at home or their office.

Regulatory Subsystem

VMUROL's structure is determined by the President of the University as guided by higher education regulatory requirements of the state. In accordance to Ukrainian education law, VMUROL's President is appointed by the University Council, the University's supreme managing body responsible for the organizational and administrative concerns of VMUROL staff in areas such as workload.

The main structural subdivisions of the VMUROL are:

- Educational and methodological department

- Seven faculties and their departments in Kyiv

- Affiliates in 26 cities and towns throughout Ukraine

- A library, Distance Education Center, Linguistic Center, Monitoring Center and other structures that provide educational activity at the University

Functions of the Scientific and Methodological Council are:

- Determination of the main trends of educational and methodological scientific research work

- Approval of curricula and programs on all subjects at VMUROL

- Recommendations for improving the educational work

- Approval of textbooks, courses, lectures and other educational materials

- Determination of the main content and the structural subdivisions of the University

- Academic programs

As previously mentioned, courses for all subject areas are developed by course lecturers and instructors; however, prior to gaining acceptance, all courses and programs are discussed and reviewed by the Department Council and confirmed by the Scientific and Methodological Council of the VMUROL. The forms of studying at the University are: full-time studies; part-time studies; correspondence studies; and distance learning (this mode was proposed to students in 2001). VMUROL offers classes leading to the Bachelor degree (4 years) and a Specialist degree (5 years). Both degrees may be earned either on a full-time, part-time, or distance basis.

Logistical Subsystem

Currently, VMUROL employs about 200 full-time faculty members and about 1,000 part-time and visiting professors. Five people make up the staff at the Distance Education Center. University affiliates also house offices of the Center.

Staff members of the Center and its affiliates are encouraged to participate in different traditional and online training sessions, seminars, and conferences held by both domestic Ukrainian and foreign institutes and universities (Topical Issues, 2000; Topical Issues, 2001; Shunevych B., 2001). VMUROL holds seminars and training sessions for teaching staff that focus on the different problems of DE, such as compiling distance courses.

Technological Subsystem

Over the past five years, Internet connectivity has grown considerably in Ukraine. Fiber optic cables, Ukrainian "Sich" satellite, radio Ethernet, as well as a combination of other satellites and telephone lines are currently being used. However, there remains an overall lack of modern communication connectivity in Ukrainian cities, small towns, and villages, primarily due to the high cost of telephone and Internet access. Computers are gaining acceptance, similar to what other established technologies such as radio, tape-recorders, and television initially encountered. Despite the costs, the number of computer users has increased considerably and Internet access has expanded across Ukraine during the past five years. Inexpensive or free Internet access may be obtained at all Ukrainian universities, colleges and many high schools; research institutions; IATP centres founded in Ukraine for American program alumni and student research work; and British Council offices located in many Ukrainian cities. Internet access, albeit more expensive, may also be obtained at Internet-cybercafes, computer clubs, and the workplace.

The Future of Distance Education Development at VMUROL

At present, VMUROL provides access to traditional modes of teaching using the newest methods of pedagogy such as project methods and case studies. As mentioned earlier, one of the chief aims of the University is to provide education and training based on modern technologies, including distance education. In the near future VMUROL will become a dual-mode (both face-to-face and distance education mode). Its courses and programs will be initiated and expanded for delivery in either traditional or solely distance education formats, as well as a hybrid mixture of both conventional and distance education models.

As with any other educational institution in Ukraine, VMUROL faces chronic funding shortages, especially for development of its own materials and a technical base for its traditional educational model. This is the main reason why VMUROL is working to improve its programs using distance learning technology.

At present, lecturers and instructors employ elements of distance teaching for full- and part-time students. The next step, therefore, will be to compile our own distance courses. Prior to the compilation phase, all the necessary methodological materials will be assembled by VMUROL's Distance Education Centre (Information, 2000; Talanchuk, Shevtsov; Bazhan, Hemba, 2001). All necessary software and hardware will also be predetermined by the Distance Education Center. From time to time, seminars on different problems of distance course compilation and delivery have been prepared by the representatives of VMUROL's Distance Education Centre as well as representatives from other Ukrainian distance education centers.

At this time, it has been determined there is no necessity to adopt DE using so-called "case technology" (Shunevych, 1999). Instead of case technologies, VMUROL has elected to design delivery of distance learning courses using Internet technologies (Shunevych, Kokhan, 2000). On the basis of the research performed by Ukrainian and foreign scientists, new technology will be introduced in the educational process. In Ukraine, such investigations are being conducted in major cities such as Kyiv, Kharkiv and L'viv.

Problems exist concerning communication between the University and its affiliates; these problems also include lack of Internet access for some of our affiliates. As a result, VMUROL is only able to use certain elements of distance learning technology at this time. Nonetheless, VMUROL's DE Center is working to develop electronic versions of self-training courses on mathematics, Ukrainian language and other subject areas for secondary school students wishing to enter the University. This work is being accomplished with help from VMUROL's partners in Ukraine and abroad who have experience using distance learning modes at their institutions: the Higher School of Business (Wyzcza Skola Biz-

nesu), Ostrowiec Swietokrzyskiego, Poland and the University of Applied Sciences, Heidelberg, Germany are two such partners.

Conclusions

It is premature to specify what VMUROL's has learned in initiating and expanding its distance education activities. Nevertheless, VMUROL's staff members have learned some important and valuable lessons:

- Initiators/leaders who appreciate the central necessity of these technologies, as well as those who know how to manage distance education at the institution are needed to introduce and expand the newest technology in an educational institution.

- Foreign experience can complement our own methodology in the compilation of educational materials (Shunevych, 2001).

- Cooperation with VMUROL's foreign partners can facilitate compilation of courses and their licensing abroad.

- Large-scale investments are needed prior to introducing the newest technologies.

- Initiation and expansion of distance education must be achieved on the state level. Prior to the year 2000, there were only private sector initiators of DE in our country. But after the above-mentioned President's decree and Ministerial order, state educational institutions began to introduce DE activities.

- It is not uncommon for staff to resist changing their habits to employ new methods of teaching and learning. However, in VMUROL's case, staff members were more commonly initiators of change, principally because they participated in conferences abroad.

- The institution can benefit from inviting experienced instructors, managers, programmers and the like, from other educational institutions and firms to develop distance courses and deliver lectures.

In light of the present economic crisis in Ukraine, along with the related lack of modern communication infrastructures in our cities, small towns and especially our villages, only a few state operated higher education institutions can afford to purchase modern computer technology and access the Internet. In short, due to issues stemming from lack of funding, access, and physical infrastructure, DE courses are not widely used in Ukraine. VMUROL and other private sector higher educational institutions are filling the void and also finding themselves

flexible enough to capitalize on cost-saving opportunities to introduce and use innovative educational technologies such as the Internet. Distance learning technologies enable private sector institutions to be more competitive compared to many well-known state institutions that use more traditional methods of teaching and learning. Indeed, many people by reason of disability, infirmity, work, or residence, often cannot attend traditional universities; VMUROL is there to fill this void.

Many challenges face VMUROL. For instance, the University requires highly qualified specialists to compile educational materials for use in all majors and professional disciplines. Likewise, knowledgeable tutors are needed to conduct these courses. To remedy this situation, seminars are currently being held for teachers and students to help them to successfully teach and learn using new education technologies. Prominent specialists hailing from both Ukrainian and foreign educational institutions are also delivering lectures focused on distance education.

Another challenge faced by VMUROL is the compilation, organization, and eventual delivery of preliminary distance education courses targeted at secondary school students wishing to gain entrance into the University. Once such courses are organized by our Distance Education Center offices located at VMUROL's affiliates, they will be disseminated to other towns and rural territories.

Providing access to technology is another challenge. In this instance, networked computer and language labs will soon be installed at VMUROL's affiliates, that will enable the University to communicate more effectively with its part-time students, as well as provide a more robust platform upon which to deliver and teach the DE course material currently under development.

In order to reduce students' need to pursue their university studies in other Ukrainian cities or abroad is another challenge, VMUROL cooperates with many Ukrainian and foreign educational institutions. In the future, it is anticipated increased inter-institutional cooperation will lead to the creation of a virtual institute or university that will enable Ukrainian and foreign students to earn a certificate or degree without changing their place of residence.

In summary, the author is confident that all Ukraine's state- and non-state-owned higher educational institutions will soon be engaged in hybrid distance education initiatives on varying levels to combine traditional education with the newest technologies available.

References

Dovgialo O., Hrytsenko V., Hurdzhy A., Zgurovsky M. (1996). *Educational Policies and New Technologies.* Proceedings from the 2nd International UNESCO Conference on Education and Informatics, Moscow, Russia.

Corness, P. Haiduk N. (Eds.). (1998). *Getting on in English.* Lviv, Ukraine: JV BaK

Information About Distance Education in the World and Modern Information Technologies (2000). (Talanchuk, P. Ed.). Kyiv, Ukraine: VMUROL. (in Ukrainian).

Matthews D. (1999). The Origins of Distance Education and its use in the United States. *T.H.E. Journal*, 27, 2, 54-67.

Osaulenko O. (1999). *Statistical Yearbook of Ukraine for 1999.* Kyiv: Technica, p. 432 (in Ukrainian).

Shunevych B. (1999). Case Technology of Distance Education. Proceedings of the Conference on Innovative Trends in the Foreign Language Instruction. (p. 55) L'viv, Ukraine: LTA (in Ukrainian).

Shunevych B. (2001). *Educational Materials for Foreign Language Distance Learning.* Proceedings of the 20th ICDE World Conference on Open and Distance Learning: Learning for the Future: Shaping the Transition. Düsseldorf, Germany, 1-5 April 2001, [Online] *http://www.icde.org* (in English)

Shunevych B., Kokhan A. (2000). *Network Technology of Distance Education.* Proceedings of International Conference on Linguistic and Methodological problems of Foreign Languages Instruction. 23-25 Poltava, Ukraine: UMSA (in Ukrainian).

Talanchuk P., Shevtsov A., Bazhan V., and Hemba V. (2001). *Creation of Didactic Materials for Distance Form of Education.* Kyiv, Ukraine: VMUROL, p. 48 (in Ukrainian).

Talanchuk P., Onkovych H. (2000). Topical Issues of Disabled Student Education.

Kyiv, Ukraine:VMUROL, 384 - 401 (in Ukrainian)

The University of Texas System TeleCampus: A Statewide Model for Collaboration

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Abstract

The University of Texas (UT) System has been meeting educational needs of students for over 150 years. In 1997, the UT System initiated the development of the UT TeleCampus, a centralized facilitation point for distance learning. The TeleCampus opened its virtual doors in May 1998, focused entirely on support services for students. By late 1998, the TeleCampus had begun developing what would become collaborative benchmark online programs for the UT System.

As a result of having developed over 12 complete online degree programs since that time, many lessons have been learned about (1) barriers to collaboration and how to overcome them; (2) faculty development and interaction; and (3) the commitment required to build successful online programs.

This article describes the UT TeleCampus initiative and how it has grown from a services-only organization to a nationally recognized model for delivering high quality distance education.

Introduction

The University of Texas System has been meeting the educational needs of students for over 100 years. The current 15 component campuses (nine academic/six health and medical) and 150,000+ students, geographically dispersed throughout the state, provide opportunities to expand horizons in a world that is now faced with and embracing an information technology revolution.

The mission of the University of Texas System is "to provide high-quality educational opportunities for the enhancement of the human resources of Texas, the nation, and the world through intellectual and personal growth" (UT System 2001 Annual Report, p. 2). The impending change in how we educate and learn in this new era, and the UT System mission of providing educational opportunities led to the creation and development of the UT TeleCampus, the centralized support unit for system-wide distance education and online learning.

The University of Texas System

In order to best describe the UT TeleCampus and its successful collaborative programs, a short description of the University of Texas System is in order. The University of Texas was first authorized by the State Constitution in 1876. The Main Campus, now UT Austin, was founded in 1883 as a small campus of 40 acres near the state capitol. Since that time, UT Austin has become a major comprehensive research university with a broad mission of undergraduate and graduate education, research, and service to society (UT System 2001 Annual Report).

From 1891 to 1949, fourteen other campuses became part of the UT System. By Fall 2000, the System comprised:

- 153,448 students

- 79,430 employees (includes faculty)

- 14,538 faculty (all ranks)

- 29,552 degrees awarded in the 1999-2000 academic year

- $US 5.8 billion annual operating budget

The UT System component campuses have each made efforts to increase the level of diversity among the student population. As a reflection of those efforts, no single ethnic or racial group constitutes a majority of the overall student population. Since 1998, the number of Anglo students enrolled at UT System institutions has been less than half of the entire student population. The proportion of Hispanic students has continued to grow significantly, and the proportion of African-American students has remained fairly constant. Female students constitute the majority of UT students.

The UT System is governed by a nine-member Board of Regents: Three members are appointed every two years by the Governor of Texas, and their appointments are subject to confirmation by the Texas Senate. The Board of Regents plays a critical role in many System-wide projects and initiatives, including investment decisions, campus master plans, and new leadership at component institutions. The Board made the final decision to move forward with the UT TeleCampus in August 1997. Members of the Board view distance education and the TeleCampus as vital to the mission of the UT System. Programs offered by the TeleCampus "are creating educational access and opportunities for learning and workforce development that previously were difficult or unattainable through traditional classroom-based education" (UT System 2001 Annual Report, p. 11).

The UT TeleCampus

The development of the UT TeleCampus was a radical departure from how the UT System traditionally met new challenges. In 1996, the System contracted with then-Andersen Consulting to review information technology initiatives at the System level and on the component campuses, and to provide a roadmap for future System-wide initiatives. As a result of the final report provided by Andersen, a Master Plan Organization (MPO) was created in early 1997 to "develop a technical and applications infrastructure to support distance education for UT System components and link to national and international initiatives." Its proposed purpose was to "use distance education to develop and share skills and apply them to enhance existing learning delivery mechanisms" (UT TeleCampus Master Plan 1997, p.2). The MPO began its work in January 1997 with a series of surveys, meetings, and campus visits. A baseline survey instrument was designed and distributed to each campus that gave the MPO information about each component's ability to offer courses at a distance. However, it was clear that the level of technology and support services for distance learning varied greatly by component.

As the MPO gathered information from the component campuses, it also looked closely at other distance education models. Penn State University had just launched its World Campus project, the Education Network of Maine was viewed as a leader in statewide programs, and the Western Governors University was in the news. The MPO also looked closely at current trends in distance education.

Trends in 1997

Student and faculty criticism of higher education's method for delivering learning had dictated a redesign of the long established manner in which this transfer of information takes place. While still effective in various situations, the instructor-centered lecture delivery of knowledge was now being seen as unacceptable as the only means of delivering educational programs; instead, the new paradigm of learner-centered electronically delivered programs was being accepted by many in higher education.

In 1997, studies had substantiated that the body of knowledge doubles every seven years and that 10,000 scientific articles were published daily. New communication and search and organization skills were required in order to sort through this voluminous amount of knowledge. In their CAUSE Paper #14, Oblinger and Maruyama (1998) stated that these skills, to some extent, would be required by at least 95 percent of the workforce in the year 2000. However, it was estimated that 38 percent of American households would have at least one person working in a home-based office. It was further predicted that in order to

remain employed in the year 2000, workers would be required to absorb a certain number of continuing education courses delivered via home desktop methods.

UT TeleCampus Infrastructure

The Master Plan for the UT TeleCampus was presented to and approved by the UT System Board of Regents in August 1997. The UT TeleCampus was designed to serve the 15 component campuses by providing centralized, high-quality support services for students engaged in distance learning, regardless of delivery method. At the time, the majority of all distance learning within the System was delivered via two-way interactive videoconference. The UT System utilized a dedicated T-1 network to deliver approximately 125 courses each semester, most in a point-to-point manner. Very few courses (less than 10) were available online; however, the UT TeleCampus would be designed for access via the Internet.

Two critical decisions were made during the early development of the TeleCampus. First, rather than being designed as a sixteenth component or virtual degree-granting university, the TeleCampus was designated to serve as a central support system for the distance educational initiatives of the 15 component campuses and research facilities that comprise the UT System. Second, the TeleCampus would be designed for service first and not offer courses in its first year of operation. Utilizing a unique model not followed by other virtual campuses, the UT TeleCampus spent its entire first year building student services, digital libraries, conferencing and chat capabilities, and compiling hundreds of links to learning resources that could be utilized by the general public.

The UT TeleCampus opened its virtual doors in May 1998 utilizing a "building" analogy. The TeleCampus was organized around various online buildings where distance learners (and the public) could locate specific services relevant to a variety of topics. Due to the fact that most distance courses were delivered by ITV, it was anticipated that faculty might not be willing to take courses completely online through the TeleCampus for at least a year. However, by July 1998, via discussions led by then UT System Chancellor William Cunningham, planning began for the first online degree program: The MBA Online.

Collaboration at the Forefront

Within a matter of months, the primary roles of the TeleCampus began to evolve within the UT System. Support to distance learners and faculty was made a reality through a combination of system components to share resources and create a network to support the individual components as they worked to

provide online programs.

A proposal developed by eight of the nine academic institutions proposed the development of a collaborative online 48-credit hour MBA program. The program would be in General Management for which each of the eight participating schools of business would develop and offer two courses. Because funding would be provided by the System (through the TeleCampus), the incentive was high to develop the program. The decision to work collaboratively ensured all campuses would receive development funding as well as tuition and fees for the courses they offered.

Since putting its first MBA courses online in 1999, the TeleCampus has expanded to offer seven fully-online Master's degrees, a Bachelor's completion program, and general undergraduate curriculum, in addition to educational certificate programs and many other stand alone courses in both academic and medical disciplines. The success of these courses and programs has affected many aspects of the UT System. (More information about the UT TeleCampus, its programs and degrees, may be found in the appendix.)

The Impact of the TeleCampus on the UT System Component Institutions

The TeleCampus functions as an external influence on individual System components. In contrast to on-campus distance education endeavors which exert change-pressure from the inside and bottom-up, the TeleCampus is able to approach each institution as a whole and externally. This allows the TeleCampus to interact with many levels of the institutions simultaneously (President, Provost, Registrars, Deans, Chairs, Faculty, etc.).

When initially created, it was hoped that the TeleCampus would initiate positive change at the component level. Specifically, it was hoped that the TeleCampus would help increase enrollments and completion rates; provide increased educational opportunities for Texas citizens; ensure high quality distance education (raise the benchmark); and provide superior digital library services. To a great extent, these goals have been met. Enrollments at the component campuses have increased and some of this is directly attributable to TeleCampus courses. The TeleCampus is making strides toward increasing general access to the educational resources of the UT System for all Texans. Seventy percent of TeleCampus students are Texas residents.

Within the State of Texas, key policy makers are focused on the issue of completion rates. There is now a strong push to motivate high school graduates to enter college as well to encourage college students to graduate. The percentage of Texans age 25 or older holding a Bachelor's degree or higher, stands at 23.9

percent. The national average for that same demographic segment is 26 percent (US Census Bureau, 2000). As might be expected, this is a cause for concern. The US Census Bureau notes that annual average earnings in 1999 for those ages 18 and over who had completed high school was $24,572 and for those with a Bachelor's degree it was $45,678.

Distance Education can clearly play a role in increasing college completion rates through the elimination of time and geography barriers. Courses and degree programs offered by the TeleCampus allow working individuals and those with family commitments to continue their studies. While the TeleCampus has focused on graduate programs to date, it is establishing its first undergraduate completion program in the spring of 2002. This program will allow students who have completed lower division requirements (or who have an Associate's degree) to earn their Bachelor's degree entirely online.

Quality has been a driving factor behind the TeleCampus from its inception. Faculty members remain the center of attention, as they are ultimately responsible for the quality of the offerings. Assisting the faculty to become more skilled in the areas of online teaching and learning is a key to assuring quality. Each year the TeleCampus offers several faculty instructional design trainings. These sessions educate faculty in core instructional design issues, as well as on the intricacies of copyright and intellectual property issues. Each faculty member is asked to complete a self-study based on the Western Interstate Commission on Higher Education, "Principles of Good Practice for Electronically Delivered Courses and Programs" (WICHE, 1999) elements of design and method for student-faculty interaction. In addition, the Telecampus conducts technical training for campus-based support staff on the use of courseware and technology tools. Through these efforts, there has been a general rise in the level of quality seen in Web-based distance education courses taught across the UT System.

Clearly the TeleCampus has had an impact on the component institutions of the UT System. While some aspects of that impact were expected, it is interesting to examine the unintended consequences of the TeleCampus. One of the direct results of TeleCampus can be seen in the creation of distance education centers at several campuses. These are formal departments that focus on creation and support of Web-delivered courses within the TeleCampus model. These centers work directly with their campus faculty, easing the burden on the TeleCampus staff. The evolution of these distance education centers has been accelerated as a result of the TeleCampus course development grants.

While the TeleCampus can be thought of a collaborative endeavor within the loose federation of autonomous universities that comprises the UT System, collaboration among the 15 institutions has not been common. The TeleCampus now seems to function as a "collaboration engine" within the System. As the programs become more visible and continue to demonstrate success, the TeleCampus model of collaboration is beginning to appear in other arenas within the UT System. Several non-distance-based collaborative degree programs have

been announced and several technology-based joint projects are underway across multiple campuses. These collaborative efforts are not just inter-institutional. A new focus on cross-departmental and cross-functional projects is becoming more visible. Administrative units (campus registrars, financial aid officers, etc.) are beginning to work actively with academic units in support of collaborative programs.

The growth and success of the TeleCampus to date also increases the awareness of the possibilities brought on by distance education. Several institutions have been approached by outside entities (i.e., other universities, corporations, the Department of Defense), to enroll cohorts, develop courses, or repackage existing courses. Overall, there is a growing realization that distance education provides an opportunity to serve markets not previously served.

Lessons Learned

While there is still much to learn about this brave new world of Web-based distance education, we have learned some valuable lessons. These can be categorized according to several constituent groups:

Students

- *Web-based distance education is not appropriate for every student.* Successful distant students are goal-oriented and self-directed. As a general trend, these are traits found more often in older students. The very flexibility that draws students to web-based courses also requires more self-discipline from the student in order to be successful.

- *Many students are not as technologically literate as initially assumed.* It is not the technology that attracts students; it is the time- and place-independence. The technology is often seen as a hurdle rather than as an enabler. The technological capabilities of the students vary greatly, generally program by program. For example, engineering students are highly technically skilled, while students in education programs tend to be technology-shy.

- *Students have "dot-com" expectations.* Information and services must be delivered quickly and accurately. Students do not tolerate downtime, and they want services delivered electronically and in real time.

- *Given the opportunity to communicate, students will.* It is imperative to make as many communications channels as possible available. The frequency and quality of feedback received from students has been impressive.

Faculty

- *Use of tenured faculty greatly increases program credibility.* By engaging tenured faculty members to "repackage" their knowledge for delivery over the web, great value is added to each course. Adjunct faculty members certainly have their place in this realm, but the use of predominately tenured faculty seems to be a strong factor in persuading students to begin our programs.

- *Training is critical.* (Corollaries: Faculty may not be as technologically literate as they claim. Most are not familiar with instructional design issues. Separate pedagogical issues from technological ones.) While many faculty members have been using technology for some time in their on-campus courses, ample training must be provided in the areas of specific technologies, instructional design, and effective online teaching methods. The key here is making this training available and useful without insulting the faculty. In addition, it is important to keep faculty focused on the content. Preferably, faculty will not be handling the actual nuts-and-bolts tasks of getting content into the courseware platform, as this only detracts from important content and design issues.

- *Copyright and ownership are important motivators.* In the TeleCampus model, faculty, or faculty and campus jointly, own the copyright on the content of the courses. The TeleCampus then contracts with the copyright holder for a right-to-use over a period of years. This policy has proven a great incentive toward faculty involvement with the TeleCampus.

- *Faculty can be difficult to work with.* We constantly search for the right balance between academic freedom and quality assurance. This conflict is heightened in an online environment. Standardizing course design/navigation elements and technology choices is necessary to ensure a consistent high quality experience for the student. However, faculty can view these decisions as constraints to academic freedom.

Administrators

- *Communication is vital.* Certainly this can be said for all the constituent groups. However, it is especially vital to keep all appropriate administrators up-to-date. Here we are referring to registrars, financial aid officers, provosts, deans, presidents, etc. Since this is a group that is not close to the development and delivery of courses, establishing communication might be inadvertently overlooked. However, leaving administrators out of the loop will certainly hamper one's ability to implement programs and policy. Successful collaboration is built on information flowing in all directions.

- *Money talks.* With the TeleCampus directly funding course development, cooperation came easily. As we move away from the direct subsidy model, we must work harder to maintain these collaborative efforts

- *Find the balance between collaborator vs. owner.* (Corollary: *Administrators will always first defend their own institution.*) Everyone involved agrees that there is great value in our collaborative programs, yet the institutions all want each program to be specific to their campus. At the same time, it is important for the TeleCampus to foster a sense of ownership among the administrators in the System.

- *Document, document, document!* All agreements between the TeleCampus and the components must be documented, and these documents must be kept up-to-date. Contracts, memoranda of understanding, manuals of operating procedures, etc., all become key resources as the faces and roles of the stakeholders change over time.

Policy Makers (Federal, State, Accreditors, Regents, etc.)

- *Being well funded by policy makers means we are also beholden.* It is important to periodically reassess organizational direction and make sure it is in line with the mission and goals of the policy makers.

- *Funding does not last forever.* Perpetual central funding should not be assumed. We are always investigating new methods of developing revenue in support of our programs.

- *Stakeholders change.* Being a state institution, our future direction can change with the next election. Priorities and policies are constantly evolving at the state and national level. The TeleCampus tends to be highly visible and thus must stay attuned to this changing political landscape.

Implications for Distance Education Research and Practice

With the success of the UT TeleCampus, there are implications for research and practice in the field. Why do some virtual universities succeed? Why do others fail? One of the key reasons for success of the TeleCampus is the collaborative nature of its programs. However, collaboration is not easily accomplished on an individual campus, much less across an entire university system. Brian Hawkins, president of Educause, stated recently that: "the ability to truly collaborate is one of the greatest challenges facing higher education today" (2001, Educause Review, p. 56). It is understandable then why many universities choose to

develop distance education on their own. After all, collaboration takes a significant level of commitment by all parties, and it requires more work hours to achieve success.

One other factor that causes breakdown in collaborative efforts can be called the "not invented here" syndrome. Although often discussed in private conversations, it is rarely discussed formally. In our work with the TeleCampus collaborative programs, this has proven to be a major barrier. One might expect this syndrome from the flagship, Research One institution in a university system, but our experience is that it is found on any university campus. The nature of higher education seems to force faculty into a competitive stance. Fifteen faculty members may teach History 101 at 15 different campuses, and each will insist that his or her course is the only way the course should be taught.

For collaborative programs to work, and for agreements to be made on curriculum decisions, all voices must be heard. For each collaborative program creating a "community of scholars" that did not threaten any one person's views about teaching strategies was an important step in the process. Each collaborative TeleCampus program includes an Academic Affairs Oversight Committee. These groups consist of faculty from all participating institutions (in the appropriate discipline areas), some who may be teaching in the program, and some who may not. Through these committees, faculty members are controlling the program in a shared fashion, and no one campus has the final say about curriculum. Evidence has indicated that a "faculty's strong sense of shared values and directions reduces the need for codified structures and procedures" (Chopp, Frost, & Jean, 2001, p. 45). Once the programs are launched, the Academic Affairs Committees meet twice a year to review programs and discuss new curriculum ideas. Additional research is recommended in the area of building faculty trust and support for collaborative programs across institutions and university systems.

The much-discussed issues of copyright and intellectual property continue to plague distance education. Throughout the development of courses and programs for the UT TeleCampus, it became apparent that a large number of faculty members were unaware of their rights regarding their own intellectual property. Many assume that the university has no rights to their intellectual property in an online course. Others assume the opposite, believing that they have no rights themselves and that the university has the sole copyright to their work. Neither assumption is completely correct. Georgia Harper, copyright attorney for the UT System, and nationally recognized for interpretations of copyright law in a digital era, has developed a Website to help faculty understand the rules of ownership (http://www3.utsystem.edu/ogc/intellectualproperty/whowns.htm.). All faculty involved in TeleCampus programs are encouraged to read through Ms. Harper's documentation. After reading, most agree with James Hilton, who states: "If I have discovered a single truth about copyright law, it is that my intuitions are almost always wrong" (Hilton, 2001, p. 48).

While the TeleCampus itself has become less concerned with "who owns what," and more concerned with "use," our faculty and campuses are beginning to focus more on use as well. In the early days of online learning, many faculty members believed they could develop a course and sell it for a large profit. A few star faculty have indeed been able to sell content, but not for the amounts of money originally assumed. The fact is that most faculty members will never sell their content to anyone outside the university. As far as ownership concerns, an author automatically has the rights to his or her work. Determining who else has rights to that work is a decision to be made between the institution and the faculty member. However, how the work is used can be the decisive factor on whether an online course or program can continue after the faculty member leaves the institution. In our opinion, this is where more work should be done. Contracts, agreements, and decisions must all be made today based on use. Unfortunately, many institutions are still dealing with ownership issues of the present, and not focusing enough attention on the future of their programs.

The TeleCampus is currently addressing two areas of online learning: tracking of graduates and outcomes assessment to determine success rates. Since the TeleCampus launched its first courses in the fall of 1999, we are just seeing our first program graduates. It is our intent to track these graduates to determine first how their online degree is accepted by hiring entities, and second, if the fact that they received the program online enhances their current employment opportunities. Most of the graduate students enrolled in TeleCampus programs are working and, in some cases, the employer is funding the educational experience.

Tracking graduates may prove to be a relatively easy task as compared to determining success rates. In Fall 2000, the TeleCampus saw an 85 percent completion rate among its 1,000+ enrollments. Over the past two years, the TeleCampus has won eight regional and national awards. But those two facts do not necessarily mean that the TeleCampus programs have been successful in meeting the overall outcome expectations of each program. In April 2001, the TeleCampus was visited by a team from its regional accreditation agency, the Southern Association for Colleges and Schools (SACS). Even though the TeleCampus is ineligible for accreditation (it does not admit students or award credit or degrees), SACS officials felt it necessary to review the collaborative programs facilitated by the TeleCampus.

The final report from the visitation team was positive overall. Members of the committee were impressed with the collaborative nature of the programs, the support services offered to students by the TeleCampus, and the oversight and control provided by the participating component institutions. However, a primary question asked by the team was related to program outcomes and how their success was being determined. As a result of the report, Academic Affairs Committees for each program now focus on the development of specific outcomes for each collaborative effort. Most outcomes resemble campus-based

outcomes, although there are some variations. Once all outcomes are identified, the TeleCampus will facilitate an assessment to determine levels of success, a process expected to take as long as two years.

Conclusion

This article is but one example of inter-institutional collaboration in higher education. The experience of the TeleCampus has revealed that while distance education in an historical sense has been a grass roots effort, the high costs and risks associated with distance education today require a top-down approach. The University of Texas System Board of Regents and its component institutions realized that by providing seed money and sharing resources, it was possible to build a truly collaborative, centralized, distance education program.

The lessons learned by the TeleCampus over the past four years, while often difficult to accept, have contributed significantly to its success. In response to the many barriers faced, new policies, procedures, and operating methods were devised. Each small success presented new challenges, but as each challenge was met, the overall impact of the TeleCampus increased.

Opportunities for research in distance education continue to present themselves. However, the advent of collaborative models brings a new level of need for empirical research. Some of the questions yet to be answered completely include: How best to offer incentives for collaboration? What are the appropriate policies regarding copyright and royalty issues? How to judge overall program effectiveness?

References

Chopp, R.S., Frost, S.H., & Jean, P.M. (2001, November/December). What's
old is new again. *Change, The Magazine of Higher Learning*, 33(6), 43-47.

Hawkins, B. L. (2001, September/October). Information access in the digital
era. *Educause Review,* 36(5), 54-57.

Hilton, J. (2001, November/December). Copyright assumptions and challenges.
Educause Review, 36(6), 48-51.

Oblinger & Maruyama (1998). CAUSE Paper #14.

US Department of Commerce, Economics and Statistics Administration (2000,
March). Texas Table Data from Educational attainment of people 18 years
and over, by age, sex, race, and Hispanic origin, for the 25 largest states.
US Census Bureau: *Educational attainment in the United States.*

The University of Texas System 2001 Annual Report. Published by The Uni-
versity of Texas System, Austin.

UT TeleCampus Master Plan (1997).

Principles of Good Practice for Electronically Offered Academic Degree and
Certificate Programs (1999, September) *Western Interstate Commission for
Higher Education* http://www.wiche.edu/telecom/projects/balancing/principles.htm.

APPENDIX

UT TeleCampus at a glance: www.telecampus.utsystem.edu .

Mission and Operating Principles

The UT TeleCampus is a service-driven, central support system for online edu-
cation initiatives among the 15 UT System universities and research facilities.
Key to the UT TeleCampus operations are the following guiding principles:

- All UT TeleCampus activities must be consistent with the mission of The
  University of Texas System in its effort to provide access and high-quality
  educational opportunities for Texans.

- The UT TeleCampus would not exist without the support of the UT Sys-
  tem faculty.

- The TeleCampus must promote and support UT faculty throughout online
  course development and delivery.

Historical Overview

The UT TeleCampus was launched in May 1998, with a Web site designated to serve as a central support system for the online educational initiatives of the 15 component campuses and research facilities (as opposed to being designed as a sixteenth component or virtual degree-granting university). In its first year, the TeleCampus did not offer courses. Utilizing a unique model, the TeleCampus spent its entire first year building student services, digital libraries, conferencing and chat capabilities, and compiling hundreds of links to learning resources that could be utilized by the general public.

In placing programs online, the TeleCampus sought to assist in the creation of collaborative degrees, utilizing the best resources in faculty expertise from all campuses. This model was defined in the first degree programs offered via the TeleCampus: The MBA Online and the MEd in Educational Technology. Both were launched in the fall of 1999. The MBA Online degree is conferred from any one of seven participating campuses, with eight campuses contributing courses to the degree plan. The MEd degree is conferred from UT Brownsville, with UT El Paso, UT Austin, UT Permian Basin, and UT Medical Branch also providing courses toward the degree plan. Today the UT TeleCampus houses six master's degrees, undergraduate curriculum and certificate programs. Though its focus is online degrees, the TeleCampus also supports several other courses (not part of a fully-online degree) in medicine and allied health in addition to a growing menu of academic choices. As a service to our campuses, the TeleCampus site also posts a searchable database of all distance education courses System-wide, regardless of delivery format.

To support the development of these programs, the UT TeleCampus provides funding for course development, in addition to providing specialized training to UT faculty teaching online via the TeleCampus. Extensive support services are provided by TeleCampus staff including instructional design, student services, technological support, policy, marketing research, and external communications.

The UT TeleCampus website sees an increasing volume of traffic with each semester and currently logs more than half a million hits and 17,000 unique users a month. When the TeleCampus opened its virtual classroom doors in fall of 1999, there were 189 enrollments spread between two programs. In fall 2000, enrollments exceeded 1,000 across half a dozen programs and in fall 2001 enrollments exceeded 2,000.

UT TeleCampus Degrees and Programs

All degree programs offered via the UT TeleCampus can be completed entirely at a distance, removing geographic-based barriers to learning. Programs run on a semester basis, and courses are paced during the semester. Listed below

are current TeleCampus programs and the component campuses participating in each one. As mentioned previously some campuses contribute courses, others contribute courses and confer the degree listed.

- MBA Online (UT Arlington, UT Brownsville, UT Dallas, UT El Paso, UT Pan American, UT Permian Basin, UT San Antonio, UT Tyler)

- Master's in Educational Technology (UT Brownsville, UT Austin, UT El Paso, UT Medical Branch)

- Master's in Curriculum and Instruction - Reading Specialization (UT Arlington)

- Master's in Kinesiology (UT Permian Basin, UT San Antonio, UT Arlington, UT Pan American, UT Tyler, UT El Paso)

- Master's in Electrical Engineering (UT Arlington, UT Dallas)

- Master's in Computer Science (UT Arlington, UT Dallas)

- Master's in Computer Science and Engineering (UT Arlington,)

- English as a Second Language Endorsement (UT Arlington)

- First Year Online (UT Arlington, UT Austin, UT Brownsville, UT Pan American, UT Permian Basin)

- Dual Credit Program (UT Arlington, UT Austin, UT Brownsville, UT Pan American, UT Permian Basin)

- Texas Professional Development Online-Algebra (UT TeleCampus)

- Chess in Education Online (UT Dallas)

- Bachelor's Completion Program in Criminology and Criminal Justice Online (UT Arlington, UT Brownsville, UT Permian Basin)

Oversight committees or Academic Advisory Committees exist for each online degree program. These committees ensure the quality and integrity of the courses. They are comprised of deans and faculty represented from the schools participating in any degree program.

Student Demographics

Each semester, the TeleCampus Marketing and Communications group surveys students enrolled in TeleCampus courses. Though demographics shift slightly from semester to semester, they remain fairly constant. Most students are from Texas. In Spring 2001 for example almost 75 percent were from Texas. The

remaining one-fourth of the student population includes representatives from 26 states and eight countries. No students are required to divulge ethnicity; however, about 75 percent elect to self-identify. The TeleCampus classrooms are diverse. Approximately 50 percent of the students identified themselves as Caucasian, 16 percent Hispanic, 6 percent Asian, and 4 percent African American. Less than 1 percent categorized them selves as either American Indian or "other."

When asked, students consistently point to the flexibility and portability of online learning as their motivation for choosing to learn via the UT TeleCampus. Almost half reported looking at other online programs outside of the System prior to selecting the UT TeleCampus. About half were truly distance learners; while the other half were taking at least one on-campus course in addition to their online course.

UT TeleCampus Awards

In the months following the launch of its first online degree programs the UT TeleCampus began receiving regional and national attention, accolades and awards:

- Golden Web Award for excellence in web design and content

- Texas Distance Learning Association Service Award

- University Continuing Education Association (UCEA) Outstanding Distance Learning Course

- US Distance Learning Association – Excellence in Distance Teaching, Higher Education

- US Distance Learning Association – Excellence in Distance Learning Programming

- UCEA – Excellence for a Credit Program (ESL Endorsement)

- UCEA Region III – Excellence for a Non-Credit Program (Instructional Design Tutorial)

- Best Site – Snap.com

- Peterson's/UCEA Most Innovative Distance Education Program

- Three first place Best of Austin Awards from the International Association of Business Communicators in the following fields: brochure, writing, and radio spot.

Reference: More information about the UT TeleCampus can be found in the UT TeleCampus *Report 2000*, and on the website at http://www.telecampus.utsystem.edu. .

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Bringing Online Learning to Campus: The Hybridization of Teaching and Learning at Brigham Young University

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Abstract

The primary purpose of Brigham Young University (BYU) is to provide students with a combination of sacred and secular education often described as the "BYU experience." Achieving this purpose is challenged by the rapid growth in Church membership and an enrollment cap of 30,000 students. To address these challenges, BYU sponsors the use of technology to bridge the gap between the increased Church membership and the number of students allowed under the enrollment caps. This institutional case study shows how these challenges have influenced the hybridization of teaching and learning for on campus (resident) and off campus (distance) students. It also describes how BYU has brought distance education to campus, and is beginning to bring campus-based educational practices to distance education.

Introduction

David O. McKay described Brigham Young University as a religious institution established "for the sole purpose of associating science, art, literature, and philosophy with the truths of the Gospel of Jesus Christ" (Richards, 1997). This idea, reflected in the University's Aims, is to provide a spiritually enriched learning environment for all members of the Church of Jesus Christ of Latter-day Saints. Of course, this desire to provide the combination of sacred and secular learning to all members of the Church presents two challenges. First, the rapid growth in Church membership has compromised BYU's ability to serve a significant proportion of the Church membership on campus. Second, the University has placed a cap on enrollments. To address these challenges, BYU sponsors the use of technology to bridge the gap between increased membership and enrollment caps. This goal is the impetus behind distance learning at BYU. The following institutional case study shows how these challenges have influenced

the hybridization of the teaching and learning process for on-campus (resident) and off-campus (distance) students. Further, this study demonstrates how the focus on providing as many students as possible with the "BYU experience" and the drive to maintain quality while improving efficiency is the impetus for the hybridization of education at BYU. Hybridization occurs when on-campus educators adopt distance education technologies and practices, and when distance education organizations adopt/adapt campus-based educational practices. The case study concludes with a discussion of the consequences and the implications of such hybridization.

Literature Review

Distance education is the use of media to enable time separation and geographical separation of the teaching process from the learning process (Calder, 2000). From the beginning, distance education has been the focus of controversy, with many researchers, administrators, and faculty relegating distance education to an inferior status compared to campus-based educational methods (Feenburg, 1999; Noble, 1999; Turoff, 1998). These debates have focused on technology's inability to effectively bridge the distance between teachers and students and the fear that distance education programs are "diploma mills" (Noble, 1999). Debates concerning distance education have become more intense with the recent availability of computers and the Internet. Many have argued that these technologies can facilitate high-quality interaction between teacher and student (Feenburg, 1999; Hiltz, 1998; Levin, Levin &Waddoups, 1999; Wegerif, 1999). Traditional universities have adopted practices and technologies from distance education and distance education institutions adopting practices from brick and mortar universities (Arvin et al., 1998; Calvert, 2001; Cookson, 2001). This brief literature review develops a theoretical framework to describe and analyze the convergence associated with the hybridization of education at many institutions including BYU.

One approach to analyzing distance education courses and programs is to focus on the communicative relationship between teacher and student. This approach entails locating distance education courses and programs on a synchronous and asynchronous continuum. This approach focuses on the spatial and temporal relationships between a teacher and students and identifies the various ways in which they use technologies to bridge this distance. For example, a distance education course that uses two-way video is synchronous in nature, allowing students to be spatially distributed, but requiring them to be together at the same time. In this way, synchronous distance education requires a technologically facilitated co-presence between teacher and student. An NEA sponsored study reported that in 1998, 56 percent of all distance education programs used two-way television, which is the most common synchronous distance education method in the U.S.A. (NEA Higher Education Research Center, 2000). More

recently, interactive video conferencing has been used to let teacher and students interact through synchronous chat, whiteboard features, and application sharing, created the possibility of "multi-sensory" learning environments (Peters, 2000). Much like the traditional classroom, synchronous interactions put the teacher in the center of the instructional interaction. This synchronicity may increase the contact between teacher and student; but it also decreases the efficiency and flexibility of distance education. In addition, synchronous distance education potentially duplicates what many regard as the least desirable feature of campus-based education: namely the lecture.

Asynchronous distance education permits students to be separated both in time and place, which maximizes the level of flexibility; however, these instructional methods potentially decrease contact between teacher and student. Correspondence education was the first type of asynchronous distance education in which institutions mailed written material to students; and students completed and returned their assignments for grading. More recently, the use of the Internet and communication technologies such as email and discussion boards has facilitated a higher level of interactivity within the context of asynchronous distance education (Feenburg, 1999; Rossman, 1999; Wegerif, 1999). There is a growing body of research focusing on the value of asynchronous learning networks for distance education students. Wegerif (1999) found that the success of online courses depended upon students feeling like insiders. The skill of the moderator to facilitate open and respectful communication through an asynchronous medium was an important predictor of students developing insider status. Additionally, there have been reports concerning the use of asynchronous learning networks in the context of traditional universities to improve the efficiency and quality of undergraduate education (Arvin, et al., 1998; Bourne, 1998). Focusing on the communicative relationship between teacher and students does not fully account for important issues such as the pedagogical methods and instructional design of the learning environment.

Another approach to the discussion of distance education includes identifying the pedagogical methods and instructional design models associated with a course or program. Two broad pedagogical approaches to distance education include those that focus on the *transmission of information*, and those distance education methods that focus on *interactivity and connectivity*. A "transmissive" approach focuses on the delivery of information from teacher to student, whether in a synchronous or asynchronous mode (Bourne, 1998). Peters (2000) described this approach as "heteronomous learning." Technology has been used to increase the efficiency of this form of distance education including the use of television and the Internet. For example, *asynchronous transmissive distance education* focuses on the delivery of information to students through the postal service, the Internet, videocassettes, or educational television and radio programs. The primary focus of this approach to distance education is efficient delivery of information by the teacher to the student. In contrast, *synchronous transmissive distance education* duplicates the traditional classroom lecture pri-

marily through the use of two-way video technology. Both of these approaches focus on teaching, rather than learning, and locate the instructor at the center of the pedagogical relationship (Bourne, 1998).

A third pedagogical approach is *interactive distance education*, which focuses on connection, interaction, exploration, and discovery, rather than the transmission of information. Peters (2000) refers to this as "autonomous learning." This model focuses on creating rich environments for student learning rather than efficient ways for teachers to deliver information. The learning environment includes providing students with a flexible array of resources including text, audio, and video in both synchronous and asynchronous modes. Many distance education programs are moving towards a more interactive model focusing on learners and learning rather than teachers and teaching. The interactive distance education model takes what is best about distance education and campus-based education and combines them through the use asynchronous and synchronous technology. This process of convergence has been observed globally among open and distance learning (ODL) institutions (Tait and Mills, 1999; Trindade, Carmo, and Bidarra, 2000). For BYU, the process of convergence is at the core of the hybridization experience, other educational institutions experiencing this kind of hybridization will be particularly interested in this case study.

The following institutional case study describes the ways in which BYU has hybridized distance education, in particular, through bringing online education to campus and bringing campus based practices to distance education. Fundamentally, this kind of hybridization is about challenging traditional academic and institutional boundaries to meet the needs of students. In the case of BYU, Independent Study courses have traditionally been asynchronous and transmissive. As distance education methods came to campus, faculty and administrators became less satisfied with this approach, which has led to the progressive hybridization of on-campus and distance education. The hybridization process is important for many educational institutions as they attempt to find ways to decrease boundaries between their on-campus and off-campus students to meet the needs of a wider number of people. Many institutions that have traditionally separated distance and campus-based education, are trying to find ways to bring distance education to campus (Arvin et al., 1998; Wang et al., 2001) and to create interactive learning environments for distance education students (Bourne, 1998). This convergence is a powerful force within postsecondary educational institutions.

Case Study Research Methods

Case study research has a long history as a qualitative research method for capturing the complexity of teaching and learning interactions (Merriam, 1987;

Stake, 1988; Yin, 1979). According to Merriam (1991), case studies are a method well suited for understanding educational processes. She identifies four elements of the case study that are important for identifying the complexity of the teaching and learning process. First, a case study is "particularistic." By using the term "particularistic," Merriam suggests that case studies focus on a particular "event, program, or phenomenon." The second property of a case study is that it is descriptive of an event or set of processes. This means that the end product of a case study is a "rich, thick description of the phenomenon under study" (p. 12). The third characteristic of the case studies is that it functions as a heuristic to illuminate the phenomenon being studied. The fourth property is that case studies are often inductive, using the data collected and assembled to construct the case. The following institutional case study was conducted through interviews with key stakeholders involved in distance education at BYU; collection and analysis of archival histories; and analysis of data about the mission and purpose of BYU and the place of distance education within BYU. These data were collected and analyzed to construct a narrative account of the emergence, development, and hybridization of distance education at Brigham Young University.

Institutional and Environmental Demands Influencing Hybridization

Brigham Young University (BYU) was established October 1875 in Provo, Utah, U.S.A., as Brigham Young Academy. From the beginning, BYU has maintained the focus of combining sacred and secular education. This focus is based on the relationship between BYU and its sponsoring institution, the Church of Jesus Christ of Latter-day Saints. The Church of Jesus Christ provides funding and leadership for BYU. The BYU president and administration report to Church general authorities, and BYU administrators adapt policies, curriculum, and programs to serve the interests of the Church institution and the wider Church membership. For example, BYU provides an opportunity for future Church leaders, namely the students, to be educated and nurtured so they can return to their homes and strengthen the local Church. According to the institutional mission statement, the purpose of Brigham Young University is to "develop students of faith, intellect, and character who have the skills and the desire to continue learning and to serve others throughout their lives." Accordingly, a BYU education should be intellectually enlarging, character building, spiritually strengthening, and foster lifelong service and learning. Students achieve these institutional Aims through learning in the classroom, participating in weekly extra-curricular devotionals, participating in university student church groups, and developing formal and informal associations with faculty members and students. These formal and informal learning environments are powerful and strengthen the individual members who, in turn, bring strength to the

Church of Jesus Christ of Latter-day Saints.

The "BYU experience" is much more than attending class, in fact, it could be
considered a whole way of life; a culture of teaching and learning developed
through participation within the center and periphery of the university commu-
nity (Williams, 1961). These are important organizing principles or benchmarks
that influence administrative and curriculum decisions and frame the activities
of faculty, students, administrators, and support staff at all levels within the
BYU community.

Providing the BYU experience for distance learners was an early concern of those
involved in the design, development, and delivery of correspondence education.
Discussions about distance education at BYU began in the early twentieth cen-
tury and have focused on the extent to which distance education can provide the
experience to Church members and others who are interested, but cannot phys-
ically attend BYU, to participate in the BYU experience. Recently, there has
been an increased focus on the use of distance education to help meet the edu-
cational needs of the growing Church membership. Because of strict enrollment
caps presently at 30,000 students, and an ever-increasing pool of applicants,
many students who would like to attend BYU cannot.

The enrollment caps limit the number of students who can participate in the
BYU experience and impedes the University's ability to serve members of the
sponsoring institution. The widening gap between those who wish to attend
BYU, but are not able, has led administrators to explore distance education
practices and technology to serve more students and to provide them with the
BYU experience. The acceptance of distance education, combined with the
increased availability of instructional technologies, is the impetus for much of
the hybridization of teaching and learning at BYU. Through innovative uses of
technology for on-campus courses, the administration hopes to streamline under-
graduate education to efficiently serve more on-campus students. For example,
large general education courses have been developed that utilize multimedia and
communication technologies to increase the efficiency and quality of learning.
Similarly, through using the Internet, multimedia, communication technologies,
and rapid feedback systems, Independent Study students can have a portion
of the BYU experience. In both of these instances, BYU administrators and
faculty hope that technology can provide high-quality and efficient learning
experiences for both resident and distant students. The effect of BYU's ex-
perimentation with distance education is to hybridize education for on-campus
and off-campus learners. As the following chronology will show, BYU is early
into the hybridization experience; however, many decisions about infrastructure,
curriculum, delivery, and assessment remain to be made.

Chronology of Events

In the following chronology, we explain the ways in which technology usage, administrative decisions, the mission and purpose of BYU, the gap between those wanting and able to attend BYU, and the desire to maintain quality and efficiency have resulted in the progressive hybridization of education at BYU. This hybridization process has provided distance-learning opportunities to on-campus students and more interactive learning opportunities to off-campus students. We conclude this chronology by discussing the intended and unintended circumstances of this hybridization process describing the relevance of BYU's experience to other educational institutions.

Distance education began at BYU in 1921, with the establishment of the Bureau of Correspondence to provide opportunities for students to begin home study courses. In 1921, the Bureau of Correspondence accepted responsibility for all work connected with instruction by mail, becoming an agent to help faculty members and students (Henstrom and Oakes, 2001 p. 286). The first correspondence study catalogue was issued November 1, 1922, which listed the courses a student could take and procedures for registering and completing a course. The Bureau of Correspondence primarily served an administrative function; they did not develop University course content, but served as a mediator between faculty and students. A report written in 1922 reported the progress of the Bureau:

> In order to systematize the work, various bureaus have been created. The Bureau of Correspondence Education, which handles all of the work connected with instruction by mail. In this work, the bureau only acts as the agent between the faculty member and the student, looking after the registration, publicity, recording of grades and credit, mimeographing and mailing of lessonsÂ The present enrollment in this bureau is 255. Of this number, 120 are missionaries and about 40 are enrolled in the genealogy courses (Henstrom and Oakes, 2001 p. 287).

During the first 25 years of the Bureau of Correspondence, the number of enrollments and course offerings increased progressively.

In 1948, the Bureau of Correspondence was reorganized into the Bureau of Home Study and expanded course offerings into the high school market. At that time, the department took on new breadth and professionalism and a full-time department head was employed for the first time. By 1949, 171 college and seven high school courses were offered with an enrollment of 719 students. Consequently as enrollments and the number of courses increased, the size of the organization increased and the Bureau took more responsibility for designing, developing, and implementing courses. As enrollments increased there was an increasing

need to provide support for faculty and students. For example, during the years 1954-1964, enrollments increased from 1452 to 5,085, which resulted in the need to provide systems for enrollment, registration, lesson processing, and communication between faculty members and students. At this point, a more efficient lesson-processing center and course development and improvement program was instituted to increase the quality and efficiency of the correspondence offerings.

During the period between 1968-1996, enrollments increased from 6,948 to 36,686 and many changes occurred within Bureau of Home Study, not the least of which was being renamed the Department of Independent study in 1978. In 1968, the first instructional designer was hired, indicating the Bureau's desire to take a greater role in the course development process and improve the quality of course offerings. Additionally, the number of enrollments in the high school program rapidly increased. This increase was due to the closing of BYU High School and later an aggressive marketing campaign to sell high school courses to individuals and schools in all regions of the country. As a result, during 1982-1992, high school enrollments tripled from 4,300 to 13,500. According to a history written about this time period: "This increase prompted important and far-reaching changes in student services, registration procedures, and customer service to students and responsible counselors and schools" (Henstrom and Oakes, 2001 p. 323). During this time, Continuing Education constructed a new building to house growing numbers of design, development, and support staff.

As computer technology became more readily available, those responsible for administering Independent Study courses began searching for ways to use technology to improve the efficiency of administering programs and improve the quality of students' learning experience. These changes included bar-coded lessons for easy tracking, computer-generated monthly reports, and a toll-free 800 number for student support, the implementation of a rapid response assignment system called "Speedback," and a grade checking system called "Gradecheck" that let students use the Internet to check a data bank for their grades. For those administering Independent Study courses, technology was seen as a way to improve the efficiency of processing information and improve students' experience in the course. The courses were asynchronous and transmissive with very little interaction between the instructor and student.

As enrollments rose to over 35,000 in 1996, greater demands for student support needs were placed on the system. In response, the Department of Independent Study adopted administrative processes and technologies to improve the quality and efficiency of distance learning. Between 1922 and 1996, the relationship between BYU campus and distance education evolved in a similar manner. Initially, the Bureau of Correspondence served only an administrative function and did not deal with pedagogical issues such as lesson content; this was reserved for the faculty member. Later, the Bureau of Home Study began employing instructional designers to work with faculty allowing them to

become much more involved with the actual design, development and delivery of courses. This administrative move increased the quality of the courses and improved the efficiency of delivery, but created distance between on-campus faculty and administrators from the delivery of education to distant learners. Indeed, one of the functions of Independent Study instructional designers was to take responsibility for the design, development, and implementation of the courses. By assuming this level of responsibility, faculty members and campus administrators became more removed from the design and delivery of distance education courses.

1997-Current: The Hybrization of Distance Education.

In the current phase of development, distance education is beginning influence campus education practices. Web-based university courses emerged at BYU Independent Study in 1997. A small group of instructional designers, programmers, and artists began to develop Independent Study courses in 1997. These were primarily asynchronous and utilized the Web as a distribution medium, coupled with "Speedback" and "Gradecheck" to automate assignments and grading. These high quality courses won several awards including the Helen S. Williams distinguished course award for the development a Health Education and Physical Education 129 in 1998; National Univesity Continuing Education Award for Family History 70, and Communications 101 in 1995. By the end of 1997, Independent Study had developed twenty web-based courses, many of which were converted from paper-based courses and enriched with multi-media and graphics.

In 1998, BYU president Merrill Bateman gave an address that explained how web-based education could increase the efficiency of on-campus education and extend the reach of BYU to off-campus students. This administrative support for expanding the use of online and distance education courses marked an important turning point in the hybridization of education at BYU. President Bateman spoke of ways that technology use would improve campus education, stating:

> On-campus education will be streamlined over time with the aid of technology, lectures, data, class assignments, reading materials, exams, and other tutorial materials will be online and on CD-ROM. When used appropriately, new technology has the capacity to reduce lecture time and allow for more discussion groups, seminars, and labs. To the extent that technology increases learning effectiveness, it may increase opportunities for students to be involved in research projects and free up time for faculty research (University Conference Address, 1998).

The President continued in this address to articulate ways in which technology might be used to provide learning opportunities for distance education students.

> BYU's Division of Continuing Education currently services more than 40,000 students. Most of the courses at present are on paper and available through the mail. During the past year, approximately 20 University course have been converted to the Internet. Plans call for 50 courses on the Internet by the end of 1998, with 300 more courses available within the next five years. The new Internet courses are enriched well beyond their paper predecessors... Hotlinks access video materials that include the professor describing courses objectives, outlining the course, and lecturing. Hotlinks embedded in the course also take students to other Web sitesÂ As the number of Internet courses multiplies, so will the number of students served across the world – at a much reduced cost (University Conference Address, 1998).

Subsequent to this speech, the University administration created and funded the Office of Course Development (OCD) to produce online General Education courses. During this same time, a committee was established to explore ways to centralize and coordinate the learning-technology initiatives for both on-campus and off-campus students. One of the recommendations of this committee was to centralize the development of all Web-based course development into one organization and realign this organization to report to the Vice President over undergraduate education rather than the Vice President of Continuing Education. Based on the committee's recommendation the Center for Instructional Design (CID) was formed in June 1999 by merging three separate entities: the BYU Instructional Technology Center (ITC), the web development team from BYU's Independent Study, and the Office of Course Development (OCD).

The Center for Instructional Design produces and supports the design, development, and implementation of technology-enhanced instruction to on-campus and off- campus students. The CID has evolved over the last two years and now has 26 full time employees and 150 student employees. Among these employees are professional instructional designers, programmers, arts and media production specialists, production managers, and educational evaluators.

The CID develops three types of products related to technology and learning. First, the CID creates Semester Online courses for matriculating on-campus BYU students and for other Church-affiliated schools including BYU Idaho and BYU Hawaii. Second, the CID is responsible for designing university Independent Study online courses intended for students not able to attend the BYU campus. Third, the CID works with faculty on special projects that use instructional technology. The Committee for the Media Arts (CIMA) at BYU juries proposals and funds these projects. Although these projects are distinct, they

inform each other in important ways leading to the progressive hybridization of technology-mediated instruction.

Semester Online

The Semester Online program is an attempt to provide online educational opportunities for registered BYU students. Because they are on-campus courses, students must complete all course requirements during the semester. President Bateman outlined the following goals of Semester Online courses in his 1998 address. They include:

- Creating efficiencies by using technologies

- Improving education through using technology

- Creating courses and learning objects that can be used to serve and bless the lives of Church members worldwide

Initially, these Semester Online courses were created by enhancing Independent Study Online courses with multimedia, assignment and exam due dates, and plans for limited face-to-face meetings, literally bringing courses intended for off-campus delivery to campus students. During the fall of 1999, thirteen of these courses were offered, with 600 student enrollments. Currently there are 2,500 students enrolled in these courses at BYU Provo and BYU Idaho.

In addition to these retrofitted courses, there has been a massive design and development effort to produce large media-rich, general education courses specifically designed for delivery to on-campus students. These courses will hopefully help students move more efficiently through high-enrolling, required courses that present bottlenecks for students. Additionally, these course re-designs are hopefully improving the quality of these courses, which are often taught in large lecture halls. The first of these courses to be completed was Physical Science 100 (PS 100), which provided a series of multimedia lessons, quizzes, and weekly meetings.

The CID is presently developing an online freshman composition course (English 115) that was funded by a $200,000.00 grant from the PEW charitable trust. In traditional composition courses, the instructor meets with the entire class three hours a week, then conferences with students as they complete writing assignments. In the revised online version of English 115, the instructor becomes just one of several sources of instruction available to the student: weekly class meetings; instructor conferences; peer-review workshops; mini-classes and tutorials from the Reading and Writing Centers; and a series of multimedia, online lessons that are standard for all sections of the course. This is not a distance

education course, in which the student and instructor are naturally separated, but a course designed for regularly matriculating students, and a radical revision of how a writing program can use technology to redefine instructional space.

In contrast to English 115 and PS 100, Accounting 200 includes a series of video lectures accompanied by animated slides and problem sets with immediate feedback. Instead of meeting in a large lecture hall with 1,000 students three times a week, the instructor has developed these enhanced video based tutorials to teach accounting principles. Students meet eight times during the semester to listen to lectures from professors and business professionals who are involved in the accounting field. Students seem as satisfied with this course, as they do the traditional version and perform as well on exams as those in the traditional version of Accounting 200. On-campus students seem to enjoy the flexibility to learn at their own pace and convenience.

Physical Science 100, English 115, and Accounting 200, are being adapted for delivery to Independent Study students. This is another way the hybridization of education is taking place. Additionally, the CID is currently developing online courses for introductory Chemistry, American History, Biology, Book of Mormon, and Statistics. All of these courses are being developed for delivery on-campus and off campus using an interactive distance education model. The idea is to use multi-media and communication technology to create a rich context for student learning. An unintended consequence of the development of these courses is a lessening of the distinction between on- and off-campus courses, which is causing administration and faculty to rethink course delivery, support, and course prioritization, as well as issues of assessment, to name only a few. These online general education courses have been developed for on-campus delivery, and now are being developed for off-campus students. To offer these courses, however, Independent Study will need to adapt and adopt many practices associated with on-campus education.

Independent Study Online

The CID develops Independent Study university courses for online and paper-based delivery. Currently, these courses are exclusively transmissive and asynchronous designed for students to complete at their own pace. The online courses have multimedia enhancements, interactive exercises, and links to relevant information, giving students a richer learning experience. The CID is responsible for developing these courses while Independent Study (IS) markets them and provides support to students. The CID has developed over 70 university level online courses.

Another important element of CID's development of these courses is the intense effort by the CID and University administration to encourage academic

departments to assume more ownership over their Independent Study courses. To this end, instructional designers are assigned to Colleges and Departments and Deans and Chairs have been asked to prioritize and select courses for development. The shift in the control and responsibility of online courses from instructional designers or administrators into the hands of academic units is an important outcome of bringing course development to campus. Departments are beginning to see their Independent Study courses in the same light as their on-campus offerings. Ownership by academic departments and lessening the distinction between on- and off-campus students is central to the hybridization experience at BYU. Since1998, when President Bateman announced his support of web-based distance education, enrollments have grown from 7,000 to 46,000.

Special Technology Projects

In addition to the development of large general education courses, the CID develops technology projects for the improvement of education on-campus. To participate in the development of these projects, faculty members think of ways they could use technology to more effectively teach a particular concept or set of concepts. With the assistance of a trained instructional designer, the faculty member develops a proposal and submits it to the Committee for Instructional Media Arts (CIMA). If the University committee funds the project, the CID provides instructional design, art, programming, and evaluation support to develop and implement the project. For example, a chemistry professor saw the potential of interactive technology to help beginning chemistry students explore chemical principles. The difficulty with teaching introductory chemistry is chemistry students often "cookbook" by following lab instructions by rote, instead of engaging in problem solving and exploration. The virtual chemistry lab (ChemLab) was developed to encourage problem solving and exploration. These and many other special technology projects help improve the quality of education and engage faculty in thinking creatively about the ways in which technology can help solve particular instructional problems.

Semester Online, Independent Study, and Special Technology Projects are combined to serve multiple functions and hybridize education for on- and off campus students. For example, the CID is developing a large General Education course for introductory chemistry that will now include the recently developed virtual chemistry lab as an important component. The Physical Science 100 course is not only available for on-campus students, but is now being used by off-campus students, and many of the learning objects are being used by the faculty in the classroom. Additionally, a video introduction developed as a special technology project is being used in conjunction with English 115, to train students in the basic composition course about principles of research and how to best use library resources. The CID enhanced the Independent Study web-based courses that are now offered to Semester Online on-campus students, and on-

line courses developed for on-campus students are being adapted for off-campus delivery. These are all examples of hybridization in education at BYU.

The hybridization of education at BYU is emergent and ongoing, and is a result of multiple forces including administrative support, development of new organizational units, technological advances, the relationship between BYU and its sponsoring institution – the Church of Jesus Christ of Latter-day Saints. Many more administrative, curricular, and institutional decisions will further affect the hybridization of education at BYU. For example, from this chronology it is clear that distance education practices have been brought to campus and are hybridizing teaching and learning in this context. What has not happened, for the most part, is the exportation of campus teaching practices to Independent Study. Practices such as teacher-student interaction, student-to-student interaction, comprehensive student services, and informal support networks to name only a few, have not been adopted for off-campus delivery. Currently, these courses are largely asynchronous and transmissive. However, university administrators and faculty members are interested in bringing more interactive practices to distance learning. As faculty members have become more involved in the design and development of campus-based courses, they have begun to become more interested in developing more interactive courses for distance education students.

Consequences of the Hybridization Experience

Convergence of campus and distance education has influenced BYU administrative services, course and curriculum design, institutional goals and structures, resource sharing and collaboration, assessment, faculty and student roles, student services, and academic policies. As Universities manage this convergence process, we believe these key elements must be given careful attention.

Administrative Support and Structure

The support provided by President Bateman and other academic administrators was crucial for facilitating change and collaboration among university organizations. This support was realized in the development of new organizational units such as the Center for Instructional Design and the reorganization of administrative structures and reporting lines. For example, by bringing distance education under the direction of the Academic Vice President rather than a separate distance education administration, boundaries between on- and off-campus education were lessened. This change in administrative structure has been important for fostering collaboration and coordination between continuing education and campus. In addition, because distance education reports to

academic administration, faculty's interests and concerns are more likely to be addressed. As distance and campus education converge, it is important that faculty members are involved in the decision making process and that academic administration are supportive of the convergence process.

Course and Curriculum Design

Another consequence of the hybridization experience is an increased level of attention to the instructional design of courses intended for campus and distance students. A greater focus on instructional design issues at the course level has led to greater attention to curriculum design within academic departments. In particular, as departments design and develop web-based courses for delivery to both on-campus and distance students, they must specify the course objectives and the best methods for teaching the course. This careful questioning of instructional objectives naturally leads to departments questioning and refining the design of their curriculum. For example, as a result of the development of several hybrid online courses, the BYU School of Religion has developed a strategic plan to use online education for their campus and distance students. During the process of writing this document, they refined their goals for religious education curriculum more generally. Similarly, the dean of General Education (GE) is conducting an extensive evaluation of online GE courses; this review is resulting in overall curriculum assessment and the refinement of course and curricular goals. This process of reflection and refinement of course and curriculum goals is an important consequence of the hybridization experience at BYU.

Institutional Goals and Structures

BYU is unique in that the goal to provide the "BYU experience" to students unites both on-campus and distance education efforts. BYU Independent Study courses have focused on a transmissive model to increase the efficiency and reach of their courses. In contrast, on-campus courses are based on interaction between a teacher and students. Although BYU has many large lecture courses, there is a concerted effort and commitment by faculty and administrators to provide students with a high quality mentored learning environment. As distance education practices and technologies were brought to campus, this tension between efficiency and quality was clearly manifest. For example, there is a debate among faculty and administrators about the extent to which online courses and distance education practices can provide students with the "BYU experience." One result of this debate is the development of a Teaching and Learning Support Services (TLSS) committee with members from the Testing Center, Independent Study, the Center for Instructional Design, the Faculty Center, the Lee Library, and the Office of Information Technology. This committee is

providing direction and coordination as the hybridization experience at BYU continues.

Resource Sharing and Collaboration

Another consequence of the hybridization experience is the increased collaboration and synergy between units that focus on "campus education" and those that focus on distance education." This sharing and collaboration has been one of the most important and interesting consequences of the hybridization of distance education at BYU. For example, there have been important discussions between technical staff, University administrators, instructional designers, the testing center, the library, and faculty members concerning the formulation of a written strategic plan for providing high quality and efficient education to students and supporting faculty in this endeavor. In addition, a committee comprised of members from Independent Study, the Testing Center, and the Center for Instructional Design, has developed a list of functional specifications for an enterprise wide assessment system for teaching on- and off campus students. Developing these specifications took collaboration and cooperation. Perhaps the most important ingredient of this successful collaboration was the blurring of boundaries between on and off campus teaching and learning.

Assessment

Assessment is an important issue associated with BYU's hybridization experience. As on-campus and distance education converges there is a need for a shared strategy for providing testing and assessment services to students. As mentioned previously, a committee with representatives from the Testing Center, Independent Study, and the Center for Instructional Design, has recently met to create an overall assessment plan that will include creating and delivering online tests and the ability to report and record grades for both campus and distance students. Additionally, the specifications included the ability to compare and analyze test scores and grades for distance and campus students. Currently, instructors teaching traditional courses, campus online courses, and independent study courses are required to access three different systems with little ability to compare test performance. The convergence of campus and distance education assessment practices and technologies will improve the quality of assessment and learning for all students taking BYU courses.

Changing Faculty and Student Roles

The change in faculty and student roles is another important consequence of the hybridization experience. At BYU, many faculty members are developing a vision of the possibilities concerning how to redesign their campus courses for delivery to geographically remote students. Indeed, because distance education practices have been brought to campus, many faculty members are seeing the advantages and possibilities of using technology to teach students, whether they live on or off campus. However, teaching students in the context of hybrid courses often means that the instructor becomes de-centered. They become a guide and mentor, rather than the center of the instructional relationship. Learning to be successful in this new role requires training, practice, and support. At BYU, we are developing a faculty fellowship program in which faculty are selected and are given comprehensive training and support to learn to teach within the emerging hybrid model.

We have seen a similar shift in student roles. Campus students who take online courses identify flexibility as one of the major strengths of these courses. However, this flexibility requires that students pace themselves and seek additional help when necessary. Many students are not well equipped to learn independently and struggle when given flexibility. It is important that students are made aware of the new learner role they must adopt in hybrid courses. BYU developed a tutorial for on-campus semester online students to provide information about their role in these hybrid courses. Prior to the development of this tutorial, we interviewed 20 students who had dropped a hybrid campus course that not only required them to complete most of their course work online, but also required occasional meetings. From these interviews, we found that half of the students dropped the course because they thought the course was online and were unhappy that they were required to attend an occasional class meeting. The other half dropped the course because the course was online and they felt they could not take responsibility for their own learning and that they did not meet often enough. Providing students with the information about their student roles and the support they need to be successful is important to the success of the hybridization of education. It is likely that as courses intended for geographically remote students become more interactive, many of the students accustomed to a more transmissive model will need training to be successful in adopting this new student role.

Student Services

Providing student services for campus and distance students is another important issue raised by the hybridization experience. These student services include access to library, academic counseling, and financial-aid, tutoring services, to

name only a few. As distance and campus education converges, the question of how to provide these services needs to be re-thought. Currently, BYU has comprehensive services for on-campus students, yet it has done little to provide similar value added services to distance students. As distance and on-campus education continues to converge, it is likely that providing student services for all students will become a priority.

Academic Policies

Many policy-related questions have yet to be addressed. For example, should there be a limit to the number of distance education courses a campus student can take? How many online courses can a student take if they are matriculated at BYU? How does one deal with copyright and intellectual property issues for faculty? How does faculty participation in designing and delivering these courses count towards promotion and tenure? These are important policy questions for students and faculty that become more salient as distance and campus education converge.

Conclusion

The hybridization experience is ongoing and complex. Important decisions have yet to be made about the ways in which distance education practices can provide students with the "BYU experience." Indeed, the search for better ways to serve the growing population of the Church of Jesus Christ of Latter-day Saints continues to provide intensity and direction to the hybridization experience at BYU. The convergence of distance education and on-campus education at BYU is embedded within the history of the mission and purpose of the campus. The mission of the University is to provide students with a spiritually enriched secular education. Due to the increase in Church membership and the cap on student enrollment, there has been a great deal of effort to find ways to provide the BYU experience to more people. This basic desire has required the administrative organization of online education for on-campus and off-campus students, coordination of services, deployment of technologies for on and off-campus education, rethinking of course prioritization, and strained the campus technology infrastructure. All of these efforts have led to a hybridization of education where the distinction between traditional and non-traditional students is becoming more blurred. As this case study demonstrates, this hybridization experience has brought distance education to the campus. But, campus practices have yet to be brought to distance education. The next phase in the hybridization experience of education at BYU will include the development and implementation of a distributed learning strategy for students regardless of their enrollment status or location.

References

Arvan, L., Ory, J., Bullock, C., Burnaska, K., Hanson, M. (September 1998). The SCALE Efficiency Projects. *JALN, 2* (2), 33-60.

Bateman, M. (August, 1998). University conference address given to campus faculty and staff. Provo Utah: Brigham Young University.

Bourne, J. R. (September 1998). Net-Learning: Strategies for On-Campus and Off Campus Network-enabled Learning. *JALN, 2* (2), 70-88.

Brigham Young University: *Aims of a BYU Education.* [Online]. Available at: http:// www.byu.edu/about/aims/.

Calder, J. (June 2000). Beauty Lies in the Eye of the Beholder. *International Review of Research in Open and Distance Learning,* 1 (1), [Online]. Available at: http:// www.irrodl.org/content/v1.1/judith.pdf.

Calvert, J. (January 2001). Deakin University: Going Online at a Dual Mode University. *International Review of Research in Open and Distance Learning, 1 (2) [Online].* Available at: http: //www.irrodl.org/content/v1.2/ deakin.html.

Cookson, Peter (July 2001). Editorial: Global Diversity of Distance Education. *International Review of Research in Open and Distance Learning, 2* (1) [Online]. Available at: http:// www.irrodl.org/content/v2.1/ editorial.html.

Feenberg, A. (1999). Distance Learning: Promise or Threat? [Online]. Available at: http:// www-rohan.sdsu.edu/faculty/ feenberg/TELE3.HTM.

Henstrom, R.H., and Oakes, K.R. (2001). *The world is our campus: The history of the Division of Continuing Education at Brigham Young University.*

Hiltz, S.R. (1998). *Collaborative learning environments in asynchronous learning networks: Building learning communities.* Unpublished manuscript.

Garrison, R. (June 2000). Theoretical Challenges for Distance Education in the 21st Century: A shift from Structural to Transactional Issues. *International Review of Research in Open and Distance Learning, 1* (1). Available at: http:// www.irrodl.org/content/v1.1/ randy.pdf.

Levin, J.A., Levin, S.R, and Waddoups, G.L. (1999). Multiplicity in learning and teaching: A framework for developing innovative online education. *Journal of Research on Computing in Education,* 32 (2), 256-269.

Maitland, C., Hendrickson, R., Pena, D., & Mitchell, D. (1998). Distance Education in Higher Education Institutions. *Update,* 4 (1) [Online]. Available at: http:// www.nea.org/he/heupdate/ vol4no1.pdf.

Merriam. S.B. (1988). Case study research in education: A qualitative approach. San Francisco: Jossey-Bass.

NEA Higher Education Research Center (2000, April). *Distance education at post-secondary institutions: 1997-1998.*

Noble, D. (1997). Digital diploma mills: The automation of higher education. *First Monday, 3* (1), 1-16.

Peters, O. (June 2000). Digital Learning Environments: New Possibilities and Opportunities. *International Review of Research in Open and Distance Learning*, 1 (1). Available at: http:// www.irrodl.org/content/ v1.1/otto.pdf.

Richards, L. A. (January 1997). *What I Now Believe About a BYU Education That I Wish I Had Believed When I First Came* [Online]. Available at: http:// speeches.byu.edu.devo/96-97/ RichardsW97.html

Rossman, M. H. (November 1999). *Successful Online Teaching Using An Asynchronous Learner Discussion Forum. JALN, 3* (2), 91-97.

Stake, R. (1988). Case study methods in educational research: Seeing sweet water. In R.M. Yaeger (Ed.), *Complimentary methods for research in education* (253-278). Washington, DC: American Education Research Association.

Trindade, A. Rocha, C., Hermano, A. and Bidarra, J. (June 2000). Current Developmentsand Best Practice in Open and Distance Learning. *International Review of Research in* Open and Distance Learning, 1 (1). Available at: http:// www.irrodl.org/content/v1.1/ carmo_et_al.pdf.

Tait, A., and Mills, R. (Eds.). (1999). The Convergence of Distance and Conventional Education: Patterns of Flexibility for the Individual Learner. New York: Routledge.

Turoff, M. (1997). Alternative Futures for Distance Learning: The Force and the Darkside. [Online]. Available at: http://www.westa.edu/ ˜distance/ turoff11.html.

Wang, C.X., Kanfer, A., Hinn, M.D., and Arvin, L. (2001). Stretching the boundaries: Using ALN to reach on-campus students during an off-campus summer session. *Journal of Asynchronous Learning Networks* 5 (1), pp.1-20.

Wegerif, R. (1998). The social dimension of asynchronous learning networks. *Journal of Asynchronous Learning Networks 2* (1), 34-49.

Williams, R. (1961). *The Long Revolution.* England: Hazel Watson & Viney Ltd. Aylesbury and Slough.

Yin, R. K. (1984). *Case study research: Design and methods.* Newbury Park, CA: Sage.

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Book Review - Distance and Campus Universities: Tensions and Interactions

Reviewers Ian Mugridge
Athabasca University

Reviewed by: **Ian Mugridge**, Athabasca University

I once read a book review in which the author recommended to the distinguished university press that had published the work that, since it was irredeemably bad and for the benefit of all concerned, it should be withdrawn and everyone connected with it dismissed. I do not intend to make such a suggestion in this case. But I would be tempted to do so in the case of those who designed and approved the cover: The design and, more particularly, the colour are simply awful, so much so that I was tempted to put the book aside without going further. However, where I grew up, everybody – at least, everybody I knew – had mothers who reminded them never to judge a book by its cover. In this case, our mothers would have been right.

Initially, I feared this book might attempt to revive the discussion that flickered into brief and inconclusive life in the mid 1980s, about the relative merits of single and dual mode institutions. It does not. What this book provides is a serious, sustained and cogent attempt to discuss "the subtle and intricate relations between the distance teaching universities and conventional universities, and to analyze the influence they have had on each other" (p. xix). In addition, the author seeks "to identify significant divergences between distance teaching universities operating in various national contexts" (p.xx) by, as its subtitle notes, providing a comparative study of five countries. This is done by attempting to answer in eight separate chapters and in relation to five distance teaching universities, a number of questions related to several aspects of university teaching and practice. The universities discussed are the United Kingdom Open University, the Universidad Nacional de Educación a Distancia**,** Spain, the FernUniversität, Germany, Athabasca University, Canada, and the author's home institution Everyman's University, Israel. The chapters review questions related to the emergence of the open universities, each of the five in its national setting, students and academic faculty, academic curricula, technologies and distance teaching universities, governance, funding and organisation, scepticism, collaboration and competition among distance and campus universities, and finally, lessons from the past and trends for the future. Further, two annexes seek to devise, on the basis of the preceding discussion, guidelines for the establishment of new distance teaching universities and a checklist for those attempting to do so.

While I have my doubts about the value of the two annexes at this stage in the development of open and distance education, the remainder of the book contains an impressive and valuable discussion, the first I am aware of in such comprehensive form of the issues it takes up. To say that those of us who are familiar with Dr. Guri-Rosenblit's work, much of it related to the development of her own institution, would have expected no less is beside the point: she has undertaken successfully and with illuminating results, a complicated and difficult task and is to be congratulated on the outcome.

Much of what Dr. Guri-Rosenblit discusses here has been dealt with piecemeal in other contexts. Much of it has become enshrined in the mythology that has emerged in the distance teaching universities over the last thirty years. Nowhere, however, have the significant issues in the development of these institutions and their relationship to the campus based institutions alongside which they have worked been analyzed. One of the features of these developments is that in the five widely differing contexts in which the selected institutions are working, their experiences are often similar. The importance, for example, of political support comes through very clearly. The author cites Walter Perry's comment that the founding of the UK Open University was a political act and many of us who have been present at the establishment of distance teaching institutions would endorse this from our own experience. The establishment of the Open Learning Institute in British Columbia, which I helped to establish, was certainly a political rather than an educational action; and the comments of all the founding heads of open universities in *Founding the Open Universities* reinforces this point. In this sense, the argument that open and distance education as it has emerged in the 1980s and 1990s was a natural, even an inevitable outgrowth of universities as they were developing then may lose some its appeal: The establishment of the distance teaching universities was probably nowhere regarded as a useful development by the established institutions and it is likely that development would have been quite different – and, I would guess, much slower – if the campus institutions had been left to themselves.

It is perhaps in her discussion of the lessons to be drawn for both the past and the future that Dr. Guri-Rosenblit's discussion is at its most interesting and potentially useful. She begins by pointing out that the distance teaching universities have demonstrated that "massification and flexible access do not necessarily imply the lowering of academic standards" (p. 240). This was a charge leveled at most or all of the new distance teaching institutions when their establishment was announced and while they were in their planning stages: many of us were obliged to spend a great deal of time defending the view that distance teaching did not mean sub-standard teaching. Time has shown that this was correct as students from distance teaching universities have demonstrated that the quality of their academic preparation is equal to that provided by campus universities. She is equally convincing in discussing other conclusions derived from her earlier discussion. This is particularly so in areas like the need for a redefinition of drop-out and attrition, the importance of student support

systems, the care needed to develop high quality study materials, potential for changes in the teaching roles of academic faculty, and use of adjunct faculty and student support staff. These lessons from the past are finally moved forward into what I would expect to be a prescient look at future developments in the field. Taken together, both the body of this book and its concluding chapter constitute an impressive and important addition to the series of which it forms part.

Book Review - The "E" is for Everything: E-commerce, E-Business, and E-Learning in the Future of Higher Education

Reviewers Jos Rikers
Open University of the Netherlands

Reviewed by: **Jos H.A.N. Rikers**, Open University of the Netherlands

The Educause Leadership Strategies series addresses critical themes related to information technology (IT) that will shape higher education in years to come. By gathering a team of knowledgeable authors, each one very much involved in the introduction of IT, the editors have succeeded in compiling a book that addresses many questions and issues. Richard N. Katz, vice president of EDUCAUSE, has a University of California background. Diana G. Oblinger, who in previous years held several management positions with IBM, is currently vice president for information resources and chief information officer for the sixteen-campus University of North Carolina system.

The central theme of this book is the relationship between e-commerce, e-business and e-learning, and the role they will likely play in higher education. The editors begin by painting a picture of what a first-time student will encounter upon entering the University of California's, Santa Cruz campus system in the year 2010. The scenario depicts how the first Web generation of university students might engage in a higher education system, once information technology has been seamlessly integrated with every aspect of its business processes. Does this sound preposterous? No, say the editors. The "E" is already in the air.

In the first chapter, the editors navigate the sea of "E", a world where the Internet and the World Wide Web will fundamentally change the way companies operate on all levels. Education, of course, is also taking part in this change. The downside of this chapter is that readers face some confusion regarding the use of terms and terminology. For instance, the editors decided to use the "e" prefix to cover many complex technologies and activities addressed later in the book. And although the editors build their case using a large number of examples, statistical data, and research outcomes, it is obvious that they wrote this chapter during the high times of the new economy. Given the significant problems the new economy encountered with the downturn in 2001, they probably would have tempered their views if only they had been in the know at the time!

The author of the second chapter, Kenneth C. Green, is the founder of The Campus Computing Project, the largest continuing study on the role of information technology in U.S. colleges and universities. The data he presents in this chapter are based on a 1999 Campus Computing Survey, which showed that by the fall of 1999, significant numbers of students were already beginning to seriously engage in Internet based e-commerce. This trend can be compared to U.S. colleges and universities, who were not ready to participate in the 1999 e-commerce explosion. In fact, less than 5 percent of the U.S.'s two- and four-year colleges had a strategic plan for e-commerce, and less than a fifth were in the process of developing such a plan.

Green then explains why colleges and universities were late to the dance. The factors he cites are: cultural differences between companies and campuses; the complexity of e-commerce is often not fully understood by campus policy makers and therefore not perceived as mainstream; the divide between academic and administrative computing; and last, but not least, the vast resources required to introduce e-commerce in the first place. While, Green describes the situation within the context of the United States, the factors he cites are perhaps more applicable outside that nation. The idea that education should be considered an industry (and should be run like any other industry) is still inimical to the academic values held around the globe. Therefore, it can be concluded that e-commerce will emerge on campuses, but only when it is accepted as a part of the institutional mission.

Chapter three is written by Robert A. Wallhaus, who among his many activities as a higher education consultant, also works for the Illinois Board of Higher Education. Asserting that e-learning will force us to look for new ways of collecting data and describing higher education situations, developments, and trends, Wallhaus says that while traditional learning modes will continue to be offered for years to come, new approaches to offering and consuming alternative forms of learning will increase. The data used to analyse emerging trends in higher education clearly shows that a dual situation is coming into existence – one that will eventually use both traditional and new measurements. To make matters even more complex, Wallhaus says this analysis will only work if the old and new data collection methods are compatible. Therefore, he argues, a broader contextual model for describing the learning process under the e-learning regime will be required. He also points out that such a conceptual framework already exists, having been developed by the National Postsecondary Educational Cooperative (NPEC) in 1999. Wallhaus then examines trends in data collection, which he says will eventually see a more fluid exchange of data between individual learners and their institutions. This trend will have enormous implications for data collecting and analyses mechanisms, positive and negative. In fact, in Wallhaus' opinion, one of the more threatening pitfalls is that this trend could lead to incompatible student records systems. The author then concludes this chapter by providing a classification structure describing learning providers.

Chapter four was written to put our feet back on the ground! The author, David L. Wasley, is the assistant to the associate vice president of information resources and communications, Office of the President, at the University of California (UC). He directs his attention to the development of universal digital credentials for all members of the UC university community, a process he sees as the cornerstone for the development of middleware services for the deployment of next-generation technologies. Wasley then goes on to discuss middleware services, which he says must be developed before the university community can step into e-learning and e-commerce on a large scale. Discussing the need for standardisation of the electronic information environment, he then defines this information environment as a set of electronic information services, on-line resources, communications services, applications software, and workstations that enable us to teach, learn and work more effectively, without constraints of time and place. Wasley then discuses the development of general solutions according to open standards for authentication, authorization, directory services, and encryption, solutions that can all be integrated to a "middle ware block" that can subsequently enable the university community to transform its business processes.

In the fifth and final chapter, Richard Katz addresses the issue of information policy support and campus e-business. According to Katz, universities and colleges must be prepared to adequately address emerging issues such as the appropriate use of institutional information and the protection of information originating or residing in college and university information systems. Privacy, access, ownership, and security issues posed by e-business are extraordinarily complex, and according to Katz, represent as much a set of cultural, behavioural, and policy issues as they do technical ones. Presenting readers with an "Integrated Policy Framework", the author starts off with this key assumption: Under what conditions (responsibilities of resource users) and for what members of the campus community is access to the network, network-based services, and networked-based information, considered a "basic right"? According to Katz, policy development is not simply a process obeying strict rules that are, for the most part, context specific. However, he is convinced that e-business applications will open new vistas, while at the same time creating new risks. An integrated policy framework to guide the new developments will nonetheless be hard to institute. On the other hand, an integrated, e-business environment without a supporting policy framework will be nearly impossible to manage.

In the final chapter, written by PriceWaterhouseCoopers' Jillinda J. Kidwell, John Mattie, and Michael Sousa examine the pitfalls of implementing new technology. They argue that universities and colleges that get the urge to participate in e-business and e-learning initiatives should not become overawed by the feeling to do something. Instead, they say that implementation of e-business in a college or university requires a balanced and well thought out strategy. At PriceWaterhouseCoopers, for instance, they identified a four stage evolutionary model for adopting an e-business strategy (relevant for all industries, as well as

higher education). The four stages described are: presence, integration, transformation, and convergence. Outlining the details of this strategy, the authors say that to deploy e-business and e-learning effectively, an organization must be prepared to guide the process from beginning to end, step-by-step. At all times the organization must be prepared for their next move. In conclusion, the authors provide a list of diagnostic questions that can be used to analyse an organization on all the eight areas they mentioned in the book.

Overall, this book gives a thorough overview of the issues that an institution implementing e-business initiatives will encounter. Starting with background on the development of e-business in higher education in the first two chapters, the third chapter offers advice on collecting data to benchmark success in the e-environment. Chapters four, five and six deal with the introduction of e-business from a technical, policy and organizational point of view. Included are practical checklists, models, and diagnostic questions to test the readiness of an organization for e-business. This book a must read for all decision makers involved in the introduction of e-business in higher education. Indeed, when putting the challenge of implementing e-business into perspective, it often seems as if the problems do seem to pile up quickly! But one still should be aware of what is ahead and take time to prepare, rather than just blindly participate in e-business because everybody else is doing so.

This book provides a clear overview of all the issues that really matter when discussing the introduction of e-business and e-learning into a higher education organization. While it is obvious that it was written from a North American context, it can be of value to other regions where cultural and economic constraints exist and where educational situations and systems differ. This is especially true for developing countries, where e-learning is often seen as a cost effective solution to problems of low access and participation rates in higher education.

Book Review - Cohort Programming and Learning

Reviewers Patrick Fahy
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Authors: I.M. Saltiel and C.S. Russo
Krieger Publishing Company: Malabar, Florida (2001)
206 pp. (Hardcover)
ISBN 1-57524-019-X

Reviewed by: **Patrick J. Fahy**, Athabasca University

Cohort learning appears to have arrived: A search on *Google* in November 2001 returned over 119,000 hits on the term *cohort learning*, ranging from medical and other professional programs, to military, and even K-12. As a vehicle for target marketing of programs, with clear planning and administrative advantages for students and institutions, cohort-based learning is evidently becoming increasingly attractive to program managers wanting to provide an option to traditional delivery.

Cohort learning in its most basic form may be defined as the formation of a group of from 12 to 25 (usually adult) students, who from the commencement of their program move through common courses and other experiences together, using the power of interpersonal relationships to enhance learning, interpersonal interaction and support, and, ultimately, program completion. Cohort-based programs are characterized by members' intense group identification with its cohort, matched by special administrative and instructional provisions on the part of the offering institution (i.e., streamlined registration and materials distribution; weekend, evening and summer courses). Technology is increasingly used to facilitate contacts among cohort members when they are not in face-to-face contact.

The authors come to their subject from backgrounds which suggest long-term involvement with alternative programming. Saltiel is presently an academic at Troy State University, Phenix City, Alabama, and has private sector and adult education experience. Her own training includes doctoral studies of cohort-based programs. Russo directs a New Jersey-based international continuing professional development and an employee-training program. Both authors have been active in leading, researching and publicizing workplace-related training developments.

The book's chapters illustrate its focus, and provide an outline of its contents:

Cohort programming and learning

Understanding cohort programs

Program design and development

Curriculum development

Teaching-learning strategies

The cohort program learner

Implications for practice

The future of cohort programming and learning

While they definitely promote cohort learning "We encourage you to try it. You will probably like it!" (p. 111), the authors makes a sound case for the timeliness of cohort-based programming, *for some types of students and programs.* Specifically, cohort programs might benefit students who:

- Are self-directed and mature learners, clear about their learning goals

- Enjoy collaborating with others for learning and mutual support

- Are not attracted to traditional delivery methods and conditions

- Dislike constantly having to rearrange their schedules as courses change (or, more positively, want a clearly laid out, sequential program)

- Are prepared to give up some choice to eliminate the problem of finding needed courses closed or unavailable

- Are highly motivated to complete a credential

Programs for which cohorts are appropriate include courses that are (or could be) sequential and interrelated; include students that usually move through program requirements more or less in lock step; include faculty who are willing to share unusual conditions such as weekend and summer teaching, and greater advising and counseling duties; include non-traditional students; have a strong connection to the workplace; include students who prepare for certain professions that have a tradition of cohort based training (e.g., medicine, dentistry, veterinary medicine, and pharmacology).

The disadvantages in cohort-based learning are actually variations of some of the main positives. The lock-step nature of the program means rigid sequencing, with few or no electives; the quality of the interpersonal dynamics within the cohort are critical to the whole experience; scheduling is intense, demanding excellent attendance and participation; the pace is usually accelerated; and the program tends to rely upon a small number of faculty.

What might be sacrificed in a cohort-based experience, "even by those who might ideally be suited to it," Saltiel and Russo admit that there is a potential dark side for cohorts (p. 101), in which programs may become incestuous, show signs of inbreeding and excessive inward focus, and develop a narrow outlook

on themselves and others. Cohorts that go bad share the same tendencies as any self-absorbed group in any environment: they become convinced of the centrality and unique legitimacy of their own restricted experience. The danger may be greater for cohort learning groups, because they often meet and interact over an extended period with only a small number of others, in an environment that may be lacking outside (the cohort) contacts.

In distance education we are familiar with this danger, evident in those online groups which bristle with snide exclusivity, "meet[ing] largely to promote their own interests and to reinforce their own like-mindedness, excluding anyone who disagrees [and] [a]s a consequence reinforc[ing] the fragmentation and factionalism of modern society" (Shenk, p. 111).

The antidote to exclusivity and disengagement from the real world is linkages to others. The authors recommend such linkages for cohort learners, advising instructors and program managers to arrange face-to-face networking opportunities with outsiders. Such networking can create and revitalize linkages and foster partnerships with outsiders who are firmly rooted in realities beyond the cohort, yet who understand the issues and have an interest in the program's success. This is not revolutionary advice, but we know from our DE experience that it is important. If cohort programming were to become reliant on technology, increasing the virtual content of the experience, the potential for alienation and asocial behaviour would consequently increase. The wise advice of these writers is that such effects be prevented through partnerships with bodies outside the cohort.

Cohort programming is not for everyone, nor for every institution. The authors warn that cohorts tend to be innovative and unconventional, becoming (if not designed to be) de facto test-beds for new kinds of teaching and learning activities and approaches, and demanding innovative institutional and program policies and procedures. Cohort programs tend to attract people who differ from the student mainstream, with different expectations of the institution and its personnel. They can be impatient and as individuals, high maintenance administratively. In a cohort, many of these characteristics are addressed or ameliorated to the benefit (and relief) of both the institution and the student.

The authors conclude that cohort programming is here to stay, and will grow as interest increases in and more resources are devoted to contextualized, integrated learning in the workplace, and in response to specific social and learner group needs. As tools and models for asynchronous interaction of various kinds become more available, the prediction is likely to be proven correct. If greater access and equity continue to be goals of education and training, it is easy to see how cohort learning could be a means for achieving them. For anyone intrigued by the prospect, this slim book would be a fine primer.

References

Shenk, D. (1997). *Data smog.* New York: HarperCollins Publishers, Inc.

Book Review - Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom

Reviewers Ramesh Sharma
Indira Gandhi National Open University

Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom
Authors: Rena M. Palloff and Keith Pratt
San Francisco: Jossey-Bass Publisher, San Francisco (1999)
206 pp.
ISBN 0-7879-4460-2

With advancements in Internet technologies, the methodologies associated with imparting education have changed significantly. The book under review, therefore, addresses issues specific to building effective online electronic learning communities. Organised in two parts, the book's first section examines the concept of learning communities in cyberspace, whereas the second part focuses on concrete aspects of building an electronic learning community.

Chapter two, "Defining and Redefining Community," examines human relations in cyberspace. It is here that the authors say electronic communication has brought on a shift from the "place-based community" to a "cyber society," where new online personas and identities have emerged. Because more time is spent processing information internally rather than interacting in face-to-face settings, this medium naturally suits more introverted people, who have what is called an "electronic personality." An important question thus emerges: Without face-to-face interaction, how does community building – one that takes into account all personality types – occur in online groups? Is it possible to build a cyber community without it? And how can the foundation of community, premised on ideals like ethics, goals, liabilities and social norms, be laid when we cannot see each other? To answer these questions, the authors begin by redefining the concept of "community" within the context of emerging Internet technologies. They then discuss the role of conflict on group cohesiveness, and ponder why some people fear electronic media, while others gravitate towards it. They conclude that for effective learning to occur online, the learning community must be treated as a vehicle, one where interdependency plays a central role. In short, the absence of mutual support and group participation stifles online learning. However, by taking simple humanistic approaches such as discovering common interests, discussing personal issues, and exhibiting flexibility on the

part of instructors, a more effective online learning experience will subsequently emerge – a dynamic that, in and of itself, will lead to a stronger and more vital electronic learning community.

The next chapter, "What We Know About Electronic Learning," deals with virtual versus human contact. More specifically, coalescence, shared responsibility, rules, social roles and norms; psychological and spiritual issues; and vulnerability, privacy and ethics in delivering online courses are all discussed in great depth. While the authors say that some of these issues may not be that important in face-to-face class setting, they are the lifeblood of online courses. The authors therefore conclude that whatever technology we may adopt for electronic classroom, human elements play an inevitable role and therefore must be fully addressed.

Chapter four highlights concerns related to online activities. The amount of time required for adequate participation by both faculty and learners, and the optimal number of participants in an online classroom setting are both covered. The merits and limitations of synchronous and asynchronous environments, time off and online, information overload, time management techniques, and time constraints are also discussed in great detail. The authors also cover administrative issues related to time constraints, group size, payment and compensation of faculty members, and instructional motivation for online delivery.

The final chapter of part one is related to managing the technology and explores the role technology plays in online course delivery. In the building of an online learning community, the man/machine relationship forms a significant part. For instance, the section on how to use the media demonstrates that software/courseware must be user friendly, functional, yet visually appealing, for it to be effective.

Part two of the book focuses on the nuts and bolts of building an electronic learning community. The first chapter of part two, explains the transition to cyberspace learning by examining the role of instructors in terms of online community building and administration; and the role of learners in terms of knowledge generation, collaboration and process management. This chapter also explains the mechanics driving the paradigm shift from face-to-face learning to an online environment.

The remaining chapters explain the development of a successful online course. The chapter titled "Building Foundations," for example, focuses on the creation of an effective online course syllabus and provides useful examples on how to create an effective online course delivery format.

Promoting collaborative learning is the focus of chapter eight. According to the authors, formulating shared goals for learning is an important element in the creation of collaborative learning environments. They give advice on tactics that help pave the way for collaborative learning such as helping students get to know

each other, and the creation of small online discussion groups where students can develop critical thinking skills and relate their course material with their real life experiences. To summarize, the objectives of inter-group collaboration, resource sharing and collaborative writing must be central in the creation of an effective online learning environment.

Jack Mezirow coined the term "transformative learning," which denotes learning based on reflection and on the interpretation of experiences, ideas and assumptions achieved through prior learning. Chapter nine describes fundamental issues surrounding transformative learning in an online classroom environment.

Chapter ten examines evaluation tools that critically analyze student performance, and program and course evaluation in an online environment. For instance, the authors say student performance can be assessed through simple means such as establishing dialogue and getting to know students' ideas and opinion, alongside techniques such as evaluating students' assignments and self-evaluation.

The final chapter offers a general recap and peeps into the future. It is at this juncture that the authors strongly suggest that traditional classrooms will not be replaced by computer mediated distance learning and that electronic pedagogy does not favour eliminating faculty. Instead, development of new skills and approaches will be required to maximize the pedagogical effectiveness of online learning. Attributes such as honesty, responsiveness, relevance, respect, openness and empowerment are key elements in building highly functional virtual learning communities. The authors also see knowledge as the most critical resource for future social and economic development. They dismiss the idea that online education is a panacea for curing the ills of education today; instead they see it as an empowering tool for the new generation of learners – one that can help students navigate the growing complexities of our knowledge society.

Overall the book is a timely treatise. More specifically, it is a good resource for faculty, instructors, trainers or anyone involved in online or networked learning. It documents and analyses the pioneering efforts of the authors from when they were Ph.D. students deeply involved in researching computer mediated distance learning via online community building, to what is happening today.

Technical Evaluation Reports Series

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Introduction

Modern distance education (DE) is increasingly dependent on the software available for communication between students and teachers. A wide range of online communication products is available, and competitive claims made by suppliers can be bewildering. Currently, particular growth is being observed in the development of synchronous (real-time) communication methods, added to the existing array of asynchronous communication methods such as email and online bulletin boards. The task of selecting appropriate products in this competitive environment is increasingly complex.

Athabasca University's Centre for Distance Education (CDE) addresses the issue of software evaluation in several of its Master's courses. In activities illustrating the importance of the evaluation process in online education, the students of these courses rate the merits and shortcomings of competing software products. Their conclusions are shared on a public software evaluation website: (http://cde.athabascau.ca/softeval/), in order to help other distance educators and students to select appropriate course development and delivery methods. The CDE maintains and updates the evaluation site as a collaborative activity by its faculty and graduate students.

The site is currently amassing comparative data on three types of online educational product:

- Computer-mediated (text-based) conferencing software
- Internet audio-conferencing software
- Course management systems In each of the above categories, the site contains:
- Definitions of major technologies and techniques
- An index of currently available products
- A survey index used by CDE students to enter their software ratings
- Reports of their conclusions for the benefit of the international DE community

It is expected that new product categories will be added as the site continues to evolve. Highest priority is given to software that it is downloadable from the Internet and useable at no cost. The selection of software reviewed on the site is completely impartial; and those involved in the site's development have no commercial interest in any of the products reviewed. The reviewers do not claim that their selection of software is exhaustive, and suggestions for products to be added to the site's review base are welcomed.

In assessing the perceived need for the evaluation website, the CDE conducted an online study of its graduate students' interest in collaborative tools generally. The conclusions (by Tom Kane) are summarised, following the first report in this series.

Athabasca University

January - 2002

Technical Evaluations Report

1. Online Learners' Interest in Collaborative Tools

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Abstract

An online survey was conducted (June 2001) of attitudes of distance education (DE) learners/teachers to online collaborative tools. The respondents in the study were 135 graduate students and faculty members of Athabasca University's Centre for Distance Education (CDE). They demonstrated particular interest in tools that offer the following features: file sharing, automatic synchronisation of documentation for the group, audio conferencing, text chat, and privacy. They also expressed useful opinions on topics including their willingness to upgrade their computer systems, and to pay to avoid online product advertising. These results will be useful in the selection of appropriate new methods for online instruction.

The Survey

The Internet has generated an expectation that we can work collaboratively without having to meet. But has that expectation been fulfilled? For students and professors at Athabasca University (AU), it is a question that affects the daily ability to work together effectively. Most of our work is still accomplished through asynchronous messaging – mainly email and text-based discussion boards (computer-mediated conferencing). Some courses – e.g., those that emphasise technology issues – also feature audio-conferencing methods.

To determine the impact of its current online communication methods among its teachers and students, members of the CDE's graduate programme collected survey data about:

a. Computer systems used by its students and faculty members, to determine possible limits on recommended software.
b. Software and facilities in current use, and the users' levels of confidence with them, to determine potential 'learning curves' requiring assistance.
c. Obstacles to the continued use of these tools, (e.g., technical problems, and the irritation of pop-up ads.
d. Online communication facilities that users would find useful in group work.

The survey required its respondents to give personal identification for verification purposes.

The Sample

A request for voluntary responses to the online survey was sent to the entire CDE membership (approximately 400 students and faculty members). The survey utilised an automatic email (mailto:) response mechanism. An initial sample of 158 responses was received. This included the responses of:

    a.   Individuals who had submitted their forms more than once
    b.   Submissions containing no data

The deletion of these responses reduced the sample to 123 graduate students and 12 faculty members. As there was no appreciable difference between the responses of these two groups, they were combined for a total sample of 135 students and faculty.

Results

1. **Computer configurations:** The data indicated that a wide variety of systems is in use, including several generations of PC and Mac processors. The PC configurations ranged from Pentium III-class CPU's ($n = 51$), to 486-level computers ($n = 4$). The memory capacity of the PCs also varied, although none was less than 32 MB. PC operating systems included the full range from *Windows 95* through Windows ME, and one Unix system.

2. **Internet connections:** The users' Internet connections also varied widely, with the most common dial-up speed being 56.6 kpbs ($n = 45$), and the slowest being 28.8kbps or less ($n = 24$).

3. **Willingness to upgrade:** The responses ranged quite evenly among answers that included "willingness to spend up to $200" to "no need." Only 10 persons stated that they "cannot" or "will not" make changes to their computer system.

4. **Interest and confidence:** Of the 135 respondents, 121 indicated confidence in downloading and installing new software (see Table 1). The greatest levels of interest were expressed in the use of the email and discussion boards ($n >100$ in both cases). In most of the other response categories, the majority of respondents indicated a lack of confidence in use of new methods: e.g., in the use of audio-conferencing methods ($n = 58$). It should be noted that 18 respondents expressed a lack of confidence in the use of traditional online discussion methods.

5. **Interest in new methods:** The need for online tools permitting file-sharing and private discussion—i.e., invisible to other participants and the professor) received substantial support (*n* = 83 and *n* = 87, respectively). Three other methods received support from over half of the sample: the "auto-synchronisation" of documentation for those who miss an online class session (*n* = 77); audio-conferencing (*n* = 70); and synchronous text chat (*n* = 69).

Table 1. Number of respondents who expressed interest and confidence in the use of Online Collaboration Methods

Collaborative method	Interest	Confidence
Email	103	133
Discussion boards	101	117
File-sharing	83	71
Audio-conferencing	70	58
Text chat	69	77
Applications sharing	48	45
Whiteboards	48	33
Listservs	44	64
Shared Web browsing	43	30
Video-conferencing	36	36
Download & installation	n.a.	121
Private discussions	87	n.a.
Auto-synchronisation	77	n.a.
Blocking intruders	62	n.a.

6. **Pop-up ads and junk mail:** The respondents were asked whether, in the interests of using inexpensive software, they would be willing to pay to avoid these annoyances. The largest group (*n* = 79) indicated that they would be content to put up with product advertising; 75 of them responded that they would not use software if it put them on junk mail lists, while 54 stated that they would put up with this. Forty-six persons stated that they would pay up to $2.00 per month to avoid advertising or junk mail intrusions; 35 persons indicated that they would not use software that generated these problems; 11 respondents stated that they would be willing to pay up to $10 per month to avoid them.

7. **Help desk support:** The survey asked whether respondents would welcome technical support in the use of collaborative tools from the CDE. Attitudes to this were broadly divided, with the highest proportion of the sample (*n* = 49) favouring online or telephone assistance with technical and how-to-use problems.

Conclusions

The results indicate that the majority of the sample is in favour of using both synchronous and asynchronous communication facilities, with an unsurprising preference for free or inexpensive software, and a reasonable though not universal tolerance for product advertising. The desirable features of an online communication tool include (in descending order):

1. Privacy of use
2. File-sharing
3. Synchronisation and storage of session documentation
4. Audio-conferencing
5. Synchronous text chat

It is not surprising to see firm support for familiar email and discussion board methods of online interaction. On the other hand, interest in audio-conferencing techniques is high, though confidence in their use is at present only moderate.

It appears that students and faculty members alike are willing to incur moderate expense to upgrade their computers in order to utilise Internet communication. However, the decision to request this of them is not taken lightly by the CDE, in view of Athabasca University's 'Open University' responsibility not to place economic pressures upon its students.

The overall conclusion of the study was that AU's Centre for Distance Education should seek appropriate methods for providing its students and teachers with the collaborative tools that their responses had requested. The search for appropriates will be discussed in the next report in this series.

N.B. Owing to the speed with which Web addresses become outdated, online references are not cited in these summary reports. They are available, together with updates to the current report, at the Athabasca University software evaluation site: cde.athabascau.ca/softeval/. Italicised product names in this report can be assumed to be registered trademarks.

JPB. Series Editor, Technical Evaluation Reports.

Athabasca University

Technical Evaluations Report

2. Selection of Collaborative Tools

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Abstract

The previous report summarised the findings of an online survey concerning Master's of Distance Education students' attitudes to online collaborative tools. The respondents in the study were 135 graduate students and faculty members of Athabasca University's Centre for Distance Education (CDE). They demonstrated particular interest in tools that offer the following features: file sharing; automatic synchronisation of documentation for the group; audio conferencing; text chat; and privacy. In the effort to respond to this interest, the Centre conducted a series of trials of conferencing and other file-sharing products. This report discusses the merits and disadvantages of current collaborative methods, and problems faced by distance educators and their students in seeking to adopt them.

Trials of Free Products

Seven online products/ services were reviewed (April to June /2001) in their most up-to-date versions. Emphasis was placed upon whether or not each provided the online collaborative features found to be useful by the needs assessment study (Report 2 in this series). The relevant features of each application are summarised in Appendix 1.

1. *NetMeeting*: At this point, no free product appears to provide all of the features that the students find potentially useful. *NetMeeting* approaches this level, though it is not a cross-platform application (i.e. Macs as well as PCs), and provides only multi-point audio for a limited number of users only. This product is also infrequently updated: version 3.01 has currently been in place for over a year, although we observe that it is being included as a useful 'Accessory' within Windows 2000 and higher versions.

2. *ICQ*: provides text chat, instant messaging, file transfer, and *two-party* audio, using the same protocol (H.323) as *NetMeeting*. However, ICQ uses the business practice of providing its subscription lists to advertisers, which many of the students surveyed in our sample found instrusive. ICQ is not a cross-platform application.

3. ***Roger Wilco*:** provides audio chat rooms, though few other features. (A similar product, *HearMe*, ceased operation since these product trials were conducted.)

4. ***PalTalk*:** provides reliable audio and text conferencing, including private groups, instant messaging, and a file transfer facility. For many online groups, *PalTalk* appears to be most appropriate application so far examined in these trials. It is not a cross-platform application, though is reliable, available in free and fee-based versions, and requires little technical sophistication. The free version is supported by pop-up ads that appear at launch and shutdown, though these can be blocked by anti-popup software. *PalTalk* has recently subsumed the subscription list of *FireTalk* (the reliable though now defunct audio-conferencing product previously favoured by the CDE faculty and students).

5. ***Stuffincommon*:** is a free online service that provides many of the functions requested by the students. The service provides room(s) containing whiteboard and chat facilities, for self-defined communities. The *Stuffincommon* whiteboard is superior to other common whiteboard tools in allowing users to add URL shortcuts, files, Post-it notes, and images. Each community has its own rooms, into which only invited parties may enter; and a community can create rooms for specific functions that it may define. Each community is a separate Web site, and is thus, it is not platform-dependent. It requires Web browser software though no other software download. *Stuffincommon* lacks an audio facility, though could be used in conjunction with a product such as *PalTalk*. Privacy is provided by a login requirement and a community members' list.

An Integrated Product Trial

In view of the difficulty of identifying no-cost products satisfying CDE students' perceived needs, it was decided to test a product which, although not free, integrates all of the desired online learning tools. A new product named Groove was identified, a peer-to-peer collaboration application providing a wide variety of functions: audio conferencing, text chat, privacy, file-sharing, automatic synchronisation of meeting notes, private discussion boards, and a high degree of personal security. At the time of testing (Summer 2001), its first edition was available at no charge (Groove 1.1, Preview Edition). It was a work in progress, with the fully licensed application due for release later in the year. A team of eight CDE members took part in the tests, including six students and two faculty members. A features comparison of all seven products featured in these tests is presented in Appendix 1.

a. **The Product:** *Groove* operates across a network in a peer-to-peer mode; i.e., communication among participants is direct rather than via a central server. This provides privacy and security, and a potential decrease of data transmission time. The product's design is based on the concept of "shared space" (i.e., a private meeting place), within which alternative modes of communication may be employed. *Groove* is implemented as a set of encrypted files on each participant's computer. Each "space" contains a list of

members, their shared applications, and their accumulated data. An individual user can use several shared spaces, and can define each of them on multiple computers. Membership in a shared space is by email invitation only, thus, security and mobility are provided.

b. **Results of Testing:** Faculty and student members of the CDE tested *Groove* during the period of May to September 2001. The product involves a 14 MB software download, and is resource-intensive, drawing upon approximately 32 MB of RAM memory during usage. Its use in the CDE program at this time would therefore be a problem for some CDE users, if only for the 9/ 135 survey respondents with computers limited to this amount of RAM.

c. The bandwidth requirements of *Groove* represent a more serious problem. Severe data loss and break-ups in audio transmission were observed during the tests. In addition, we found that a text box message could take up to several minutes to reach the other participants. This problem has been reduced in a subsequent version of the program (Build 940). A member of the *Groove* technical support group confirmed that the break-up of audio transmission is a bandwidth problem, at least on dial-up. Sixty-nine of the 135 respondents to the CDE poll use dial-up Internet access.

d. *Groove* is a 'message-intensive' application: i.e., much status messaging is transmitted during a meeting, with regard to the session's progress. The product provides pop-up displays for many of these functions ("message being sent", "message sent", etc.,). It even displays "xxx is typing a message" during text chats. This heavy message load may contribute to the product's high bandwidth requirement. The process by which the application coordinates the simultaneous contributions of participants is known as synchronisation. This is required when participants wish to make simultaneous entries into a shared tool (e.g., the notepad), when some members of a group are absent, or when a member makes entries whilst offline. The tests of *Groove v1.1* indicated that connection to a *Groove* meeting can take three to five minutes, owing to this synchronisation process, even between computers in the same room, connected by a 100 MBS local area network (LAN). During the synchronisation of these two computers, audio transmission halted while the data was being transferred from one computer to another. Once the computers were synchronised, the audio time lag between them increased from almost imperceptible to approximately three seconds.

e. *Groove's* **Future Status:** Groove's support technician states that improvements in audio transmission are a high priority, though they could not provide a date for this to be achieved. Groove will continue to offer a free preview edition after the licensed version is released, but this will not contain feature upgrades, and will not receive the same maintenance priority as the licensed version. The product's support staff advised us that a

Mac version is one of the company's highest priorities, and that Groove and Apple Corporation were still negotiating this issue. They indicated that the size of the product download package will not be reduced from its current size of 14 MB.

Conclusions

These tests led Athabasca University's software evaluation team to the following conclusions.

a. Integrated applications offer more products than all or most other collaborative tools. However, the problems with integrated software are similar to those encountered with the integrated tape-slide educational technologies of the 1970s. For the users that need to use all of the features simultaneously, the package can be bulky and cumbersome; while for those who only need one or two simultaneous features, the package's contents are excessive. The CDE will continue to monitor the evolution of the new integrated product, *Groove,* in graduate classes that cover technical issues.

b. Simpler products that provide fewer simultaneous applications (e.g., *PalTalk*, with its superior audio-conferencing and ancillary functions) are the most immediately convenient for students to download and install as collaborative tools.

c. The *Stuffincommon* website can be recommended to the general CDE population, as a convenient means for text chat, sharing files and Web links, images, and notes on digital Post-its. It can be used in conjunction with a product such as *PalTalk*, and is a cross-platform application.

The next report in this series will review text-based conferencing applications.

N.B. Owing to the speed with which Web addresses become outdated, online references are not cited in these summary reports. They are available, together with updates to the current report, at the Athabasca University software evaluation site: cde.athabascau.ca/softeval/. Italicised product names in this report can be assumed to be registered trademarks.

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Appendix

Features comparison: online collaborative tools (as at Summer 2001).

	Groove	ICQ	NetMeeting	PalTalk	Roger Wilco	Stuffincommon
Discussion Board	Y					
Audio-conferencing	Y [7]	Y [1]	Y [1]	Y	Y	
Private groups	Y		Y	Y		Y
File Sharing	Y	Y	Y			Y
Applications Sharing			Y			
Text Chat	Y	Y	Y [2]	Y		Y
Shared Web Browsing	Y		Y [3]			
Whiteboard	Y [6]		Y [4]			Y [5]
Auto-synch of meeting notes	Y					Y
Instant Messaging	Y	Y		Y		
Cross-platform		Y			Y	Y
'Postit' Notes						Y
Ads		Y		Y		

Athabasca University

Technical Evaluations Report

3. Text-Based Conferencing Products

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Abstract

The basic form of online conferencing is asynchronous and text-based, and a vast array of products is now available for fully featured communication within this framework. The following set of seven reviews contrasts some of the best text-based products that have so far come to our attention, with other products whose features are less extensive. This comparison of products provides a useful look at the options now available to the designers of online conferences, and at the choices to be made in product selection. The reviews (by the first two authors, both DE graduate students) have stressed the utility of the products from the joint perspective of students and teachers.

Trials of Free Products

Five online conferencing applications were reviewed (September to December 2001) in their most up-to-date versions. Emphasis was placed upon whether or not each provided the collaborative features found to be useful by the needs assessment study (Report 2 in this series).

1. ***Anyboard:*** is forum software that meets all basic requirements for distance students. It has s easy to set up forums, and several optional features that enhance its usefulness for distance-based students. The software has the best facility for back up and archiving and forums of the products so far tested. Administrator and moderator features are robust. We found the user interface to be a rather cumbersome; but it should be noted that it can be modified by the administrator to be made user-friendly. The packages provide the unusual ability to import and export user descriptions from/to a database. Robust administration features provide the ability to: ban specific users, email and IP addresses; edit, move, and delete messages and threads; customise numerous bulletin board features; set up polls for forum, categories, and threads; archive, backup and restore forums and threads; copy messages from one topic to another (useful if a message is posted under the wrong heading); set a limit to the number of posts by the same person; and freeze the forum after a specific date.

2. ***Beseen:*** While probably not useful for classes of distance students, small groups may find this bulletin board adequate for project work. It is easy to set up and use, but lacks educationally useful features (e.g., the ability to search for and spell-check messages, and to compile transcripts). There is a limit to the number of concurrent messages that can be displayed (75), after which old messages are deleted when new ones are posted. Bulletin-

board messages are limited to eight kilobytes and messages can be stored for 60 days only (there is no apparent way to archive messages).

3. ***Ceilidh***: is available as both freeware and in the more fully featured Pro version. It meets most of the basic requirements for distance students. The product's moderate range of features includes: editing and deletion of own postings; attachment of files (if permitted by the administrator; email notification of new postings; and auto-create hyperlinks for Web addresses. The product does not include a message search feature, and requires the download and installation of a small operations program.

4. ***Discus:*** (free and Professional versions). This product has the unusual feature of proprietary coding allowing users to add html-style formatting (e.g., technical symbols) to postings. Distance-based mathematics students might find this feature significant. Other useful features include: an integrated chat facility for real time (text based) interaction; private messages; deletion of messages after posting; optional email posting and email notification of replies; easy attachment of files to postings, with variable file-size limits. The package includes a wide variety of administration features similar to those of the *Anyboard* package, plus multiple language support, and a batch user-list upload feature. The *Discus Pro* package (currently $150 US) provides: analysis of user statistics; banning of postings by IP address; reading restricted by IP; forum administration by email; archiving of forums by date and length; private topics; allow attachment uploads; editing of own posts; customisation of preferences; creation of own account; validation of email addresses; cookie-based log-in option; and a spellchecker. The product has limited threading options, and required downloading of a small program and access to server space and CGI privileges.

5. ***World Crossing:*** This Web-based service is very tidy and easy to use. New messages are clearly marked, and the user can choose to read the new messages only without having to scroll through all of the topics to find them. As with several of the forum software packages tested, *World Crossing* has a free integrated text chat feature which distance students may find useful for real-time communication. Other useful features include: a choice of applet-based and HTML/ javascript integrated chat facilities for real time (text based) interaction; a customisable spell checker; optional email forwarding from the *World Crossing* forum site, variable display of discussion items (e.g., alphabetical order; oldest/newest postings first; most recently active first); auto-creation of hyperlinks for Web addresses; forum creation in Spanish. In addition to the usual administration features, the product provides a wide range of display configurations; enabling of NNTP (newsreader) access; and options for the administrator to define user access levels as: participant (read and reply); moderated (posted only after moderator approves the message); read only; and no access. During several tests of the product, the pages were very slow loading (even using a T1 connection). *World Crossing* does not allow saving and/or archiving of discussions, though is otherwise the best free software that we have so far evaluated.

Trials of Priced Products

Two priced applications were reviewed (September to December 2001) in their most up-to-date versions. Although they are not freeware, they are included in this report owing to their high educational cost-effectiveness.

1. ***Aimoo*:** provides numerous tools of use to distance students: e.g., an integrated chat facility; a restricted set of editing tools (so that users can easily format postings to include bullets, email links, Web links, etc., without the need for html coding skills); integration with common Instant Messaging tools (including *ICQ, AOL, MSN,* and *Yahoo*); a spell checker; customisation of personal preferences; private message transmission; bookmarking of specific forums and threads; and multiple language support. Robust moderator and administrator features are provided: e.g., editing, moving, deleting of messages and threads; customisation of bulletin board options and themes; creation of polls for forum, categories, and threads; option of anonymous logins; and a full range of user banning options. (Current cost: US $15 for 6 months).

2. ***Ezboard:*** We rated this the best of all the products in this comparison, with the most user-friendly and intuitive interface, and meeting all basic requirements for distance students, and more – e.g., an integrated chat facility for real time (text based) interaction; integration with common Instant Messaging tools (including *ICQ* and *Yahoo Messenger*); a spell checker; customisation of preferences, including a public profile; private email messages; email notification of replies; optional view of new messages only; choice of standard html proprietary coding for text formatting (including addition of email links, images and standard text formats); auto-creation (i.e., no need for html code) of hyperlinks for Web addresses; and multiple language support. The moderator and administrator features are very robust, including: a full range of broadband capabilities; editing, moving, deletion, and closing of messages and topics; customisation of numerous bulletin board options and themes; creation of polls for forum, categories, and threads; password protection of forums; and the ability to screen postings. (Current cost: US $30 for six months).

Conclusions

While the *Ezboard* package contains the most sophisticated selection of text-based forum features in this set of products, the *World Crossing* service also provides an excellent array of options, and has the advantage of being cost-free. On the other hand, free services that make use of a proprietary external server (e.g., *World Crossing* and *Discus*) lack the advantage of full stand-alone independence. If the master server used by a product ceases to operate, the product's utility is diminished, and a replacement product may be required. This can involve the users in a disruptive and inconvenient re-learning process. Course designers are therefore advised to make a careful investment in a reliable, independent product for the long term. These product reviews illustrate the many features that course designers can look for in their inspection of alternative conferencing software.

The next report in this series will review Internet audio communication products.

N.B. Owing to the speed with which Web addresses become outdated, online references are not cited in these summary reports. They are available, together with updates to the current report, at the Athabasca University software evaluation site: cde.athabascau.ca/softeval/. Italicised product names in this report can be assumed to be registered trademarks.

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Technical Evaluations Report

4. Internet Audio Products

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Abstract

Online audio methods have evolved as a means of providing unlimited and inexpensive/free international audio communication. They are becoming popular in distance education (DE) as an alternative to the asynchronous conferencing methods (Report 3 in this series). Current types of Internet audio connectivity provide: (a) direct between individuals (Internet phone); (b) shared places or forums on the Internet where groups can meet (audio-conferencing); and (c) a variety of PC-to-PC and PC-to-phone methods. However, products differ in terms of lag time, delay, quality of voice, and stability of service and connection. The report compares current online audio packages in terms of their technical features and reliability.

Trials of Free Products

Few online audio products contain audio features only. Fully featured products include applications for administering conferences and for reinforcing their value – e.g., integration of email, file sharing, and file transfer; simultaneous text chat, instant messaging (for one-to-one communication), whiteboard, and Web searches/ tours (i.e., the ability of a user to take control of the other users' browsers in order to demonstrate webpages). Eight online applications were reviewed (September to December 2001) in their most up-to-date versions. Emphasis was placed upon whether or not each provided the collaborative features found to be useful by the needs assessment study (see Report 2 in this series). All of the products were tested at least twice with the same configurations of equipment, connection, and users, so as to increase test-retest reliability.

1. ***Groove***: (*see also Report 2 in this series*). This integrated package of collaborative tools includes good quality audio-conferencing, and the greatest variety of educational support tools in this series of products: a simple and intuitive file-sharing facility; several whiteboards; a notepad; email integration; and a useful tool for tracking actions and messages. The application is designed as a series of webpages rather than in the telephone handset format favoured by some other products. It would be improved with more tools enabling ease of connection between users. At the time of testing, contacting other users involved emailing to invitations to a *Groove* "room." No indication was available of whether or not the other users were online or had received the invitation. The only online status indicators were in the chat room mode. The product was subject to audio delays and interference sounds in the push-to-talk mode. Subsequent tests will determine whether these problems persist.

2. **ICQ:** is a popular communication tool for one-to-one (rather than conferencing) communication. It serves one of the largest online active communities and has strong commercial viability. The product features high-quality audio; multi-party text chat; PC-to-phone connectivity (for a fee); a good search directory; and efficient online status indicators in its various modes. It integrates well with email, and makes effective use of emoticons (e.g., smile icons J). Its other educational application features are limited to text chat, email, and file transfer. Its usage is fairly straightforward, with a basic and advanced mode, and a comprehensive online tutorial. Its more sophisticated features require practice and guidance by an experienced user. Occasional server problems cause inconsistent delivery of text messaging. With the addition of whiteboards and multi-party voice conferencing, the product could be without equal for DE users.

3. **NetMeeting:** is a popular Microsoft PC-to-PC conferencing product, integrated into many versions of Windows. It has high-quality audio for a limited number of users, video connectivity in some of its modes, and a good array of educational support tools: e.g., file transfer, and whiteboard. Occasional delays occur in the audio transmission. The product's connection procedures are relatively complex, requiring users to know one another's Internet protocol (IP) addresses in order to make contact. As most users with dial-up and cable modem connections have a different IP address each time they log-on, the creation of a call or conference requires time-consuming advance coordination by other means (e.g., email). Not all sharing features work consistently: our tests noted the occasional failure of various features, whether because of user error or infrastructure failure.

4. **Net2Phone:** is a hybrid IP Audio tool that facilitates discounted long-distance calling by allowing a computer to connect with a telephone on the Public Switched Telephone Network (PSTN). The tool has an intuitive, user-friendly interface and its operation requires little technical skill. A problem with the application is that the necessary phone lines are not always available. The party initiating the call (the PC user) is billed for the call whether or not it remains connected. Gaps in audio transmission, and overlaps between the audio contributions can create confusion, particularly for the receiving party at the phone end of the connection.

5. **PalTalk:** is one of the easier to load and learn products, with a compact 1 MB download, high-quality audio, and an online support service. One's online contacts (pals) are clearly listed, and indications of whether or not they are currently online/ online but unavailable, etc. Adding names/ pseudonyms to the contacts list is a simple process. Optional one-to-one and group connections are provided, with no apparent limit to the number of simultaneous users in the conferencing mode. Occasional loss of transmission is noted and problems of audio clarity, articulation, and lag. The product contains simultaneous text-chat and webcam video features, though is otherwise a bare-bones audio product. Its educational value would be improved with the addition of, for example, a whiteboard, file transfer, Web-tour, and email integration facilities. The product is free-of-charge with banner advertising, though this can be removed for an annual fee (approximately US $10.00) or with pop-up display prevention software.

6. **Roger Wilco:** is a popular communications tool among online gaming enthusiasts. It provides high-quality audio in a simulated walkie-talkie mode. Multi-party connections are available in push-to-talk mode only. The product does not feature online status indicators or search directories, and to join in a conference each user has to enter the IP

address of the person hosting it (see the problems reported in the *NetMeeting* section). The product's text chat, email, and file transfer are useful as educational support, and it makes effective use of emoticons. Occasional interference with other programs is observed, and use of the product is not recommended while ICQ is running.

7. *Yahoo Messenger:* This is a good product for two or more persons, fairly user-friendly, and with very good audio quality. Connecting with other users is straightforward. When others are speaking their names and an icon appears next to the audio-level meters. The hands-free option works well. Currently, the product's only tools with particular educational value are text chat and file transfer. Other features include emoticon faces, different font options, instant messaging, a calendar, and an overview page. Non-educational features include: news, stocks, and sports information. A disadvantage of the product is that users must become *Yahoo* members (no fee), using a *Yahoo* password. Also, the disk storage required to operate the product is almost 4 MB compared with, for example, 1 MB for *PalTalk*.

8. *4ecalls:* is a hybrid PC-to-Phone technology (like *Net2Phone*) that enables a PC to place calls on the PSTN (Public Switched Telephone Network). One of its current advantages is the low calling rates: e.g., three cents within N. America and France; four cents to Australia and the UK, and five cents to Brazil. The tool uses a downloaded dialer at the PC end of the connection. As with other PC-to-Phone technologies, the audio is clearer for the PC user than for the telephone user. Delays in transmission can interfere with the receiver's audio. At the time of testing, this product was undergoing a server upgrade, and its reliability was low. Prior to the upgrade, the evaluation team was able to place calls successfully once or twice in every five attempts.

N.B. Three other audio products (*HearMe*, *FireTalk* and *Talk City*), were also tested by the CDE's evaluation team. Since then, *Talk City*'s audio and download support appear to have been discontinued, leaving only its text chat mode in operation. *FireTalk* and *HearMe* were discontinued earlier in 2001. *FireTalk* had offered the most efficient and sophisticated of all online audio services of which we are currently aware, and had become the de facto standard for synchronous audio communication in the CDE's graduate program, with regularly scheduled international seminars and events. The evaluations contained in this report and Report 2 of the current series have led the CDE to adopt *PalTalk* as its audio-conferencing substitute.

Conclusions

In comparing the features of the different online audio products, the CDE has selected PalTalk as its current standard. Frequent changes of software would be problematic for both students and teaching faculty, involving time-consuming coordination and re-learning. As some users have access to limited disk space, there are advantages to using stand-alone products such as PalTalk, and complementing them with other non-integrated products: e.g., the file-sharing facilities of Stuffincommon (see Report 2 in this series). Most products restrict audio contributions to one person to speak at a time, which is useful in most conferencing situations though requires moderation by a facilitator with technical experience of the product. Current problems common to many online audio applications are their platform dependency (e.g., PC as opposed to Mac), and the lack of technical infrastructure provided for them by educational institutions. Institutional firewalls and bandwidth limitations often prevent their use altogether, forcing DE teachers to

conduct their classes from home! DE providers will need to deal with these issues as student demand for online audio communication increases.

The next report in this series will review online course management systems.

N.B. Owing to the speed with which Web addresses become outdated, online references are not cited in these summary reports. They are available, together with updates to the current report, at the Athabasca University software evaluation site:cde.athabascau.ca/softeval/. Italicised product names in this report can be assumed to be registered trademarks.

JPB. Series Editor, Technical Evaluation Reports.

Athabasca University

Technical Evaluations Report

5. Classification of DE Delivery Systems

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Abstract

For their optimal use in distance education (DE), online educational applications need to be integrated within a comprehensive course management system (CMS). Such systems are server-based software that supports the development, delivery, administration, and evaluation of online learning environments. The selection of an appropriate CMS should be considered from the multiple perspectives of the student, the course developer, the course instructor/ tutor, the technical support staff, and the DE institution's administration. The current evaluation of CMS packages was conducted by a team of individuals with experience and contacts in relation to each of these DE user types. The report compares a series of CMS packages in terms of their range of features, and in relation to their satisfaction of international online education standards.

Course Management Systems

In general, CMS methods share these characteristics:

1. They favour a *learner-centred approach*, involving the following media and methods:

- Asynchronous: group-based text discussions, commonly learner-led
- Synchronous: individual or small group text discussions, learner or teacher-led

2. They contain a range of *content tools*:

- Authoring tools for course development and revision
- Navigation tools

3. They contain *collaborative tools*, involving asynchronous and synchronous communication:

- Email (with support for attachments)
- Text chat communication.
- Bulletin board (with support for attachments).
- Presentation tools (e.g., a whiteboard for collaborative drawing and sketching).

4. They contain student management tools, such as:

- Secured access (e.g., password-protected logins)

- Registration procedures
- Withdrawal procedures
- General student tracking functions

5. They contain *quiz and survey tools*, such as:

- Report generation (with statistical analysis)
- Student self-assessment routines
- Student evaluation
- Course evaluation

Product Classification

Throughout the review process, the perspective of the student user was the major focus, while the other perspectives were addressed in terms of their relationship to the student. Our description and classification of products is based on the vendors' descriptions, and on a range of earlier comparative analyses (Boston University, 2001; Centre for Curriculum, Transfer and Technology (C2T2), 2001; Consortium for Information Technology in Education (CITE), 2001; Marshall University Center for Instructional Technology, 2000; University of Illinois at Urbana Champaign, 2001; University of Manitoba; Rollinghoff, 2001; Windman, 2001). Many products identified as course/learning management systems are not marketed as such, but as "as a learning portal, best-of-breed technology, an end-to-end solution, an e-learning solution, a total solution…" (Broadbent, 2000). Companies such as e-com Inc (producer of the Theorix LMS), compete with CM systems by offering the capability of running "courses originally developed for WebCT (etc.,)" (www.theorix.com). Other vendors use the terms LMS and CMS interchangeably (CITE, 2001, p. 13; Hall, 2001). The CITE (2001) software categories have therefore been used in the analysis. These, and further descriptions of the product genres, are given in Appendix 1.

A series of 31 products was reviewed, which were generally found to fall into one category only. All share the aim of facilitating or managing the development, delivery, administration and evaluation of online learning. The list is not claimed to be comprehensive.

a. **Course Management Systems:**
   Anlon Academic; Blackboard; Enterprise Education Server; IntraLearn; Learning Manager; Learning Space; Mallard; Prometheus; Theorix; TopClass; Virtual U; WebCT

b. **Learning Management Systems:**
   Docent; Generation 21; Knowledge Planet; Saba Learning Enterprise; Learning Platform; WBT Manager

c. **Synchronous Environments:**
   LaunchForce; LearnLinc

d. **Total Solutions:**
   ECollege; Embanet; Jones e-education; LUVIT eLearning

e. **Related Tools:**
   Authorware; First Class; Pathware; PlaceWare; Questionmark; Trainersoft; WebBoard

The products were next reviewed in terms of their:

- **Accessibility and testability:** Ready access to free demonstration software in order to test the product's appropriateness.

- **Usage:** The product's use by major academic (post-secondary) or corporate (business) clients for DE and training.

- **Standards:** The extent to which the product subscribes to the international software standards of the Common Technical Framework (Advanced Distributed Learning Partnerships: ADL), ensuring SCORM, IMS, IEEE, AICC, ISO compliance.

Relatively few of these products' Web sites produce sample courses to facilitate comparison studies such as this. At the time of publication, product information was available allowing the classification of five of the 31 products in the above terms: *Blackboard*; *LearningSpace*; *Prometheus*; *TopClass*; and *WebCT*. The attributes of these specific products will be reviewed in a future report in this series.

Conclusions

Athabasca University (AU) uses two of the five products listed above: *Blackboard* and *WebCT*. The selection of course delivery systems is left largely to the discretion of individual teaching centres, though it may also relate to the standards imposed by inter-institutional course-sharing arrangements: e.g., the Global University Alliance applies the *Blackboard* standard. Some Centres, typically those whose faculty members possess online programming skills, use a range of non-proprietary software and usually combinations of freeware customised to the Centres' specific needs. For example, the CDE uses this approach in maintaining a Web site that provides its students with login access to all of the Centre's courses. The site uses an online editing facility that allows faculty members to update their online course materials directly on the Web. Evaluation activities reported in these reports teach the students about the range of DE methods. They also allow the Centre to draw conclusions about software options and DE student preferences for them. The CDE's evaluation Web site is designed to share these conclusions with the international DE community.

This IRRODL series of software evaluation reports will continue with reviews of other online collaborative tools.

N.B. Owing to the speed with which Web addresses become outdated, online references are not cited in these summary reports. They are available, together with updates to the current report, at the Athabasca University software evaluation site: cde.athabascau.ca/softeval/. Italicised product names in this report can be assumed to be registered trademarks.

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Appendix

Classification of Online Course Delivery Systems

Category	Definition	Characteristics	Comments
Course Management Systems	Server-based software, which supports the development, administration, delivery and evaluation of Web-based asynchronous online learning environments	• Restricts course development to specific educational approaches, interface designs and learning tools • Requires minimal-to-moderate technical/graphic skills for developers/instructors • Has synchronous chat capabilities but is limited to little or no audio/video-conferencing capabilities • Features tracking of student management and progress	• The largest category of online learning environments • License fees and support costs are considerably lower than Learning Management Systems • Primarily targeted at educational institutions • Rarely supports third party software
Learning Management Systems	Software primarily designed to manage externally developed online learning on a large scale	• Has highly flexible presentation options • May offer separate courseware products • Has extensive course management capabilities	• Cost can be 10 times that of Course Management Systems • Primarily targeted at corporate training and large well-funded educational institutions • Supports third party courseware
Synchronous Environments	Web-based software which supports real time audio/video communication	• Has some support for asynchronous communication, and for student management and progress tracking • Includes instructor-led talking-head video/formal seminar formats	• 74 per cent corporate Web-based conferencing is for presentation; 26 per cent for collaboration and small meetings • Bandwidth and cost issues for students and institutions
Total Solutions	Software and technology infrastructure allowing human resources services to develop and deliver online courses	• Provides a learning environment hosted by the vendor • Vendor's development teams work with an organisation's instructors and content experts	• Avoids local cost of technology infrastructure, and of hiring, training and 'back-filling' staff • Speeds development and availability of large numbers of courses
Related Tools	Web-based publishing, collaboration and testing software used to develop and support online learning	• Flexible in appearance, instructional design and functionality • Requires highly developed technical, graphics and/or design skills	• Free or low cost • Avoids license fees and support costs

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