Online Education and Implications for Japan

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Abstract

Information technology has rapidly changed the way that education can be delivered and supported. In Japan, the number of internet users has spread more slowly than in Western countries. However, that is changing, and Japan is now only second to the United States. in total number of users. The potential use of multimedia−based course delivery, and as a way of supplementing existing courses in Japan, is enormous but remains unrealized except in a few isolated cases. Numerous barriers and hurdles need to be overcome for most institutions to be able to offer accredited internet−delivered courses. The myriad of issues involved in developing internet−delivered courses include: accreditation, cost−effectiveness, marketing, public perception, the drop−out rate, the development of software and curricula, and infrastructure costs. In this paper, it is argued that establishing internet−delivered courses in Japan is a positive step that has potential to increase interaction between students and teachers, provide better flexibility and access, provide access to students who cannot fit into regular residential degree programs, and possibly serve as a stop−gap measure for a number of smaller universities and colleges which are struggling to maintain adequate student numbers. Online education is not necessarily a replacement for traditional universities, but rather an educational alternative. If approached and designed effectively, online−delivered courses have the potential to offer some students a viable, quality, and cutting−edge learning experience.

1. Introduction

The phenomenal growth of the internet has resulted in serious long−term consequences for education, and provided an unprecedented plethora of opportunities as a supplement to traditional teaching materials, and to deliver courses. However, "it is a cliche to say the 'the internet changes everything': the challenge now is to guess what, how and how quickly" (The Economist 1999, p.17). In 1998, the number of computers in Japan connected to the internet was

roughly 12 million (McCarty, 1998), a number which pales in comparison to the 61 million adult Americans using the internet in December 1998 (Stewart, 1999). The use of the internet in education is creating an educational paradigm shift that can be equated to the introduction of the printing press (Oblinger and Verville, 1999). With ever increasing use of computers in the future, the role of tools such as the internet, e-mail, forums, and multimedia will shift educational trends further from traditional teacher-centered classrooms.

Tertiary education is fundamentally different from for-profit business. However, some of the issues faced by universities differ little from those in the business world. How to best incorporate information technology (IT) in education, the costs, benefits, and negative aspects are all issues that demand attention and analysis. Educators and administrators have control over the purse strings of an enormous amount of money. In the U.S., universities spend an incredible $200 billion per year (Feenberg, 1999). The allocation of this money to best reflect educationally sound and quality opportunities for students is essential.

In Japan, university educators face more obstacles to developing internet delivered education than those in the West (McCarty, 1999). Impediments in Japan have included regulations (in particular, accreditation), lack of technical know-how amongst teaching faculty, and the dominance of conservative educational pedagogy. The extremely limited number of universities actively planning to establish internet-delivered courses in Japan contrasts greatly with the United States. The Gardner group estimated that by 2001, more than 75% of all traditional colleges and universities in the U.S. will use distance learning technologies and techniques in at least one class (Radford, 1997). Already, the breadth and influx of online education can be observed in the U.S. and Canada, where numerous universities, including a number of more prestigious ones, use existing online technologies to offer courses in diverse fields at both the undergraduate and graduate levels. The Telecampus database of online courses maintains links and information on several thousand courses in numerous subject areas that are offered from universities around the world.

There is also an increasing number of traditional institutions that have extensive courses that are internet supported due to a combination of administrative mandate and instructor initiative (Noble, 1998). This contrasts greatly with most universities in Japan where the potential of the internet as a delivery method, teaching aid, and source of information has yet to be used extensively. Oblinger and Verville (1999) note that universities around the world have used lectures, discussions, and the written word because they were the only available mediums. However, the internet has expanded the realm of educational delivery methods, and now multimedia-delivered courses may allow distance education to more closely resemble traditional classroom

education in many ways due to its interactive possibilities. The online classroom cannot replace the traditional class, but is a more scalable business than the conventional educational model.

So, where does this leave Japan? The lack of integration of multimedia in mainstream education in Japan may surprise many who look at Japan as a high-tech haven. However, educational pedagogy in Japan is conservative and change is slow. Japan has had a history of borrowing from the West and improving on other countries technologies in each of its stages of economic growth (Hane, 1986), and that may be the case with online education. This paper examines some of the debate surrounding online education and barriers to the widespread adaptation of multimedia learning technologies in Japanese universities.

2. Overview of Online Education

Computer delivered education shifts the learning process from traditional teacher-centered classes to more learner-autonomous education where students are responsible for the work they produce, and the speed at which they accomplish their goals. The virtual classroom, unlike the traditional classroom, is not a physical presence, but rather a series of students and instructors linked together by computers that are often on opposite sides of the globe. As technological improvements in the speed of connections, bandwidth, and ease of use of software are made, use of the internet in education will increase, especially in developed countries with the resources and technological know-how. Lemke (1993) argues that many students now read less than in the past, and that the wider variety of media available (television, video, and to a lesser degree magazines and comics) more closely reflect the world students actually live in than the traditional print media does. He furthers this by suggesting that these largely oral and visual media types are more easily absorbed by many young people. As Owsten (1997, p. 29) remarks, young people "relate to the computer in ways that baffle adults". The question may be, will the written language as we know it fuse more closely with other media, and in doing so provide richer learning experiences? If in fact other mediums are more effective at conveying information and ideas than traditional lectures and the written word in some cases, then perhaps the efficacy of adaptation of other mediums should be examined more closely.

Optimists for the Web promise that it will provide low-cost distance learning, virtual universities-without-walls, that are enriched by lively student interaction (Shneiderman, 1999). Whether or not it is true that internet-delivered education is cheaper and more interactive than the traditional classroom, remains a subject of debate. However, the quality of the learning and real value of the education depends much on the student's motivation (Bothum, 1998), and the quality and care in which it is designed and delivered. Many of the early experiments with on-

line education were faculty–led, grassroots efforts (Feenberg, 1999). These experiments with new technology were often carried out likely with relatively little outside industry, political, and administrative interference .

In the last few years there have been heated debates in academic communities over top–down administrative and/or industry led initiatives to implement internet–delivered courses (Noble, 1998; White, 1999; Feenberg, 1999). Noble (1998) argues that online education is profit–driven commercialization of higher education and the results are "courseware". Other criticisms of online–delivered courses include serious issues such as: cost, the higher drop–out rate, validity of the learning experience, and how differing learning styles are related to the use of specific technologies (Grossman, 1999). However, some educators have noted that online education can be more interactive than that found in traditional courses (Ellram and Easton, 1999). Certainly, developing online–delivered courses is fraught with concerns such as reliability, authenticity, quality, and accountability, but the early results have shown that online–delivered and supplemented courses can be a viable and effective medium.

Rapid improvements in technology such as digitization, storage, and processing power, are some of the changes that are making it possible for IT to be faster, less costly, and less environmentally damaging (Oblinger and Verville, 1999). These improvements, and the benefits of en masse delivery, and the resulting economy of scale are balanced by both the cost of the infrastructure, and of the costs of establishing and maintaining courses (Sherritt and Basom, 1997).

The use of the internet for education, like that of business is not without numerous problems. Many of the issues described by Lawrence et al (1998) such as security, legal and ethical issues, payment systems, communication, and identifying the market are critical factors for institutions developing online–delivered courses. These issues are far too broad in scope to explore adequately in this paper, but they must be considered in the development and implementation of any online course.

The distance learning industry as a whole is a multi–billion dollar industry in the West (Clark, 1998), and in the competition for students and scarce resources, institutions on the forefront in developing internet–based courses may have comparative advantage. Internet–based courses may provide smaller universities, or universities facing difficulties in attracting enough students, an advantage in maintaining enrollment in ever–increasing competitive environments. However, pursuing this use of technology in education has both significant benefits as well as real risks (Ringle, 1996).

DeLong (1997) argues that the introduction of the internet to education will not mean fewer faculty, but instead those who have adapted and transformed their teaching perspective.

This is contested by those who decry the commoditization of education. Noble (1998) contends that the commoditization of education in the U.S. has resulted in negative effects on the level of education offered by institutions, and reduces university and faculty autonomy. However, those same corporate ties have been accompanied by much of the funding and initiatives, which have aided the development of online distance education. Unfortunately, in his blanket criticism of online education Noble fails to provide a balanced perspective, and fails to understand how online courses and course supplements, when designed well and structured, can benefit both the learner and the institution.

3. Online Education and Japan

The use of the internet and multimedia for education in Japan is still in its infancy. Like many new technologies there is an initial hesitancy to incorporate its use in mainstream education on a large scale. Universities have to justify the expenditure, realistically analyze their needs, and evaluate how they can best serve their most important stakeholders, the students. For Japanese universities faced with the reality of declining numbers of college-age students, the internet may provide a viable alternative to the traditional classroom. The potential educational benefits of the internet are balanced by a number of challenges in creating real for-credit internet courses in Japan including: accreditation, cost effectiveness, faculty rewards and motivation, the top-down and conservative nature of the decision making process, actual demand, security, and quality of both materials and learning. Japanese universities are not as closely aligned to the private sector as many of their Western counterparts are. Close collaboration between private industry and education is not found to the same extent at Japanese universities, and this may result in a dearth of funding to support the cost of setting up computer infrastructures and other costs associated with online education and IT.

Many Japanese universities have limited collaboration and ties with private industry. The extent of these collaborations even at large national universities with emphasis on the sciences and engineering such as Hokkaido University, where there is a more graduate studies/research focus, ties are limited, in comparison to the U.S. In the U.S., educational philosophy and the relationship between education and employment as a whole differs greatly from Japan where many companies hire recruits with the belief that they are not yet ready for work, and then provide extensive training. This differs from the West as a whole, where companies expect new employees to be skilled and ready to immediately make a positive contribution. In the U.S., industry specific universities such as Michigan Virtual Automotive College reflect very industry-specific ties.

Roschelle et al (1997) point out that in the traditional university model, the long-term mission is research, assembly, investigation, exposition, criticism, publication, and integration of knowledge.　The model of the virtual university cannot replace real face-to-face human contact and the spontaneity of the classroom.　However, technological innovation, and improvements in delivery and software, and well-designed interactive materials may make it possible for internet-delivered courses to rival traditional courses in quality.

In Japan, the general recognition and acceptance of distance education and the role of university education is a serious obstacle.　University is still perceived in many ways to be a break between the rigors of high school and entrance exam hell, and the long working hours that many salaried workers put in.　In many ways, universities in Japan are valued for qualification (the degree) as opposed to education (the learning), and the social aspects of college life are highly valued.　This is changing slowly, but the educational value differences between Japan and the West are striking.　The virtual classroom cannot replace real face-to-face human contact, and is not a replacement for the traditional classroom but rather an alternative.

Japan is a qualification and status-based society, and online education will not replace the status of elite universities such as Tokyo University and Waseda University.　Horio (1988) argues that Japan is an academic pedigree society, and that where one studies, as opposed to what one studies, is most important.　These attitudes and ideas are changing in Japan, but the role of the university for most students and companies, along with that of society as a whole differs markedly from the West.　This is changing slowly, and the existence of undergraduate and graduate degree programs aimed at shakaijin (regular people in the workforce) has increased at both the undergraduate and graduate level.　The market for these programs is illustrated by the existence of programs offered at universities in Hokkaido, such as Otaru University of Commerce, and Hokkai Gakuen University.　These include both graduate level courses offered in law and management-related studies at Otaru University of Commerce, and undergraduate degree programs at Hokkai Gakuen University.　Online education may provide a viable alternative method of instruction and way to attract students for courses in programs at institutions seeking to broaden their markets. This is Particularly true for those whose personal situation such as geographic location, or work commitments necessitate a more flexible educational delivery.

Several factors allow for distance learning to become more wide-spread including: financial necessity, demand for more flexibility from both organizations and individuals, the elimination of geographical barriers, the impact and growth of the digital economy, and demand for lifelong learning (Radford, 1997).　However, the market for university education in Japan differs from that of the West.　In the U.S., a large percentage of students are nontraditional or returning stu-

dents, which greatly contrasts with Japan, where almost all undergraduate students enter college directly after high school or yobiko (university entrance examination preparatory schools). Few Japanese of working age return to school after entering the workforce, and it is the adult education market that has been the focus of many internet–delivered courses in the U.S.

Another consideration is financial burden, both to students and the institution. Japanese telephone companies charge by time connected (dial charges), while North American telephone companies charge a flat fee for unlimited local usage. McCormack and Jones (1998) note that usage based charging can lead to anxiety on the part of students in terms of making effective use of their web–based classroom, not to mention the cost of purchasing suitable hardware and software. For institutions, the cost–effectiveness of internet–delivered courses is also an important factor. Whether or not online–delivered courses are more cost efficient than traditional courses depends on many variables such as the amount of additional investment the institution must make in hardware and software, and the number of fee–paying students who actually enroll. Wah (1997) suggests that the Australian and American experiences with online distance education have not had immediate yields. It has also been illustrated that the cost of the average professor may be less expensive than the cost of creating materials and utilizing the technology (Walkosz, Gross, and Cook, 1997). However, cost may not be the factor that merits closest examination, and initial costs are high. Information technology is not a substitute for older technology and savings are not likely to be found through the change. The use of IT for instructional purposes may be better analyzed in terms of whether or not the educational outcomes are met, and if the college's reputation is bettered or not. Also, the level of engagement by faculty and students, enrollment and availability of courses, and other less tangible benefits such as market niche, credibility, and quality of faculty are important considerations (Ehrmann, 1997).

In Japan, the low status of distance education courses, and barriers in a status–conscious society to recognizing distance education courses as viable and valuable, are serious obstacles. Assuming that secure and fast hardware, and easy to use software are available, some of the largest issues are public perception, the slow process of changing pedagogical ideology, accreditation, and faculty and administrative resistance to change.

National universities in Japan must have courses accredited by Mombusho (Ministry of Education) before they can be offered, and while private universities have more flexibility in terms of in–class content they must also go through formal channels. Currently, there are extremely few online–delivered credit courses offered by universities in Japan , but new guidelines will allow accreditation of courses that are internet–delivered from early in the year 2000 (McCarthy, 1998). Private and public universities are severely hampered by Mombusho accredi-

tation regulations.　Approval of new for-credit courses can be slow given the excessive centralization of Mombusho, and the prevalent conservative educational pedagogy.　The Internet is already being used to supplement part of some courses such as the English and Chinese languages, and computer-related classes to a limited extent.　In language education publishers have already jumped on the internet boom and popularity with texts such as *Internet English* (Gitsaki & Taylor, 2000).　With new guidelines emphasizing the use of IT in education how many higher educational institutions respond to changes and set up online courses, and/or develop internet support for courses remains to be seen.

4. Discussion

With the increased use of the internet in education there is a corresponding need for companies, institutions, and individuals to develop and implement software for educational use. There is a vast array of software to create and manage online courses available, as illustrated by O'Sullivan (1999) in her review of currently available course software.　In Japan too, there is an increasing amount of software available and software/hardware issues do not pose serious obstacles in the development of courses.　As the market for internet-delivered course delivery develops, innovative companies and individuals will step in to further fill the gap and develop better software.

The market for online-delivered courses in Japan differs from that of the West.　Furthermore, the flexibility of the educational system in the United States for example allows private ventures such as eCollege.com to offer credit-courses in conjunction with other universities and colleges quite readily.　Companies such as eCollege.com work with various universities and provide template packages that can manage aspects such as courses, payments, and grading (Financial Times, 1999).

Japan has a sizable foreign-student body (approximately 50,000), but it cannot be compared to the United States, where education is a huge business and in some degree areas non-American graduates greatly outnumber Americans (Staff Writers, 1998).　In fact, the education industry is one area in which America has a sizable gap with virtually all countries, and contributes enormously to the innovation and academic level found in the U.S.　The international reach of universities in the U.S., Canada, and Australia also provides a real market for distance education courses, whereas the fact that the Japanese language is little spoken outside the country negates those possibilities.

One of the larger undergraduate distance learning universities in Japan is Hoso Daigaku (the University of the Air), which utilizes material mainly in printed course packages, and

broadcasts of some lectures by satellite TV, radio, and video. Use of multimedia for course-delivery is not even mentioned on the university's web site, nor are course descriptions offered. It seems likely that in the future, educational providers such as Hoso Daigaku will make increasing use of the internet, but the pace at which they have embraced the new technology is extremely slow compared to the West. There are however a number of pioneers in the use of IT for education in Japan. McCarthy (1999) notes that Tezukayama University is offering non-credit online courses on an experimental basis. Furthermore, a limited number of educators such as Yasuhiko Hirao are experimenting with and working to justify the use of the internet in public schools (McCarthy, 1999).

Clearly, this is only tentative beginning in Japan and in the future more institutions and educators will follow. The internet and multimedia as a medium for use in education is changing at breath-taking speed. As advances occur, and more people as well as institutions are both aware of and comfortable with the technology, the use of the internet for educational purposes will become a more legitimized form of educational delivery in Japan.

5. Conclusion

Peter Drucker, one of the most prominent management gurus, has stated that in thirty-years time, the university as we know it will cease to exist (Grossman, 1999). The speed at which technological changes, in particular those in communication advances have occurred is astonishing. The result has been a paradigm shift in modern approaches to business and education, and it has for the most part occurred with a lack of centralized planning or coordination. In essence, "it just happened" (Oblinger and Verville, 1999), and with these changes, educators must examine the viability and merit of the internet and multimedia for educational purposes.

In this paper, it has been argued that real internet-based courses in Japan are indeed a viable and attractive educational alternative from which many Japanese universities would benefit from recognizing and implementing changes to integrate use of IT as an educational tool. Lemke (1993) goes so far as to argue that "schools as we recently understand them hardly existed before the 19 th century, and it hard to imagine that they will exist in recognizable form by the end of the 21 st". The challenge for educators in Japan lies in applying the technological advances in pedagogically sound ways. The internet provides the opportunity for a new global paradigm in education, a powerful information, teaching, and delivery tool.

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