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Education in the age of the Internet

The euphoria of technology

In an earlier commentary (Kong, 1999), I raised the issue of distance from the 'centre' as a barrier to a researcher's participation in the academic circuit, despite the advent of technology and the possibilities it brings of decreasing relative distance. In this commentary, I wish to focus on what technology may and may not do for teaching and learning, and thus to balance some of the overstated claims about the imminent replacement of classrooms and lecture halls with virtual campuses.

In the giddy euphoria of Internet development, a respected Oxford professor, in speaking to *The Observer* before delivering his first online, interactive lecture, said, "It is a tremendous opportunity to democratize education, which would otherwise be available only to the elite few. It really is the way forward, the potential is enormous, both in this country and abroad" (*The Observer* 3 December 2000). In Los Angeles, a group of investors and educators recently announced plans to open a school in cyberspace for students from kindergarten to grade 12 to receive an education entirely via cyberspace. *The LA Times* reported that the new virtual classroom was "aimed at the nation's nearly two million home-schooled students, but its curriculum [was] also being marketed to school districts and parents who want[ed] to supplement the traditional public-school education" (*The Straits Times Interactive* 29 December 2000). In Singapore, web tutoring has emerged. A company offering teacher-student tuition (iqmind.com) makes available online tutoring to more than 100 schools. Ngee Ann Polytechnic has introduced a web peer-tutoring system, which has better-performing students tutoring their weaker counterparts online. Recent discussions about establishing a fourth university in Singapore have produced suggestions that it should be an e-university with a virtual campus, abandoning the concept of "education that is served" for the principle of "education on demand" (*The Straits Times Interactive* 27 December 2000).

The excitement and curiosity generated by technological developments in education belie the current inadequacies of e-learning and the many issues that require addressing before its full potential can be realised. What is also not adequately acknowledged by enthusiasts is that there are irreplaceable learning experiences to be wrought from nonvirtual classrooms. There was no more poignant evidence of this than the deeply ironic plan by a National University of Singapore team to travel halfway across the world to visit various campuses to study their e-learning initiatives!

Technology in education

And many of these countries halfway across the world have introduced policies to establish what Selwyn (1999) calls "educational superhighways". In the United Kingdom, a National Grid for Learning has been established which includes a commitment to establish a network of online resources for schools to access. An overall investment of £1 billion is directed with this end in mind. In the USA, Bill Clinton and Al Gore have kept Tony Blair company in promoting wired-up schools and access to the Internet for every child. In Japan, it is the target that all primary schools will be online by 2001 and in 2002, a new IT-based curriculum is scheduled to commence. At the university level, research and IT-associated subjects are being encouraged by the Ministry of Education (McLaughlin, 1999, pages 227-228). Closer to home, in

Malaysia, the target is to make all schools 'smart schools'. In Singapore, the "Information technology (IT) 2000" plan has S\$2 billion earmarked to enable every school to be connected to the Internet. The National University of Singapore's IT strategic plan has thus far spent close to S\$22 million in establishing and upgrading its IT infrastructure and services, allowing, inter alia, voice-over-Internet protocol telephony services on campus. Such government attention is paid and taxpayers' money expended premised on, amongst other things, the belief that educational superhighways enhance learning. Do they?

There are indeed many wonderful things that technologies can do and different educational experiences that e-learning facilitates. For example, technology can get us away from a faculty-centred approach to learning towards a more learner-centred mode, paralleling a shift from an objectivist to a constructivist theory of education. With technology, learning can benefit from being "an individualistic exercise of knowledge construction in which new knowledge is interpreted according to a student's prior understanding and experience" (Rich et al, 1997, page 143). Critical paraphernalia in e-learning would include computers and communication technologies. These resources can make for greater independence, autonomy, and flexibility for students to access material in their own time and place, at their own pace. Such resource-based learning, it is argued, makes students "more autonomous and independent learners by encouraging active learning rather than relying on the passive receipt of information from the teacher" (Rich et al, 1997, page 145).

Hypermedia environments have also enabled educators to draw on repositories of images, video, sound, and real-time data, which can be used in the lecture hall as much as in distance learning. It is a rich databank of information (such as satellite images, air charts, and radar summaries), and examples of how geographers use the Internet in education can be found at the Virtual Geography Department (<http://www.colorado.edu/geography/virtdept/contents.html>) and the Geography Discipline Network <http://www.chelt.ac.uk/el/philg/gdn/>.

Effective education also includes the ability to communicate and to engage in discussion. Supporters of distance learning herald the advent of recent technological advances in this regard, which, through Internet environments, make possible electronic mail, chat rooms and listservers, and facilitate effective synchronous and asynchronous communication among students and between students and faculty.

Deconstructing myths

The possibilities are indeed many. Yet, in taking stock of technological developments and the possibilities they present, it is also important to recognise that there is much by way of unsubstantiated rhetoric and uncorroborated myth.

The myth of democratisation

Claims of democratisation are built on the assumption that access to resource-based learning is necessarily greater than access to faculty-centred learning. Yet, there is every danger that educational superhighways will increase educational inequalities instead. Not least, the Worldwide Web is not very worldwide yet! Institutional and technological capital must be available if the Internet, with its increasingly commercial and economic nature, is to be tapped. As Selwyn (1999, page 5) argues, "educational use of information networks looks likely to be increasingly delineated in terms of economic rather than educational priorities". Sussman (1997), in turn, argues that the loss of public funding for many educational institutions could mean that the Internet could become available only to those of financial means, and less-endowed educational institutions would be locked out of educational superhighways. Selwyn (1999, page 5) argues pointedly that "the communitarian rhetoric

of educational superhighway policy-making belies the significant divisions it actually threatens to expose between educational institutions in terms of socio-economic status, funding and resourcing”.

Funding is of course not the only barrier to technological access. Where learning involves e-discussion, for example, other inequalities emerge. It has been empirically shown that men dominate cyberactivity. As an illustration, men have been revealed to dominate discussions in newsgroups, even for women-centred topics (Herring, 1993, 1994). They tend to be more adversarial, ridiculing and criticising others' viewpoints. Women, on the other hand, tend to be reluctant to express their views freely in cyberspace. Women also face censorship in the form of intimidation and the lack of response to the opinions they state in their newsgroups. When women contribute to more than 30% of the discussion, they are thought to be dominating and are usually told so (Herring, 1994)! In mixed-gender e-classrooms, inequalities are likely to be very real between the gender groups.

Further, Usenet and most current Internet traffic which is text-based uses English as the de facto language of choice, alienating a large proportion of the world's population. McLaughlin (1999, page 224) illustrates how, in 1997, 82% of all websites were in English; the next most common was German at 4%; and 2% were in Japanese. Non-Anglophone students are disadvantaged in the educational superhighways.

Even when the above barriers are overcome, and Internet access growth continues at astounding rates, as statistics illustrate, practical problems present themselves. Access must be from a place which is conducive to prolonged connection to the Internet without interruption by incoming or outgoing telephone calls, and where concentration and study are possible. Thus, in many households where access to the Internet is possible, but usually involve sharing the same telephone line as that used for voice calls, extended use is not possible. In many parts of the world, one telephone line per household may not even be a reality, let alone two or more.

There are perhaps too many caveats that need to be added for now to the claim of democratisation that the claim itself may be more myth than reality.

The myth of independent learning

The claim of independent learning is based on the autonomy and flexibility by which material on the Net can be accessed and the assumption that in the lecture hall, students are passive learners. There are clearly two fallacies here. Just because access to material can be more independently and flexibly achieved, does not necessarily mean that students are more autonomous and independent learners. Indeed, if students adopt an unguided and unthinking cut-and-paste approach to information on the Net, there could be no clearer instance of passivity in learning. Neither does the traditional faculty-centred teaching and learning imply passive receipt of information. There is plenty that has surely been written about classroom teaching and how active learning strategies can be implemented.

Learning on the Net is no different in terms of the need to educate students to learn actively. Certainly, they need to learn how to make decisions about which resources are relevant and which are not. They need to learn how to use the information available to construct coherent arguments. They need to develop critical thinking—a critical literacy—to appreciate that there is a distinction between “empirical information” and “conceptual understanding” (Shenk, 1997). They need to understand the critical morality of copyright and plagiarism. O' Tuathail and McCormack (1998, page 355) summarise this succinctly:

“there is a danger that some students fail to distinguish between approaching the material available online as value-free information that can be cut and pasted without much thought, and developing a critical understanding of what information is presented, how it is presented, and why.”

Ó Tuathail and McCormack (1998) call for the development of a “critical technoliteracy”, which includes a literacy of technical competence, but extends beyond that. It must include an ability to contextualise and problematise technology, including and perhaps especially the Internet. It must entail the ability to unpack the politics and aesthetics of information on the Internet, to see it as “visual seduction” and “aesthetic hyper-reality”. Ross (1991, page 132) reckons that it is akin to a hacker’s abilities in the sense that both entail penetrating “existing systems of rationality”.

Simply making lessons and material available on the Net therefore does not automatically lead to independent learning. Those who claim independent learning by simple virtue of e-learning extol uncritically and contribute to unmediated myths.

The myth of resource saving

It has been argued that, when resources, particularly staff, decline, technology can be used to enhance teaching and learning outcomes (Rich et al, 1997). From an institutional perspective, therefore, resource saving is the order of the day. This must simply be on the assumption that much hardware and certainly software are in place already, for, if any institution were starting from scratch, the capital costs would be extremely high and unaffordable at a time when resources are in decline. Much therefore depends on what technological infrastructure is already in place at the institution concerned.

The invisible hand

A skeptic may well spotlight the myths underlying claims of technological panacea in spite of the many advantages to be accrued and greater potentials. Indeed, such a skeptic may well ask why there is all this excitement and appeal to develop information technology in education? Selwyn (1999) argues that the key actors behind educational superhighways are in effect private commercial concerns. They build and manage networks and develop many of the applications that use the network. With such business and industry involvement, the profit motive becomes dominant and overshadows educational concerns and needs. Even where governments are the motivators behind the construction of educational superhighways, the underlying impetus may well be national and international economics. Selwyn (1999) presses the point that countries are keen to establish their national information infrastructures and expertise so that they can compete effectively in the globalised economy. From this perspective, economics, at the end of the day, is the real driver in all of this, not educational ideals.

W(h)ither education without classrooms?

From the perspective of enhancing education, clearly, the Internet offers potential benefits that are not and have not been fully realised. A great deal hinges, in my view, not on technological advancements so much as on pedagogical strategies. What educators need to strive towards is the development among students of critical thinking abilities, whether in the traditional or virtual classroom. In the case of e-learning, students need to be equipped with the ability to “recognize, engage with, and potentially disrupt and displace the contested field of Internet based representational power that is becoming an increasingly visible presence and invisible power in the academic environment” (Ó Tuathail and McCormack, 1998, page 357).

From the perspective of educators (faculty), what does the time and effort channeled towards enhancing learning mean for them as academics? In my experience at the National University of Singapore, striving to move from essentially a long-time

teaching institution to a research-intensive university, faculty are confronting the shift and waking up to the realisation that research output has escalated in importance. Investment of time and energy in effecting e-learning material may yield positive results for teaching and learning, but may do little for individual staff in their career development. The goalposts are not immediately apparent to faculty in this transition, and if they looked elsewhere in the developed world (the United States and United Kingdom especially), the emphasis is indeed very often and very much on research, as Jenkins (1997) points out. Yet, if faculty members sought to enhance learning through technological means and channeled energies in the development of material on the Web, for example, they quickly find themselves “technician, designer, and operator of information delivery systems” (Ó Tuathail and McCormack, 1998, page 358) all at once, with little time for much else. On the other hand, if time were actually expended, and well-thought out and designed educational packages are put online, other issues creep in which will deserve much more attention, issues such as the intellectual property rights of faculty, and the increasing use of part-time or adjunct faculty.

The forecast is uncertain for now, but certainly, the many prophets who herald the coming of education without classrooms should offer better evidence why their forecast should hold. In the absence of that, there is need to temper the optimism and moderate the prognosis for now.

Lily Kong

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