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Editorial

TerryAnderson
IRRODL, Editor

This issue marks the tenth anniversary of The International Review of Research in Open and Distance Learning - the world's most widely read and cited distance education journal! We are pleased, proud, and grateful for your help in making IRRODL this success. An open access journal only succeeds by the efforts of many - through readership, funding, submission of articles, and willingness to review.

This latest issue of IRRODL demonstrates the considerable efforts of our new managing editor, Brigette McConkey. Brigette has replaced Paula Smith, whom many of you will know from her 8 years of work as managing editor of IRRODL. Paula has left Alberta to seek her fortune in the high tech industry in California and all of us send her best wishes and thanks for her very significant contributions to IRRODL. Brigette brings considerable technology and editorial experience from her former position at Douglas College in Vancouver, BC, Canada.

Beyond introducing this month's articles, I wanted to take space in this editorial to talk about the continuing evolution and development of social software for use in distance education programming. The absence of physical contact in distance education leaves a great deal of opportunity for the growth of 'transactional distance,' which has been associated with the absence of academic, social, and institutional integration and associated attrition. Many researchers, practitioners, and pundits are exploring the potential of social software to bridge this distance. As the functionality, accessibility, and number of users increase, social software affords a sense of transparency and means of interaction that in some ways may even surpass that experienced face-to-face. For example, how can you search the profiles of those seated behind you in a classroom to see who shares a hobby, a special interest, a past experience, or the potential for a bus ride home together?

Many see the greatest potential for social software in enhancing informal and self-directed learning. However, I think that social software has at least as great a potential to transform formal education. Social software provides the means by which formal education can break out of the social, ethnic, regional, and economic barriers and online ghettos that can create a hidden curriculum in even distance education. By expanding our distance education programming through participation and observation by those from different social classes, backgrounds, and nationalities, we enrich the experience of both learners and teachers. As Ronald Burt accurately notes "People who live in the intersection of social worlds are at higher risk of having good ideas" (Burt, 2005, p. 90). As distance educators we need to help both ourselves and our learners to situate ourselves at such intersections. More importantly, we need to create, nourish, and develop these intersections in our educational programming.

The adoption of open standards, open educational resources, open pacing, and open teaching that are associated with social software promises a means to reaffirm and re-envision our commitment to open and distance learning. It is disappointing to see that an institution calling itself an open university may have the most rigid entrance requirements, pacing, fees, and monolithic curriculum. We are now

empowered and challenged to do more than eliminate prerequisites if we are to claim to be supporting truly open education. We need to make our content, our pedagogy, and all of our processes more transparent and accessible to all – even to those not currently enrolled, but who are able to benefit from our programming.

Overview of this Issue's Articles

As always, I am confident that you will enjoy and learn from the research results, insights, and recommendations of the authors of articles in this issue.

The first by Liz Harvey-Carter, M.A., is a critical review of the use of community radio in Sri Lanka. Radio has great potential for use in all regions of the world most importantly because of its accessibility and cost effectiveness, yet there are challenges associated with the use of any educational medium, as demonstrated in this article.

The context of the next article by Katarina Pisutova-Gerber and Jana Malovicova is Slovakia and an investigation of critical thinking in online threaded discussions. The article documents the challenges for students in thinking deeply and in public, using new media.

The third article moves to the Caribbean where Michael L. Thomas and Judith Soares document the challenges and opportunities of academic partnerships in the widely distributed campuses and programming provided by The University of the West Indies.

Canadian, Michael Barbour, then reviews the challenges and opportunities of the thriving online high schools that are becoming an increasingly popular option for North American secondary students.

The next article demonstrates the learning power afforded through synchronous and asynchronous networking across very large geographic expanses. Osvaldo A. Muniz-Solaris and Christine Coats analyze a graduate geography course that linked students in China and USA.

We move on to a very interesting US study that looks at the importance of multiple types of interaction in a self-paced model of distance education. Jason Rhode shows that though self-pacing maximizes individual choice and freedom, it challenges the use of collaborative pedagogies.

Clayton Wright, Gajaraj Dhanarajan, and Sunday A. Reju next provide an insightful overview gleaned from their considerable experience in distance education programming in developing and emerging countries. The issues they document and discuss are critical to the creation of meaningful and effective, as opposed to convenient, yet underutilized educational programming.

Finally, Shiling McQuaide takes us back to Asia for a fascinating description and analysis of distance education techniques and programming used to support reform in Chinese primary and secondary schools.

The issue concludes with reviews of two recent books – *Distance Learning in Higher Education* and *Web-based Learning through Educational Informatics: Information Science meets Educational Computing*.

I am confident you will agree that this issue of IRRODL bears evidence of the value of researching, sharing, and documenting our global experiences of the challenges and opportunities provided through the many modalities of distance education.

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Athabasca University

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Editorial

Brigette McConkey
IRRODL, Managing Editor

IRRODL is Growing!

My first three months as the managing editor of IRRODL have been action-packed. In addition to preparing this general issue, the IRRODL team has steered papers for our upcoming Middle East issue, Bridge over Troubled Waters, through the peer review process, and we are progressing towards the peer review stage of another special issue, Trends and Issues in Open and Distance Learning in Africa. Also, after deliberating on a record number of proposals for our Openness and the Future of Higher Education issue, we are now awaiting completed papers. I look forward to publishing these special issues, under the direction of our guest editors, over the course of this year.

On the technical front, I have been working with the IRRODL team to customize Open Journal Systems (OJS) in order to realize the full value of this open source software. We are so impressed with the automated work flow that OJS facilitates and its ease of use and responsiveness to complex conditions that we now ask authors and reviewers to upload their proposals/papers/reviews to IRRODL's OJS-powered Web site. The advantage for authors of registering with our site and submitting via OJS is the ability to log in and check the status of active submissions and to have a record of past submissions. For reviewers, OJS offers one-click access to the blinded paper as well as a guided step-by-step procedure to upload a peer review and to offer the editor(s) a specific recommendation. We encourage readers of IRRODL to register as reviewers and to provide a list of your reviewing interests and a brief biographical statement in your profile.

As well, IRRODL is seeking a book review editor. If you are interested in writing reviews of recent books published in the field of open and distance learning, please contact Terry Anderson at terrya@athabascau.ca. To learn more about this opportunity, click here.

Recently, we examined the activity on IRRODL's Web site and compiled a list of the top 25 articles downloaded in 2008, which are presented below:

1. Setting the New Standard with Mobile Computing in Online Learning
2. An Assessment of the Effectiveness of E-learning in Corporate Training Programs
3. Building Sense of Community at a Distance
4. Blended Learning and Sense of Community: A Comparative Analysis with Traditional and Fully Online Graduate Courses
5. Plagiarism by Adult Learners Online: A Case Study in Detection and Remediation
6. Table of Contents Current Issue

7. Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction
8. Use of Distance Education by Religions of the World to Train, Edify, and Educate Adherents
9. Feedback Model to Support Designers of Blended Learning Courses
10. Second Language Acquisition Theories as a Framework for Creating Distance Learning Courses
11. Elements of Effective E-Learning Design
12. Defining, Discussing and Evaluating Mobile Learning: The Moving Finger Writes and Having Writ . . .
13. Open Content and Open Educational Resources: Enabling Universal Education
14. Increasing Access to Higher Education: A Study of the Diffusion of Online Teaching among 913 College Faculty
15. Learning Objects: Resources for Distance Education Worldwide
16. Theoretical Challenges for Distance Education in the 21st Century: A Shift from Structural to Transactional Issues
17. Integrating Mobile Learning into Nomadic Education Programme in Nigeria: Issues and Perspectives
18. Structure, Content, Delivery, Service, and Outcomes: Quality E-Learning in Higher Education
19. Online Education Systems in Scandinavian and Australian Universities: A Comparative Study
20. Distance Education and Corporate Training in Brazil: Regulations and Interrelationships
21. The Emergence of Open-Source Software in China
22. Combating HIV/AIDS Epidemic in Nigeria: Responses from National Open University of Nigeria (NOUN)
23. Interaction and Immediacy in Online Learning
24. Perceptions of Social Loafing in Online Learning Groups: A Study of Public University and U.S. Naval War College students
25. Eportfolios: From Description to Analysis

I am excited to be a part of IRRODL's tradition of publishing articles that are referred to year after year as well as articles that are on the cutting-edge of open and distance learning, and I hope to be able to contribute to the innovation and openness that have led to its success. Please contact me if you have any questions or comments about IRRODL (brigettem@athabascau.ca).

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Kothmale Community Radio Interorg Project: True Community Radio or Feel-Good Propaganda?

Liz Harvey-Carter
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Abstract

The Kothmale Community Radio and Interorg project in Sri Lanka has been hailed as an example of how a community radio initiative should function in a developing nation. However, there is some question about whether the Kothmale Community Interorg Project is a true community radio initiative that empowers local communities to access ICT services and to participate freely and equally or another feel-good project controlled by successive, repressive Sri-Lankan governments and international partners, as alleged by its critics? After two decades of operation, the evidence shows that the Kothmale project is a cautionary tale about what can go wrong when an ICT project is not strongly promoted as a community-based enterprise. The biggest lesson that the Kothmale model can teach us is that control of community radio must be in the hands of the community *exclusively* if it is to succeed.

Keywords: Kothmale, community radio, Sri Lanka, ICT, Kothmale Interorg Project

Kothmale Community Radio Interorg Project

The Kothmale Community Radio Project in Sri Lanka, now called the Kothmale Community Interorg Project, has been hailed as an example of how a community radio initiative should function within a developing nation, particularly one that has been embroiled in a long, brutal civil war (FAO, no date; Hughes, 2003; IDS, 2002; Jayaweera, 1998; Op de Coul, 2003; Seneviratne, 2007; Seneviratne, 2000). While this project is described as a success, ostensibly enabling the limited community it serves to participate in ICT and to decide which aspects of their culture(s) will be broadcast or featured on air or online, it can be argued that it has failed to realize its promise as an engine for change and freedom of expression (Gunawardene, 2007). Indeed, one may ask whether the Kothmale Community Interorg Project is a true community radio initiative that empowers local communities to access ICT services and to participate freely and equally or another feel-good project controlled by successive, repressive[i] Sri-Lankan governments and international partners, as alleged by its critics? In order to answer this question, the project's background is explored: why it was created; by whom; how the project unfolded; how it was, and is, funded; who its listeners and contributors are; and how its content is delivered.

Then some of the initiatives and applications associated with the project are examined, such as education programmes, community health projects, and cultural transmissions. Finally, the author analyzes the challenges to and criticisms of the Kothmale project, mainly raised by the press, as well as continuing questions about the project's viability.

Background

Community radio was defined by a meeting of Media South Asia and other community radio groups in 2002 as "a broadcasting organisation established to provide communication support for the social, economic and cultural development of a community within a geographic location and owned and operated by the community on a non-profit basis" (IDS, 2002, p. 2). Although the Kothmale Community Radio Interorg Project or KCRIP (an outgrowth of the earlier Kothmale Community Radio or KCR project) serves its local community in some respects, it does not meet the above definition because it is not owned and operated by its local community.

The radio station and its tower were initially located at the top of a mountain in central Sri Lanka to maximize its broadcast range, and its first program was transmitted in February of 1989. KCR was created in response to a development scheme by the Mahaweli Authority, which displaced over 2,900 families, some 60,000 people, in order to build Sri Lanka's second largest dam project (Pringle, 2001; Venniyoor, 2006). The displaced families needed information about job creation, farming, education, and health in their new communities, and KCR was created to provide this information in an easy-to-access format—radio. It was hoped that KCR would stimulate interest in new technologies among the rural, poverty-stricken people displaced by the dam development and inspire them to learn about and initiate development projects of their own (Dagron, 2001). It was further hoped that the KCR project would help to bridge the digital divide in Sri Lanka (Reddi & Sinha, 2007). Acting controller of KCR, Sunil Wijesinghe, declared this aspiration in an interview in early 2000: "We have opened the doors to knowledge, understanding and entertainment through radio. This has motivated the community to participate and express themselves freely and receive information without censorship" (Seneviratne, 2000, p. 1).

Both KCR and its progeny KCRIP are the result of the collaborative efforts of many, including UNESCO, the Sri Lankan Ministry of Posts, Telecommunications and the Media, the Sri Lankan Telecommunication Regulatory Commission, and the University of Colombo. The Kothmale project is owned and operated by the Sri Lankan Broadcasting Corporation (SLBC), which provides and regulates trained staff, physical space, and equipment. The SLBC also regulates permission to broadcast; thus, all community radio projects are top-down operations, at least as far as their licensing and core operations. Only the day-to-day operations of each station and their individual communal impact occur at the local level (Pringle & David, 2002). It is reported by some authorities that the Kothmale project provides broadcast services to approximately 350,000 rural inhabitants in a radius of approximately 25 kilometres from its broadcast tower (Dagron, 2001). Other authors contend that the range of the project is actually 20 kilometres and serves between 200,000 and 230,000 people in 20, 50, 52, or 60 villages. Still other researchers write that it is impossible to determine the actual number of listeners, participants, and recipients of KCR and KCRIP's benefits (Op de Coul, 2003).

Initially, UNESCO donated the computer equipment used to run the radio station and trained the staff members, with the understanding that when the initial funding for the project ran out, the project would find ways to become self-funded. By 1998, when it became clear that the original radio project alone did not address the increasing digital divide between the urban and rural population in Sri Lanka, UNESCO again worked with Sri Lankan authorities and partners to create the Interorg project KCRIP, which they hoped would become a pilot model for ICT applications (Pringle, 2001; Pringle & David, 2002). Project directors sought to address four key issues using the KCRIP model: (1) rural ignorance about new communication technologies and the opportunities they provide, (2) accessibility to same, (3) differing linguistic and cultural expectations, and (4) stimulus for change (Pringle, 2001).

It was hoped that the Kothmale project would provide access to both formal and lifelong learning for community members; create increased opportunities for expansion of local jobs and business creation; reduce the marginalization of the rural poor; and foster an atmosphere of peace and understanding to deter warring factions (Pringle, 2001). Accordingly, the Government of Sri Lanka, through the Telecommunication Regulatory Commission, provided a dedicated 64KB line to provide the communities served by KCR with Internet connectivity and ensured that three access points were built in different villages to increase community access to the project. Thus KCR moved down from its mountain top and into the community, and KCRIP was born as a mini ISP (Pringle, 2001). The lack of infrastructure in this remote central region of Sri Lanka meant that a *microwave radio line* (Op de Coul, 2003, p. 2) was established between one of the villages and the Kothmale Station and that a *Remote Access Server* was created to provide dial-up service to other villages and possible future access points, which would be computer training centers (Op de Coul, 2003, p. 2).

At first, Kothmale radio operated on an extremely limited basis as radio station KCR 98.4 FM (Venniyoor, 2006), using a 300 watt transmitter (Reddi and Sinha, 2007), under the rubric of Kothmale Community Radio or KCR (Dagron, 2001; Venniyoor, 2006). By 1991, it was on-air for three hours thrice weekly. In 1998, a cash infusion of $50,000 from UNESCO enabled the implementation of the Internet part of the radio project and expanded the station's interactive possibilities, turning it from a radio initiative into a true ICT Interorg project dubbed KCRIP. The affordance of direct and independent access to the Internet and the enthusiastic response by community members ensured that by 1999 the station was moved to larger quarters in Mawathura and that it was able to broadcast seven days a week for twelve and a half hours during the week and eight hours on weekends in both Sinhalese and Tamil (Seneviratne, 2007).[ii]

For the first two years of the KCRIP project, all accessibility costs were paid by the Government of Sri Lanka, but it was understood that those running the station would use this period to generate sufficient income to meet its expenses, approximately USD 1,000 a month. This goal has been accomplished by selling commercial spots on the morning broadcast shows, and it is estimated that this revenue provides approximately 75% of the station's operating budget. The Sri Lankan Broadcast Corporation retains responsibility for the KCRIP project's financial oversight (Dagron, 2001; Pringle, 2001).

KCRIP utilizes both direct and indirect means for community members to access the Internet. Community members who can make the often long journey to an access center are free to browse the Internet directly on one of the computers provided.[iii] Members sign a log book (kept by the University of Colombo to assess web usage), and cookies record the web sites they surf.[iv] They then have a block of time, usually half an hour to an hour to surf free of charge, build a web site, or write and answer e-mail (Jayaweera, 2001; Pringle, 2001). Alternately, community members who either cannot make the journey to an access center, do not have the time to come, or do not want to learn how to browse the Internet, can access the Internet indirectly through the device of *radio-browsing* (Pringle & David, 2002, p. 2; Reddi & Sinha, 2007, p. 263), which means that the disc jockey or programmer of a radio show browses the Internet on behalf of radio listeners, who either call-in and ask questions, mail in postcards, or visit the station to request information. This information is then broadcast as part of a program for the entire community to hear.

Local experts, usually members of the community's elite such as doctors, lawyers, accountants, or educators, either sit in to provide context for and translation of the information gleaned by surfing the Internet, or they act as DJs themselves with regular shows that provide research on specific topics of perceived interest to their fans (Reddi & Sinha, 2007). This effectively puts control of the information gathered and its interpretation and spin into the hands of local elites, which may be problematic, particularly for members of under-represented minority groups in the communities served. Nevertheless, in concert with the University of Colombo, a multilingual community database of over 600 pages (see http://www.kirana.lk) has been established to house the accumulated information, and CDs are available for loan or sale, which summarize the research on specific topics (Jayaweera, 2001; Pringle, 2001). The KCRIP web site (see www.kothmale.net) also hosts more than 26 sites built by community members and volunteers, which contain information pertinent to both personal and community interests (Pringle, 2001; Reddi & Sinha, 2007).

On a daily basis, KCR/KCRIP is run by a station manager/controller, which since the inception of the KCR project has been Sunil Wijesinghe, with the assistance of two technicians, two labourers, and one broadcaster (Pringle, 2001). A series of some fifteen relief announcers and a varying number of volunteers complete the staff (Pringle, 2001). KCR FM also operates what is called an *active listeners club*, which purportedly has great support in the community and operates the *e-tuktuk* project, discussed below (Basu, 2008; Pringle, 2001).

Local Successful Kothmale Social Initiatives

By actively participating in the Internet project through visits, call-ins, and post cards that contain potential research questions, some of the local community members consciously engage in educational activities (Pringle, 2001). As Pringle notes, some Kothmale listeners and users now have "an expanded local capacity to use ICTs" (2002, p. 2). This is touted as being one of the Kothmale project's key achievements. Another is the amount of peer-to-peer training, which is ongoing (Pringle, 2001). After the initial training by staff and a succession of Australian volunteers,[v] the Kothmale model is demonstrating, at least on a limited basis, that creating local experts is smart business because these local experts are pleased to display their new talents by

teaching others in their community. So the benefits of teaching a few are expanded exponentially when they in turn teach others, thus broadening the local knowledge base. The project has succeeded so well that the local desire to learn and use the Internet now far outstrips the available Internet accessibility (Pringle, 2001).

The breadth of topics that have been addressed over the years include information about mosquito-repelling plants for local farmers; the development of a web site on scouting; business opportunities, which were researched online and helped to expand local businesses nationally and beyond—these include a palm treacle distributor and a mortuary company, new crafting techniques for local blacksmiths and bamboo artisans, and recipes for local bakers; and English language learning skills and research opportunities for local teachers, to name a few (Pringle & David, 2002; Jataweera, 2001). The biggest success stories have occurred with local youth who have eagerly embraced the new technology. Many, through volunteering at the station, are now adept enough to create their own web sites and to teach others how to use the Kothmale computers (Pringle & David, 2002). Another benefit has been the dissemination of human rights information to local communities through association with human rights activists and professionals at Colombo University, whose Human Rights Centre funds the program (Dagron, 2001), and the development of programs that educate women about health and home-related issues of concern to them (Pringle & David, 2002).

There are two noteworthy features of the Kothmale radio web browsing project: All programmes are presented in time slots that reach the specific listeners who have submitted questions, and all programmes make the web, and how it is actually searched, their focus. The Internet is not merely used as a speedy information-gathering tool, but the reality of how it works is taught to radio listeners, which raises their awareness of Internet technology as an efficient communication and research technology. The DJs explain their actions to listeners as they are performing Internet searches in real-time, thus turning their shows into what Pringle and David call "live web-browsing telecasts" (2002, p. 6). Regardless of the topic researched in any given programme, all listeners learn something new and expand their frame of reference, which ultimately benefits the entire community.

To disseminate information about the Kothmale project to local villages (and to community members of the poorest culture and language groups, who often do not feel entitled to participate due to their minority status), to increase awareness of ICTs, to encourage women and girls to become more involved, and to train and familiarize the community with Internet technology, the Kothmale project has commissioned a mobile telecentre (Keerthiratne, 2007, p. 1), which drives from village to village, broadcasting the station's programmes and offering community members a taste of the Internet[vi] (Basu, 2008; Venniyoor, 2006). To this end, a four-stroke autorickshaw has been converted by local mechanics and outfitted with a mobile radio station, speakers, and Internet capability (Keerthiratne, 2007; Venniyoor, 2006). The e-tuktuk, which can navigate the steepest of mountain passes, is also equipped with an Internet-ready lap-top computer, a power supply unit, a digital camera, a scanner, a CDMA phone, and a battery-operated printer, so that local people can make full use of the mobile studio's capabilities when it visits their community (Basu, 2008; Keerthiratne, 2007; Venniyoor, 2006). They can both upload and download files

(Venniyoor, 2006), take pictures, scan or print documents, narrowcast audio and video content, broadcast live programming or stream KCR's shows, or use the media center and cordless microphones to put on a concert (Keerthiratne, 2007). The e-tuktuk uses an ancient 50 Watt FM exciter, which is precariously strapped to its roof and transmits via a portable eighteen foot antenna that the crew assembles and disassembles as needed[vii] (Venniyoor, 2006).

Figure 1. The e-tuktuk, an autorickshaw that serves as a mobile radio station and multimedia centre. Source: Google Images

The e-tuktuk attracts large crowds wherever it goes, and its route is broadcast ahead of time on both KCR FM and the KCRIP web site (Keerthiratne, 2007; Venniyoor, 2006). At a cost of approximately USD 20,000 to build and outfit, its creation is considered such an innovative concept that in December 2007 the e-tuktuk project won the Stockholm Challenge Global Knowledge Partnership Award in Kuala Lumpur in the Public Administration class (Basu, 2008). With daily operating costs of USD 200 a day, ongoing support for the e-tuktuk project is necessary and is currently being borne by the MJM Charitable Foundation for an undisclosed period of time (Basu, 2008). Project members hope that the award will encourage other community radio projects to adopt a similar system (Basu, 2008).

As a final note on the e-tuktuk project, research coordinator for the project, Kosala Keerthiratne, writes that the e-tuktuk is used so often to deliver official Examination Department exam results to schools that the project has had to start charging minimal fees to "cover the Internet bill of the phone and as a contribution for the e-tuktuk" (2007, p. 1). Although the fee is waived for the poorest students, the fact that fees are charged for services may bode well for the upkeep of the e-

tuktuk, but it may also foreshadow trouble if the fee cannot be waived for the poorest communities in the future.

Challenges and Criticisms

Nalaka Gunawardene, a noted journalist, science writer, UN consultant, media researcher, and head of TVE Asia Pacific, a non-profit media organization, is an outspoken critic of the Kothmale radio project and asserts that UNESCO "peddles" the Kothmale project as a "feel-good" story (Gunawardene, 2007, p. 1). Gunawardene criticizes the tight bureaucratic control of the Kothmale project by both SLBC and the University of Colombo. Also, he is critical of the fact that no political opinions of any nature may be discussed by either programmers or listeners of the station during programming and that the Internet may not be used for such purposes.[viii] He writes:

> A globally persistent myth holds that community radio has been thriving in Sri Lanka for two decades. In reality, these broadcasters [sic] are nothing more than rural transmissions of the fully state-owned and state-controlled Sri Lanka Broadcasting Corporation (SLBC). Yes, these stations are located in remote areas, involve local people in programme production and broadcast to a predominantly rural audience. But the bureaucracy in Colombo tightly controls content: nothing remotely critical of the government in office is permitted. The rest of the world does not recognize this as community radio. The World Association of Community Broadcasters (AMARC) defines community radio as non-profit with the community having complete control over the content of broadcasts. Ironically, only armed rebels have defied this stranglehold by successive governments. (2006, p. 3)

This assertion is contradicted by Sunil Wijesinghe, a local Sinhalese villager who has been with KCR since its inception and holds the position of controller, for which he is paid by the government; he "disputes that a government-owned radio station is incapable of doing community broadcasting" (Seneviratne, 2007, p. 1). Yet other staff members at KCR are on record as questioning the usefulness of the station to members of their community, such as Tamil tea plantation workers who are considered to be lower caste by Sri Lanka's Sinhalese majority and are largely illiterate labourers. Kosala Keerthiratne, e-tuktuk research coordinator , writes that the Tamil population is disadvantaged by the lack of significant Tamil language interpreters and programming and the lack of educational opportunities for poor Tamils, and she states that the "People in the communities don't feel that these facilities are provided for them too" (Keerthiratne, 2007, p. 1). Keerthiratne goes on to say that Tamil mothers do not encourage their children to get educated or to learn about computers because they have found that their offspring feel unwelcome at the station and the access centres, and, worse, they are not offered better jobs

because of their minority status even when they are educated and computer literate. In another article that touches on the lack of participation of Tamil tea workers in the KCR and KCRIP project, Keerthiratne writes: "It was like we had forgotten our own neighbours" (2006a, p. 1).

Similarly, Keerthiratne disputes the success of the KCR radio project among young listeners:

> Most young people who I talked with seemed to listen to radio but did not seem to listen to Kothmale Community Radio. They did not say it directly. When I asked about the kind of programs that they listen to in Kothmale Community Radio they did not seem to remember any. Most interestingly out of 4 older persons three of them listened to Kothmale radio and did have favourite programs too. (2006b, p. 1)

Former Kothmale staff and volunteers, who have had to leave the station and move on to find paid work to support their families (Op de Coul, 2003), also question the usefulness of the project, hinting that there were many promises made but no effective policies implemented to transform the project into a self-sustaining, community-run station[ix]. Listened to mostly by a hard core audience of approximately 50 senior citizens (Op de Coul, 2003), most of whom are teachers, monks or priests, KCR, far from being a community radio station, is still owned and operated by the Sri Lanka Broadcasting Corporation, as researchers and former workers make clear (Gunawardene, 2003; Op de Coul, 2003; Venniyoor, 2006). Any station profits are turned over to SLBC rather than used to better equip KCR and KCRIP, hire and train more staff, strengthen its capabilities, better its programming options, expand its reach, or ensure its continued existence. As well, SLBC limits the hours of operation and salary levels of relief staff (Op de Coul, 2003). KCRIP, the Internet project, appears to be used mostly by the young, and while it does successfully promote peer-to-peer training (Pringle, 2001), this success may be mitigated by ethnic tensions between Muslims, Tamils, and the Sinhalese majority.

Significant barriers to community access still exist at Kothmale after more than two decades of operation. The English language barrier, which is rarely addressed by articles extolling the merits of the Kothmale project, is more evident now that the Internet is available for community members to browse. Lack of English-language proficiency necessitates the use of local elites to interpret and put information into local contexts (Dagron, 2001; Pringle, 2001). While some writers say that this service contributes to community cohesiveness, it also means that local elites effectively control access to all information that is not presented in local languages, thus cementing their status as community leaders and further widening the gap to community access by poor labourers who are not of Sinhalese ethnicity. What is rarely noted is that no permanent mechanism exists for community members to publish *their* information on the Internet in English in order to reach a wider audience (Pringle, 2001).

Credibility is another issue which creates barriers. Much of what is found on the Internet lacks both credibility and scientific rigor, particularly regarding practices needed by farmers for animal

husbandry, crop information, market rates, etc. The use of volunteer specialists at Kothmale is asserted to be a credibility check (Pringle, 2001, p. 45). However, what if there is no local expert available on the subject being researched, or ethnic tensions do not facilitate a specialist/searcher scenario? Pringle (2001) admits that research supports the finding that, particularly among new users of ICT technology, if irrelevant or incorrect information is obtained by community searchers they will quickly abandon further use of the new technology.

The definition of the concept of participation itself is another barrier to full community access to ICTs. As Pringle (2001) observes, community participation may denote shifting power structures to some people, and this can be empowering or frightening to community members or even threatening to authorities or political leaders. Full participation may never be possible, no matter how strenuously a project is promoted, because ethnic tensions may render certain information unacceptable, regardless of how rigorously it is researched or how well it is presented, and certain segments of a population may feel uncomfortable using it (Pringle & David, 2002). Furthermore, Pringle (2001) writes that the Food and Agriculture Organization of the United Nations (FAO) disputes the relevance of Western notions of community participation as a construct that has little meaning to non-Western cultures.

Funding for equipment upgrades and repair is proving to be an even bigger barrier to community access than distance or travel time.[x] Motivated Internet users willingly travel several hours to reach access centres, but irregular and infrequent funding has meant that KCR needs to charge for Internet access, which limits the ability of many poor families to participate (Op de Coul, 2003). Aging computers, the reassignment of some computers for local urban council uses, and the lack of free or affordable Internet connectivity to other access point computers, have all plagued the Kothmale project since UNESCO discontinued its funding in 2000 (Op de Coul, 2003).

It would appear that KCR and the concept of radio-browsing is more cost-effective and culturally acceptable for older, female listeners than KCRIP because they can enjoy these programs from home. However, the number of young listeners of KCR has dropped off, as previously noted. Young people, particularly young males, tend to be the ones who participate most in the KCRIP Internet project and the training programs offered by the community access centres, but the loss or breakdown of most of their computers stymies their efforts.[xi] All of the access barriers noted above leave rural groups of young people with few options but to use the services of the e-tuktuk when (and if) it comes to their village or to move to urban centres to seek ICT training opportunities.

Finally, some activists have noted that four successive governments in Sri Lanka have given broadcast licences to openly political groups and commercial organizations and one licence to the Tamil Tigers to operate their Liberation Tigers of Tamil Eelam (LTTE) channel legally, yet *no* broadcast licences have been awarded to help legitimize community radio stations in Sri Lanka. It is alleged that this is because of the potential for community radio to freely express political biases, but what of the clearly political commercial radio stations and the broadcast channel of the LTTE (Gunawardene, 2003)? Are commercial stations putting pressure on governments to prevent community radio from becoming commercially viable entities because they fear

competition or the loss of advertising dollars? These issues are currently not being addressed in Sri Lanka due to ethnic tensions and continued civil war.

Discussion

While a 2002 Institute of Development Studies (IDS) conference in Kathmandu stated that "sustainability was more a matter of organisation and human resources than finance" (IDS, 2002, p. 3), as regards ICTs, this is clearly wishful thinking. Without ongoing funding or the infrastructure to commercialize community radio to the extent that it can become self-sustaining, community radio cannot continue to operate effectively. Money to maintain Internet connectivity, repair equipment, train volunteers, pay staff, and upgrade to new and better technology has to come from somewhere: benign government intervention, ongoing support from a series of funding agencies, private donors, commercial activities of the station itself, or small mandatory contributions of the listening audience.[xii] No station can run on good will and good intentions alone as the Kothmale project has discovered. The Kothmale project lacks the "political power" and "influence" to "leverage the support they need" for self-sufficiency and independent financing (Pringle & David, 2002, p. 12).

As Pringle and David (2002) have indicated, many studies and surveys, focus groups, and papers have been commissioned to look at the impact of the Kothmale model, and the overall consensus is that not much has changed for the Kothmale community. The main positive impact is that the community members are aware of the power of the Internet and ICTs in general as powerful technological aids (Pringle & David, 2002). However, it is also clear that introducing technology to a community who embraces it enthusiastically and has used it extensively for over two decades and then substantially depriving them of its ongoing enjoyment in a reliable manner is cruel and can only foment greater unrest and civil disorder as people now know and understand what they are being deprived of.

Bhatnagar et al. have indicated that the involvement of central agencies in the project, such as Sri Lanka Telecom and Colombo University, means that local decision-making and administration is next to impossible (2003, p. 6). Passwords to access and upgrade the Kothmale web site (see http://www.kirana.lk) are retained by staff at Colombo, thus preventing KCR/KCRIP staff from updating the site in a timely manner and rendering its information outdated fairly quickly. To circumvent this situation, KCR staff resorted to creating a parallel web site of their own (see www.kothmale.net). This duplication of effort saps resources and is counter-productive, especially given the difficulties that the project faces in terms of funding, staffing, equipment use, and maintenance, to name a few.

In its publications, UNESCO often notes the importance of free access for the rural poor to the Internet, yet it pulled the bulk of the funding that made this possible without making certain that other reliable mechanisms to sustain the Kothmale project were in place (UNESCO, 2001). Thus, while the channels of communication (Simonson, 2005, p. 264) to enrich the local population and their educational efforts may be appropriate, the funding model for the project is not. As noted, it is pointless for the KCR/KCRIP staff to initiate funding projects if the profits are siphoned off to

benefit SLBC rather than the project. Prior to initiating the Kothmale project, funders should have negotiated a different arrangement with SLBC. Two decades into the project is too late to begin the process of changing the entrenched attitudes of SLBC administrators about diverting community profits for their own purposes.

Finally, as Wilson points out, providers want to make a profit from their model of e-learning because it is still largely viewed as "an entrepreneurial enterprise" (2005, p. 14), and the Kothmale administrators are no different. SLBC, Kothmale organizers, funders, as well as Sri Lankan government authorities are hopeful that their model can be exported for use by others in a way that will be beneficial and profitable. Even e-tuktuk builders are hopeful that they can create an industry that may grow across Asia and Africa, not to promote and encourage learning as much as to create a profitable growth industry in e-tuktuk outfitting and sales with the resulting jobs and incomes for individual e-tuktuk operators. They also believe that the industry will grow as educational opportunities are encouraged and promoted. This commoditization and commercializing (Wilson, 2005, p. 14) of learning for other purposes is a direct outgrowth of ICT initiatives in distance education.

Conclusion

As Dagron notes, "Development priorities are to be analysed – hopefully by the *beneficiaries* – before deciding which technology is appropriate, where and how. Communities should adapt technology to their needs and to their culture, not the opposite" (2003, p. 3). In the Kothmale situation, this did not happen. The KCR project was foisted on the communities it serves by a government that was focused on development imperatives and eager to mitigate the problems created by stripping thousands of people of their land and forcibly moving them.[xiii] The assumption was made that radio-browsing or Internet technology would be useful for all communities served by the Kothmale project, an idea which the young, at least, appear to have internalized in Sri Lanka (Hughes, 2003). Yet, despite an inauspicious beginning, the Kothmale model has had some notable successes, such as the locally created environmental NGO *Green Lanka*, which resulted from the Internet training of young Kothmale community members (Hughes, 2003).

The Kothmale project as a whole, while struggling with repeated funding issues, government control, outdated and broken equipment, and ongoing civil unrest and ethnic violence, has managed to successfully train and create a generation of rural Internet users in Sri Lanka. Unfortunately, no one is quite certain how many people, in real numbers, have actually benefitted from this project. KCR and KCRIP have enabled some community members to initiate both continued learning and development projects of their own, and the project has succeeded in educating several generations of community members about the possibilities inherent in ICT technologies. Unfortunately, these gains are offset by a succession of repressive Sri Lankan governments that are intent on limiting ICT-empowered political activism and by the short-sighted decisions of funders.

The Kothmale project, far from being a model that should be emulated by other nations is, in fact, a cautionary tale about what can go wrong when an ICT project is not strongly promoted as a community-based enterprise. It is both self-serving and misleading of UNESCO and others to promote the Kothmale project as a successful example of community radio when its continued existence is in the hands of a succession of political administrations and international funding agencies with their own economic agendas. The biggest lesson that the Kothmale model can teach us is that control of community radio must be in the hands of the community *exclusively* if it is to succeed in an ongoing, educational, and culturally-sensitive manner.

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Appendix

The following points are a direct quote from Pringle and David's (2002, p. 4) study of the Kothmale model.

1. The internet and other new communication technologies should not be presented as a technological gimmick or marvel. They should be presented as something that is useful in day-to-day life.

2. The first precondition for success is active community participation. For this, the computers and other facilities should be placed and operated in a user friendly manner.

3. Simple step-by-step instructions should be prepared on how to use the Internet and there should be someone at the radio stations and access points to explain the Internet and how it is used.

4. As many do not have telephones the importance of postcards should be emphasized within the radio program.

5. Internet content should be put across the radio program with reference to the local context.

6. As a considerable degree of preparation is needed, a single presenter should not do more than one radio program per week.

7. Women should be encouraged to participate.

8. The local database should be updated regularly taking into account information needs that would emerge within the process.

9. The staff should not be over cautious about breakdowns in computers. The users should be given a free hand.

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[i] The author uses the word *repressive* explicitly to showcase the inhibitory nature of successive Sri Lankan governments regarding the freedom of expression available to those accessing the Kothmale Interorg project resources, and the seemingly tacit approval of international funding agencies of these restrictions on free use of a community initiative ostensibly meant to be controlled by the community's inhabitants, not their government. In the case of the Kothmale Interorg project, the Sri Lankan government stringently enforces stipulations on which topics and community groups are too 'political' for inclusion in the initiative. While ostensibly ensuring that radicals do not gain control of the initiative through enforcing strict guidelines for community use of the Kothmale initiative, in actual fact government restrictions have had the effect of denying certain minority groups access to this valuable community resource, even for the most benign, apolitical, educational reasons.

[ii] In the past, with better funding, the Kothmale project was able to broadcast for 15 hours during the week and up to 20 hours on weekends (UNESCO, 2001).

[iii] For a list of key points from the Kothmale project's operational guidelines please see Appendix 1.

[iv] The University of Colombo conducts on-going research to track users' web usage, which they ostensibly plan to publish and offer as a template for other community radio projects (Jayaweera, 1998).

[v] The most recent of these volunteers, Ben Grubb, a former tourist, volunteers his expertise, his time and his money to the project. Mr. Grubb has often contributed his personal funds to help keep KCRIP afloat: particularly in regards to the e-tuktuk part of the project of which he is the coordinator. This situation may soon end, as one tourist of limited means cannot continue to fund repairs of the project on his own (Venniyoor, 2006).

[vi] Funders of the e-tuktuk project include the following: UNESCO, Pan Asia Networking ICT R&D Grant, Merrill J. Fernando Charitable Foundation, Suntel, Information Communication Technology Agency of Sri Lanka, Sri Lanka Broadcasting Corporation, and Finding a Voice (E-tuktuk.net, 2007).

[vii] The community is attempting to raise money to buy a new, smaller transmitter unit which they can install inside the e-tuktuk, because the e-tuktuk cannot operate during monsoons with a giant transmitter on its roof (Venniyoor, 2006).

[viii] Local politicians requested that political opinions not be allowed to be expressed by any political entity on KCR, a fact which some writers use to show that the station is not "controlled by the government" (Pringle, 2001, p. 37). While Sri Lankan media does have a credibility problem as suggested by Pringle, merely refraining from allowing political views to be expressed does not necessarily indicate a lack of government control or promote "good media ethics" and credible journalism (Pringle, 2001, p. 37).

[ix] Community radio is usually funded at low levels by external funders and is subject to frequent funding fluctuations and stoppages, which means that many workers are either poorly paid or work as volunteers. Eventually these people, often male, although enthusiastic and well-trained, need to move on, albeit reluctantly, because they marry and need to find work which can sustain their families. This is a sore point for many former employees at Kothmale, who maintain that they should have been allowed to turn the station into something larger, better, and self-sustaining. Ultimately, of course, hiring these workers permanently would negate its communal/volunteer nature and turn it into a more commercial entity. This is the paradox facing all communal radio networks.

[x] Another problem is the Kothmale model's rules of access (See Appendix 1). By allowing users a 'free hand' (Pringle & David, 2002, p. 4) in using the computers, frequent crashes and breakdowns in equipment limits the enjoyment of the equipment by all potential users.

[xi] The access centres offered training in computer use, Internet and e-mail use, using the Windows suite of products to create documents and spreadsheets and in creating publications, such as news magazines and brochures (Op de Coul, 2003).

[xii] User costs would change the Kothmale model which has prided itself on being free for users, in particular the rural poor who are its biggest users (Pringle & David, 2002). Mandating user fees would make the project sustainable in theory, but in practice even more people would opt out of using it because they could not afford it.

[xiii] McMichael makes the point that integrating poor people into "monetary relations" by selectively relocating them and introducing technology to economically educate and stimulate them discriminates against the traditional knowledge and culture that these people already have (2004, p. 69).

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Critical and Higher Order Thinking in Online Threaded Discussions in the Slovak Context

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Abstract

This article describes and analyzes efforts to use collaborative asynchronous discussion forums in a three semester online education program for NGO leaders and managers in Slovakia. Slovakia, as a country with autocratic styles of teacher-centered education, presents strong barriers to the implementation of collaborative learning activities. The authors used Garrison's four stage cognitive processing categories to analyze some of the online discussions in the program. The two higher order critical thinking categories – integration and solution – appeared in student discussions only when prompted by specific instructional techniques.

Keywords: Slovakia; online discussion analysis; authoritarian traditions

Introduction

Slovakia, similar to other post-communist countries, is struggling with a significantly higher use of authoritarian teaching methods than countries in Western Europe or North America. The individual skills required to compete in and meet the challenges of the 21st century cannot be effectively nurtured in an authoritarian learning environment because such an environment does not promote independent thinking and collaborative and group problem-solving. However, the authoritarian approach to teaching and learning is not unique to Slovakia, nor is it limited to former communist regimes. Traditions in authoritarian teaching exist all over the world (Bates, 2007). By an authoritarian method, the authors refer to a teaching approach that is unilateral in nature, in which students are passive receivers of information from a teacher who holds all the relevant knowledge on the topic of study. An authoritarian approach does not encourage independent thought or self-guidance on the part of students, makes only limited use of discussion in the classroom, does not employ group or collaborative activities, and so on.

In the United States, we see a classic authoritarian style of schooling called the "factory model" (Rogoff, Paradise, Arauz, Correa-Ch´avez, & Angelillo, 2003), which has been predominant from

its rise early in the 20th century to the present day. Yet a shift toward a student-focused pedagogy began in the 1960s and now enjoys widening acceptance in the U.S. and across Western education. Cuban (2006) describes the current situation in the United States as a blending of teacher-centered and student-centered practices. Although the teacher-centered approach is still dominant in U.S. schools, many teachers now incorporate an increasing number of student-centered practices into their teaching routine.

To understand the stagnation in bringing change to pedagogy in Slovakia, an historical perspective is helpful. The cultures of East-Central Europe (a region comprised today of Hungary, Poland, and the Czech and Slovak Republics), have historically been associated with Western European civilization. This occurred about a thousand years ago when the kingdoms in the region accepted Roman Catholic (Western) as opposed to Byzantine (Eastern) Christianity (Szebenyi, 1992). For an entire millennium since that time, these countries were part of a common cultural sphere with the West. For the last few centuries, in particular, under the Hapsburg and Austro-Hungarian empires, they were considered an integral part of Western Europe. However, when totalitarian regimes took over following World War II, the traditional authoritarian teaching style became not only common practice but a rigid paradigm that together with the active suppression of independent thought relegated the region's pedagogy to a political tool for sedating society. In the words of Hannah Arendt: "The aim of totalitarian education has never been to instill conviction, but to destroy capacity to form any" (Arendt, 1968, p.168).

While Western Europe went through student revolts and structural changes in the 1960s and 1970s, and their education systems opened up accordingly, higher education systems in the East were not liberalized (Rozsnyai, 2003). In Poland, Hungary, and Czechoslovakia in particular, education was made widespread and accessible but became centralized, and curricula became heavily politically indoctrinated. The authoritarian approach, which was prevalent in all schools in Europe after WWII, became fixed in place in these countries and experienced little change for over 40 years (Zajda, 2007; Kaser, 2006; Livschiz, 2006).

When political change ultimately came to Central and Eastern Europe in 1989, political pressure on teaching styles diminished. The transformation of the political and economic systems in the region brought the potential for a great shift in the prevailing paradigms in education, research, science, and many other areas. As the turn of events would have it though, a decline in economic production coincided with this transformation and resulted in decreasing investment in many areas, particularly in education, with funding priorities focused more on the social and political transition (Zajda, 2007). Thus, the year 2009 will mark twenty years since the fall of these totalitarian regimes in Europe but with not much having changed in the teaching approach and practices of Slovakia and its neighbors.

In Slovakia, university courses consist of monologue lectures and term exams. In introducing online learning, the focus is often kept on technology. Issues of applying sound and visual media are explored widely, but interaction is often kept between instructor and student, and the authoritarian teaching style is transferred into the online environment without any significant change.

Yet there are signs of change in the prevailing attitude. The number of teachers and students with international experience is slowly growing. Nejedly (2008) interviewed Slovak university students in an effort to discover the reasons for the low quality of Slovak post-graduate education and got predictable answers from those who compare their international university experience to the Slovak system. One student with international experience described how common it is in Slovakia to have a professor who reads aloud from textbooks during a lecture. This particular student claimed that he bought a laptop so that he could do his emails during the lecture and keep from falling asleep.

There are also a number of teachers, mostly with international experience, who hold critical viewpoints of the teaching practices at Slovak universities. Teachers with experience from German, British, Dutch, and US universities interviewed by Jarmila Horakova (2008) describe a complete lack of focus on developing critical thinking in students at Slovak universities. Also, Matusova (1997) criticizes Slovak university teachers for simply transferring knowledge. Burjan (2008) notes how an absence of a chance to make any decisions throughout schooling, from primary school throughout university, results in adults who require somebody else to make decisions for them and to tell them what to do. Similar opinions relating to the lack of encouragement of independent thinking and the authoritarian teaching styles at Slovak universities can be found in the work of Zabka and Mojzis (2005) and Mojzis (2008).

Student-Centered Collaborative Approach and Online Collaboration

The dominant issue in education today is access to information. The amount of accessible information is large and growing rapidly. The problem is how to access it efficiently, how to process it so it makes sense, and how to apply and use the information effectively. Locating reliable information resources is also a top concern. In a knowledge-based society, it is not as important to learn as it is to learn how to learn (Garrison & Anderson, 2003).

In this sense, students need to be able to think independently, to analyze and evaluate information critically, and to work in teams. There are also authors who argue that collaboration (i.e. the socio-cultural constructivist approach) is necessary to create graduates who are able to compete in a global, knowledge-based society. Since it is not possible for one person to hold all the available knowledge on a topic, there is a need for knowledge to be held in interaction, spread among a learning community (Garvin 1994). Collaboration seems to be an inseparable component of modern teaching and learning. A shift in learning from the familiar face-to-face setting to the online environment brought a few changes and challenges, but the need to focus on collaboration as a means to enable students to think critically and to work together remains.

One of the most frequently used technologies to facilitate collaboration in online settings is an asynchronous discussion forum. Fahy (2001) even called discussions ubiquitous in distance education. Discussions, whether conducted in a face-to-face setting or online, are often an essential part of the course. However, online threaded discussions are in many aspects different from face-to-face discussions (Meyer, 2003). Threaded discussions focus on one speaker at a

time; they leave a semi-permanent record of discussions; they don't require everybody to participate at the same time; and they enable people to spend as much time as they need to formulate their contributions.

Analysis of Discussion Content

The written record of online discussion enables teachers and researchers to perform a thorough evaluation and analysis of it. Naturally, a simple counting of posts made by students will not provide any insight into the quality of the discussion. Content analysis of student posts is necessary to discern what level of quality and higher thinking the discussions sustained.

Within the last ten years, a number of frameworks for online discussion content analysis have been developed. In some cases, researchers adopted instruments developed for analysis of face-to-face discussions. For instance, Fahy (2006) adopted the Interaction Process Analysis (IPA), the model developed by Bale in 1950. The IPA model classifies interaction in groups of learners according to its positive and negative socio-emotional content and the amounts of giving or asking for task-related input. Other researchers applied Bloom's taxonomy of educational objectives, developed in 1956 (Meyer, 2004). Bloom's taxonomy defines six categories of student contributions: knowledge, comprehension, application, analysis, synthesis, and evaluation.

There are also a few instruments developed specifically for analysis of online discussion transcripts. For instance, Fahy, Crawford, and Ally (2001) developed Transcript Analysis Tool (TAT) based on Zhu's (1996) analytic model. TAT defines five categories of student contributions: questioning, statements, reflections, scaffolding, and references. Garrison, Anderson, and Archer (2001) developed a model based on critical thinking theory. They proposed a four stage process: (1) triggering (posing the problem), (2) exploration (search for information), (3) integration (construction of possible solution), and (4) resolution (critical assessment of solution).

By using any of the transcript analysis models, it is possible to gain valuable information about critical thinking and cognitive processes present in discussions. However, transcript analysis also raises some problems that need to be addressed. First, ethically, it is necessary to receive consent not only from lecturers but also from students for such an evaluation. Then there are the issues of objectivity and reliability. One may question objectivity when the interpreter's subjective criteria play a role in the process of categorizing and grading messages (Rourke, Anderson, Garrison & Archer, 2001, Fahy, 2006), and, hence, the reliability of the analysis itself needs to be assessed.

Slovak Online Learning and Use of Collaboration

Most online learning projects in Slovakia have been focused on technical aspects. Courses are generally offered by technically oriented business companies or technical universities; often, they are automated lectures with self-tests where students work individually and have only occasional contact with the instructor and no contact with co-learners. Some universities have tried to create their e-learning policies and strategies by dealing solely with technical aspects, such as hardware

and learning management systems. The teaching approach and the pedagogy of the courses rely upon the enthusiasm of the teacher. Hence, there are only a few courses that attempt a truly student-centered collaborative approach.

However, it seems as though most managers expect that implementation of technology will also change the nature and approach to teaching and learning with no further action required (Ozvoldova, 2002). The resulting situation might be best described in the words of Katarina and Hynek Bachraty (2008): "Technologies are new, but students and teachers are the same" (p.197).

Simuth & Sarmany Schuller (2008) conducted a survey of 274 Slovak students from four different universities, which focused on possible online learning barriers. None of the students indicated that a lack of appropriate technology represents a barrier. Some students, though, complained about a lack of communication with peers. All of the students stated that the most serious barrier was the slow responses from their tutor.

In 2003, evaluative research was conducted on four of the first online courses introduced at Slovak universities. The goal was to identify barriers to the development of online learning that are typical for or unique to Slovakia (Pisutova, 2003). The study identified two online learning barriers caused by authoritarian teaching traditions:

1. *Teaching style and teachers' approach to problems*. For a long time regimes in Slovakia did not encourage independent thinking. The common pedagogy contained authoritative teaching styles and student memorization of facts. The shift to facilitation roles and collaborative activities represents a change for Slovak teachers. There is a strong tendency to view online learning as only publishing lectures on the Web. Of course, this does not apply to all teachers and universities. There are islands of change growing within the educational arena in Slovakia, most of them initiated as a result of funding from EU programs, USAID, or independent foundations.
2. *Issues of independence and responsibility and concepts of collaboration among students*. The Slovak higher education system still does not encourage independent thought in students to any significant degree. Therefore, students used to having little more asked of them than memorizing facts will find any other approach to learning to be radical and often uncomfortable. Having teachers as facilitators, students taking responsibility for their own learning, and even asking students to cooperate with their peers are all new concepts in Slovak higher education.

Online Program for NGO Leaders in Slovakia

The Open Society Foundation, in cooperation with the Centre for Education of Non-profit Organizations (CENO), developed and conducted a three-semester online program for NGO leaders in Slovakia. The first pilot run of the program is now being evaluated. For most instructors and all of the students, this was their first experience with online learning. In order to promote a sense of community for both teachers and students, every semester began and ended

with a face-to-face meeting. Introductory meetings at the beginning of each semester served to introduce teachers and students to one another and to the coursework and focused on explaining the advantages and principles of peer interactions and group work. Beginning in the second semester, two additional voluntary face-to-face training meetings were added for students who felt that they needed increased personal contact; these additional meetings were designed to ease students' fears, frustration, and confusion related to online participation. The open source learning management system, Moodle, was used because of its cost efficiency but, more importantly, because of its full support for the Slovak language. Also, CENO technical administrators already had experience with this system, which enabled them to handle the technical side of the program and to provide effective technical support for students.

Before beginning preparation of the courses, authors and tutors went through basic training, which was provided by the Slovak Technical University in Bratislava. The authors and tutors gained basic knowledge in online learning and the associated technologies and worked closely with an instructional designer for each course. In the planning stage, the value of collaborative assignments and discussions as learning tools had to be explained numerous times. Even during implementation of the course, though, some aspects of the usefulness of these activities needed to be re-explained and reinforced with the tutors.

In the first semester, students were encouraged to participate in asynchronous discussions, but participation was not obligatory. Questions related to the course topic were posted in a discussion forum each week, and students were encouraged to answer them and analyze the answers. Sixteen students generated 270 messages in 61 threads in this discussion forum. In the second semester, an obligatory discussion assignment was introduced. Students were asked to answer an analytical course topic question and to draw conclusions based on their own practical experience and on course theory. The question was as follows: "Provide an example of a negative experience as a project manager and provide suggestions how to avoid such a situation." They were then asked to react to at least two answers of classmates in a substantive way. In this discussion forum, there were 58 messages in one thread created by 16 students. The general forum in the second semester consisted of 158 messages in 25 threads. In the third semester, two more similar obligatory discussions were used.

On the whole, students evaluated the program as very successful and satisfactory. In fact, 15 out of 16 students admitted into the first semester completed all three semesters successfully, which is an unusually strong course retention rate, especially given the fact that this was their first online course. The students were happy with the technical support provided as well as with the response time and supportive conduct of their tutors.

Methodology

Data for evaluation of the courses were gathered from observations of online interactions of students with tutors and among students during the course as well as from questionnaires given to students at the end of each semester and interviews with tutors and students at the end of the full program. In order to understand the thinking processes and to be able to determine how our

threaded discussions worked, we decided to use Garrison's (2001) Critical Thinking Categories (CTC) model. We analyzed general discussion in the first and second semester and then conducted a separate analysis of obligatory discussion in the second semester.

For the analysis, we placed each contribution into one of four categories as defined by Garrison: (1) triggering (posing the problem); (2) exploration (search for information); (3) integration (construction of possible solution); and (4) resolution (critical assessment of solution). Further examples of these categories, their indicators, and the socio-cognitive processes captured by the indicators, are presented in Table 1, taken in total from Garrison et al.

Table 1

Categories of Contributions (Based on Garrison et al.)

Category	Indicators	Socio-cognitive Processes
Triggering	Recognizing the problem Sense of puzzlement	Presenting background information that culminates in a question Asking questions Messages that take discussion in a different direction
Exploration	Divergence within online community Divergence within single message Information exchange Suggestions for consideration Brainstorming Leaps to conclusions	Unsubstantiated contradiction of previous ideas Many different ideas/themes presented in one message Personal narratives/descriptions/facts (not used as evidence) Author explicitly characterizes message as exploration-e.g. Does that seem right? Adds to established points, but does not systematically defend/justify/develop Offers unsupported opinions
Integration	Convergence among group members Convergence within a single message Connecting ideas, synthesis Creating solutions	Reference to previous message followed by substantiated agreement, e.g. I agree because… Building on, adding to other's ideas Justified, developed, defensive, yet tentative hypotheses Integrating information from various sources: textbook, articles, personal experience Explicit characterization of message as a solution
Solution	Vicarious application to real	

	world Testing solutions Defending solutions	

SOURCE: Garrison et al. (2001), p. 15-16.

We also used, in a similar way to Garrison et al. and later Meyer (2003), a fifth category for contributions that did not fit into any of the previous categories and included social and other posts unrelated to the course content. The unit of analysis was the complete posting of the student, as in Garrison (2001). However, given the length and complexity of some student postings, this was problematic. The issue was resolved by assessing the contribution's main, or predominant, quality, which introduced a subjective aspect to the analysis.

In order to eliminate at least some of the subjectivity, both authors made categorizations of postings independently. It was discovered that 84% of messages were in categories labeled identically by both authors. Since our total number of messages was not extremely high (270 in general discussion in the first semester, 158 for the second semester, and 58 for the obligatory discussion in the second semester), we were able to discuss the categorizing of the remaining 16% of messages and decide on their category placements together.

Results

In order to illustrate our point, we present here results and analysis of discussions for only the first and the second semesters. Analysis of discussions in the third semester shows results very similar to discussions in the second semester. Table 2 shows the percentage of messages in each of the five categories used for the three discussion forums analyzed.

Table 2

Categorizing of Discussions

Category	General Discussion Semester 1	General Discussion Semester 2	Obligatory Discussion Semester 2
Triggering	11.5%	13%	3.4%
Exploration	20.8%	27.5%	36.2%
Integration	0%	0%	37.9%
Solution	0%	0%	20.7%
Other	67.7%	59.5%	1.8%

Clearly, general discussion forums were used mostly for resolving administrative and technical problems, and the part of the discussion that dealt with course content did not include any higher-level thinking. Students were primarily summarizing problems and exploring options. However, when not obliged to do so as part of an assignment, they made no effort to solve any of the proposed problems.

Of further interest is the evaluation feedback that students provided about the obligatory discussion activity in the second semester. Most of them acknowledged that having the opportunity to read the opinions of others and to learn about their experiences was very useful. Some of the views are presented below:

"It was a very positive experience. It gave me very useful information and insight on problems other NGOs face."

"I liked to know opinions and experiences of people who are in the field longer than me."

"I enjoyed the discussion very much. It was free-flowing, it had variety and it gave me new information."

But they also complained that when it was obligatory for them to form and present opinions on specific issues, it required too much time and effort:

"I did not like the fact that it was compulsory. I would happily participate in a voluntary discussion, this irritated me."

"I did not feel comfortable to be asked to express my opinion. It was really hard for me."

"It required lot of my time to read all the reactions in order to choose which one I want to respond to."

"I felt like being treated like a little child – being told to participate in a discussion. Discussion should be an easy and relaxing activity people do for fun. Here we were guided to do it and forced to spend all that time reading and composing thoughts."

Teachers generally did not see much profit for themselves in using obligatory discussions in the course.

"Reading and evaluating for marking all these posts was way more time-consuming than I would ever suspect it to be."

"What did you say before that discussion activities were good for?"

Analysis

We compared the analysis of the obligatory discussion from the second semester with results of Garrison et al. (2001) and Meyer (2003, 2004), who used CTC according to the Garrison method to analyze threaded discussions in courses at the University of Dakota. The comparison is shown in Table 3.

Table 3

Comparison of Results

Category	Obligatory Discussion Semester 2	Distributions in Garrison and Colleagues (2001)	Distribution in Meyer (2003)	Distribution in Meyer (2004)
Triggering	3.4%	8%	18.18%	18.4%
Exploration	36.2%	42%	50.59%	27.0%
Integration	37.9%	13%	22.24%	32.4%
Solution	20.7%	4%	6.66%	19.8%
Other	1.8%	33%	3.33%	2.5%

Both Garrison and Meyer analyzed messages in general forums of online courses, where students were discussing various issues throughout the duration of the course. In our case, we analyzed only discussion related to one specific assignment.

We assume that the low number of posts in the 'triggering' category is caused by the fact that in our case the questions were posted as part of an assignment. In most cases, students gravitated toward trying to explore, integrate, and find solutions. By being asked to find answers, they were also pushed into trying to find a solution; hence, our percentage of 'solution' category posts is higher than in the discussions analyzed by Garrison or Meyer. However, it is clear that even in the context of Slovak authoritarian traditions, it is possible to achieve higher order thinking, integration, and solution searching in asynchronous discussions by applying encouraging instructional techniques.

Biesenbach-Lucas (2004) says that instructors must design the use of technologies and the learning environment to encourage collaborative work. Edelstein and Edwards (2002) compare course design and discussion facilitation to the work of an architect: "Just as the architect will design a blueprint to provide the homebuilder direction in completing the house, the facilitator must design and manage the threaded discussion to direct students in achieving the intended learning outcomes" (Introduction section, para. 2). Edelstein and Edwards also consider active and focused participation in discussions to be an expectation of most online courses. However, in the first semester in our case, although students were told that they were expected to participate regularly and substantially, the discussion showed no signs of higher order thinking.

Palloff and Pratt (2003) provide instructions on how to plan and create asynchronous discussions for young students participating in their first online course. They suggest the following:

- To create specific posting times, for example, the first response to a discussion question is due online by Wednesday,
- To be specific about the minimum number of responses to other student's posts required for particular discussion,

- To be specific about what constitutes a substantive post. A post is considered a substantive contribution to the discussion wherein a student either comments on other posts or begins a new topic. Posts like "good job", "I agree" or "I like the way you think" are important for the community building process, but students must be instructed that these are not considered substantive posts. (p.8)

This was the basic approach we used when planning the obligatory discussion task during the second semester. From the reactions of students, we could see that although they did not like being directed and they did not like that this particular discussion required increased effort, they were able to appreciate its learning value. Still, it is difficult to prompt students to participate in discussion and put effort into thinking and designing solutions without making them feel that they are being directed.

Conclusions and Recommendations

Problems arising from a rigid authoritarian approach to education throughout the second half of the 20th century are being experienced by countries all across the post-communist region. For instance, Soukalova (2002) describes similar problems in the Czech Republic and Rozsnay (2003) does the same for the region of Hungary, Czech Republic, and Poland. From our study we can draw conclusions and recommendations on three levels: recommendations for course design, recommendations for institutional management, and recommendations for more research.

Concerning course design, there are three implications:

1. Before starting design work on a course, it is important to work closely with the authors and tutors. If teachers don't understand and respect the values of collaborative methods, it is unlikely that they will apply them so that students participate and gain valuable experience. In our case, due to time and funding constraints, the training of tutors was brief, and it did not include an opportunity for them to experience and appreciate online collaborative activities as a learning tool. This hampered the use of collaborative methods during the planning period and the involvement and encouragement of tutors during discussions.

2. It is important to work with students' expectations. We were able to make students understand that the course would not be "easier" because it is online. However, we failed to explain at the beginning of the course the purpose, importance, and learning value of discussions. It is necessary to ensure that students do not expect a discussion forum to be easy and relaxing.

3. Students in Slovakia do not have a great deal of experience with collaborative activities and discussions. So if these activities are to be used in an online course, students need to be introduced to these methods. Instructors cannot expect students to participate enthusiastically and voluntarily in something that is so new and unfamiliar to them. Assignments consisting of discussions should be made obligatory in this environment,

even if course participants are older adults. However, it is important to formulate instructions carefully so that students don't find the environment to be patronizing.

Additionally, there is a clear implication for universities or NGOs that are creating their own e-learning strategies.

If e-learning is to be accepted as a new and effective form of pedagogy then it is necessary from the outset to change teachers' approaches to and perceptions of collaborative learning. E-learning policy needs to address not only technical but also methodological teacher preparation.

Due to the lack of funding and attention from education policymakers and university administrators, the online learning sector in the region of Central and Eastern Europe began its growth slightly later, and it proceeded more slowly than in Western Europe and North America. As well, thanks to authoritarian teaching traditions in the region, the number of online courses using collaborative approaches remains limited. This means also that the number of evaluative research studies on online courses that introduce the collaborative approach is low.

In order to formulate proper recommendations for strategies for training and student support, similar additional studies in the region should be conducted.

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Increasing Public Access to University Qualifications: Evolution of The University of the West Indies Open Campus

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Abstract

This paper traces the evolution of The University of the West Indies' Open Campus (UWIOC), which is expected to expand service and increase access to the underserved communities of the Eastern Caribbean. At present, UWI, which caters to the needs of the 16 far flung countries of the Commonwealth Caribbean, has not been able to fully serve these countries, the UWI-12, in a way that is commensurate with their developmental needs. Historically, the institution has been dominated by campus-based education, and its three campuses have been poles of attraction for scholars and scholarship to the significant advantage of the countries in which they are located: Jamaica, Trinidad and Tobago, and Barbados.

The University's creation of an open campus, a fourth campus, enables it to expand its scope, enhance its appeal, and improve the efficiency of its services to individuals, communities, and countries. This new campus, a merger of UWI's Outreach sector, which comprises the School of Continuing Studies, the Tertiary Level Institute Unit, and The UWI Distance Education Centre, will have a physical presence in each contributing country and will function as a network of real and virtual modes to deliver education and training to anyone with access to Internet facilities.

Introduction

> *Expansion of higher education in the Caribbean done in a rational way, with sensitivity to our current realities and with a clear commitment to quality is a winning option for the region and its peoples*. (Bhoendradatt Tewarie, 2007)

The University of the West Indies is one of three regional universities in the world, the other two being the University of the South Pacific and the University of the Indian Ocean. Established in 1948 as a regional university and serving a student population of 35,000, UWI caters to the higher educational needs of the 16 countries of the Commonwealth Caribbean: Anguilla, Antigua & Barbuda, (the) Bahamas, Barbados, Belize, (the) British Virgin Islands, (the) Cayman Islands,

Dominica, Grenada, Jamaica, Montserrat, Republic of Trinidad & Tobago, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines and (the) Turks & Caicos Islands.

The UWI began its experimentation with distance education as early as 1958 with the establishment of the Radio Education Unit (REU) on the Jamaica campus. Although the Unit was not a serious medium of adult education, it nonetheless had the potential to make a "vital and unique contribution" to that field in the Caribbean (Fergus, Bernard, & Soares, 2007, p.77). From its inception, the REU was responsible for producing radio programmes, which were used in Jamaica and throughout the Caribbean in schools and teachers' training colleges. Recordings were also sent to various radio stations throughout the region. More serious attempts at distance education came later in the 1970s with the introduction of the prototype *Challenge Examination Scheme*, which was a new concept in distance education for UWI. In 1983, Challenge was absorbed into The University Distance Teaching Experiment (later Enterprise) (UWIDITE) which, in 1996, evolved into the University Distance Education Centre (UWIDEC), thereby making the institution a dual mode operation. This new development formalised UWI's determination to explore the usefulness of a telecommunications network for education, outreach, and public service, which is of critical importance in the Anglophone Caribbean region as it is spread over 99,215 square miles and is separated by two thousand miles of water. However, despite the new developments in distance education, UWI fell short of providing higher education to those countries of the Eastern Caribbean, referred to as The UWI-12, not only because these countries exist on the periphery of the campuses in Jamaica, Trinidad and Tobago, and Barbados, but also because the cost of higher education is prohibitive for some of their residents. So while we could argue that higher education has a history of fruitful experiments with distance learning, as demonstrated by the use of technology to deliver programmes beyond the physical campuses, we must also recognize that problems of infrastructure and access remain unresolved.

In fact, Gulati (2008), with reference to UWI, noted that distance education (DE) was still sidelined by face-to-face teaching faculty, who viewed it as an add-on and voiced fears that they were "giving away" their intellectual property. She concludes that the face-to-face faculty did not view their distance teaching experience as a positive influence on their careers, nor did they identify with distance education's goal of widening access. Faculty resistance to DE is not new. In this respect, Olcott and Wright (1995) have observed that faculty members appear reluctant to participate. Ellis (2000) supports this point by arguing that faculty members view it as time consuming and question changes to already busy workloads. Perraton (as cited in Hope, 2006) confirms that in the case of UWI there was little anyone could do to support and expand DE when faculty members had tenure, job descriptions did not include distance education, and heads of department were unenthusiastic.

In examining some of the educational traditions which may have relevance to discussion of barriers to access, the educational experience of the Caribbean may be divided into four periods. These discrete periods are as follows: "prior to 1948, between 1948 and 1969, 1970 to 1995 and 1996 to present" (Roberts, 2002, p. 6). However, it could be argued that the period from 2007 marked the beginning of a fifth discrete period in the discourse on barriers to access. In relation to this, several barriers to tertiary education access have been identified by, for example, Roberts

(1999), Marrett (2000), Garcia (2000), and O'Neal and Davies (2000). According to Roberts (2002), these include the following: space (geographical and accommodation); cost (development, delivery, and travel); population size and economies of scale; technology; attitude of producers and consumers; the structure of opportunity; administrative leadership; and gender. Cost is frequently adduced as a factor that inhibits less well-off students from proceeding with study. However, to minimize the costs of study is not necessarily to overcome the barriers to access. The case of Germany can be highlighted, where efforts to improve access have run counter to a strongly entrenched academic tradition. In this respect, Berggreen-Merkel (as cited in Skillbeck & Connell, 2000) notes that "keeping up the academic standards of schools and higher education institutions vs. open access and equity – this seemed to have been the political question in the past decades in Germany" (p. 28). Recent research in Australia suggests that a policy enabling universities to derive more income from fees for non-research, professional postgraduate courses and from employed people who can afford them has, as an unintended consequence, meant that a number of academically qualified people who cannot afford the fees are unable to enroll, thereby effectively debarring them from entry into certain professions (Anderson et al., 1998). And in the international research literature, socio-economic conditions affecting student access to higher education have been a strong concern for several decades, greater in some countries than others, muted at times, but persistent. Research and policy measures have centred on the following: the disparity of opportunity among social classes with a recurring emphasis on low socio-economic status, the concept of cultural as well as economic capital, rural areas and economically disadvantaged regions or areas, and the interactions among these factors (Skilbeck & Connell, 2000). Sometimes, attention has focused on the "second chance" principle, i.e., increasing opportunities for mature students. The literature has shown that this is variable across national higher education systems. Returning to the Anderson study, one bright light he detected in the Australian environment is the great expansion of enrolments by mature students (evening classes, distance education). There is a modest correlation in the student population between greater or mature age and low socio-economic status. Distance education, wherever it has been seriously promoted, has increased opportunities for mature age entry to higher education, including those who lack formal qualifications and those from lower socio economic groups. But access once gained does not guarantee that all problems will be solved.

In the context of the above, the establishment of a fourth campus, an open campus, should be seen as a radical reconceptualization of higher education in the Caribbean. It is not to be seen as an add-on to UWI but is to be understood as a part of a reengineering of the educational infrastructure in order to establish a relevant and appropriate entity expected to resolve issues of access.

The proposed organizational structure of UWI's Open Campus is designed to expand the scope of UWI by increasing the range, reach, and access to university programmes and services by students from the relevant target groups. The aim is to create a division dedicated to the development of pre-university and professional courses and programmes such that they provide the opportunity for people in the region to pursue various routes to access university education. In addition, community focused teaching and research units will collaborate to provide a wider range of preparatory and developmental programmes for an increasing number of applicants,

including those who would either not have had the opportunity for access or those who, through lack of sensitization, may not have pursued the means of doing so. Further, the redesigning of programmes offered at the online delivery sites will make preparatory programmes available to a wider range of people and will open up opportunities for access to higher education. However, it is our view that institutions must consider the advice of Skilbeck & Connell (2000), who argue that the desire to open up admission procedures must be tempered by a realistic appraisal of student capabilities and the readiness and capacity of institutions to provide suitable study environments.

In this paper, our definition of access coincides with that of the Council of Europe project on Access to Higher Education in Europe, where access is defined by Woodrow (1996) in this way:

- greater participation in higher education of good quality;
- the extension of participation to include currently under-represented groups; and
- a recognition that participation extends beyond entry to successful completion. (p. 7)

Against this background, this paper discusses the evolution of UWI's Open Campus, which came on stream in the 2008/2009 academic year.

Addressing Issues of Access in the Eastern Caribbean

According to Malik, Belawati, & Baggaley (2005), whilst distance learning has the potential of impacting all levels of education, tertiary education is the level at which the maximum benefits could be achieved in terms of economic impact. Although Asia and the Pacific were used as examples, the same is true for the Caribbean in terms of the potential of deploying appropriate emerging Distance Learning Technologies (DLTs) to provide high-quality tertiary education that is accessible and affordable to population segments and that supports developing countries in their desire to convert their ample human resources into human capital. This, in turn, will improve their socio-economic status. However, Lewins and Stuart (1991) propose that educational provisions in developing countries were limited due to their governments' failures to recognise and address the issues of access, culture, and gender gap, which affected poorer population groups.

The Organisation of Eastern Caribbean States (OECS) Development Charter (2002) makes a firm commitment to ensuring that their education system is structured to produce the positive results required for making their economies more efficient. However, despite the developments in the education system over the years, there remain concerns about six ongoing problems: the low levels of educational achievement, declining rates of completion at the primary level, increasing levels of functional illiteracy/semi-literacy at the primary level, the high drop-out rate for boys, the virtual lack of problem solving skills among graduates of the education system, and significantly, the small percentage of the population who access higher education and participate in adult and continuing education (2002, p. 11).

Such concerns are also recorded in *The Organisation of Eastern Caribbean States Education Reform Unit (OERU) Strategic Plan 2001-2010* (2001), which states the following:

> In the OECS countries, only between 3-7% of the population achieve a tertiary level of education….If we are to reach the level of 17% targeted for 2010, then a great deal of effort must be put into increasing access to tertiary institution or enabling learning through distance education or other new technological means. (p. 9)

Although the Plan points to general principles guiding reforms to education in the states of the Eastern Caribbean, it speaks specifically to the issue of access. In this regard, it proposes supporting and assisting member states' efforts to increase access by children and adults to all levels of education (pre-school, primary, secondary, and tertiary), including access to education by children with special needs and by the out-of-school population. In addition, it proposes more emphasis be placed on the reduction of inequity and mitigation of poverty in the education system. To achieve its objective, The OERU has a stated commitment to concentrate its activities in seven strategic programming areas, one of which bears relevance to tertiary education/post-secondary education, in relation to harmonization of governance structures and programme development, including diversification and evaluation. This programme area, already being defined through the European Development Fund/Human Resource Development Programme, will continue to promote standardization and harmonization of programmes and accreditation practices among tertiary/postsecondary institutions in member states. Areas of operation will include *inter alia* the promotion of relevant courses and programmes to enhance the economic development of the sub-region. Within the context of reforming tertiary, adult, and continuing education, the OECS Education Reform Unit lists four objectives on its Web page:

- To transform tertiary education into the engine of human resource development and knowledge generation in the sub-region.
- To facilitate the consolidation of technology transfer in the sub-region.
- To provide educational programmes for all persons who missed or were not afforded the opportunity to complete formal primary or secondary education.
- To provide the opportunity for educational renewal and advancement for all citizens with the relevant educational background to continue their education throughout life.

The OERU also emphasizes increasing access:

> Tertiary education is underdeveloped within the OECS. Any new thrust must be mandated to provide for a higher percentage of the population thereby decreasing the tendency of OECS nationals to migrate in search of tertiary education. This means expanding tertiary education opportunities within the OECS. At the same time, the under-

> representation of females in Science and Technology and the deprivation of rural residents require attention.

The unit further points to the partnership arrangement necessary for the achievement of these stated objectives when it prescribes "…a partnership involving all the beneficiaries in order to ensure that the best relevant quality education is delivered. Only a national effort that maximizes government, private sector, personal, and external support can provide the needed expansion and improvements." From this statement, we can conclude that the OECS recognizes the central role that education, particularly tertiary education and lifelong learning, has to play in the enhancement of their sub-regional development. This determination, no doubt, played a part in encouraging UWI and other regional educational institutions to give serious thought to resolving issues of educational attainment for the peoples of the region.

The decision to deliver distance education programmes by regional institutions such as UWI at the undergraduate, graduate, and postgraduate levels was geared toward this objective and hence the bifocal nature of its response should come as no surprise. This bifocal approach meant firstly, widening student access, and secondly, responding to the needs of those students in the non-campus countries who could not afford to move to a campus country. According to Sherlock & Nettleford (1990),

> The University has a responsibility itself to assess those perceived needs with a view to satisfying them in ways that will provide the region with resourceful, thinking graduates who will be able to rid the region in due course of the material dispossession, spiritual enfeeblement and cultural dependency by which it has been afflicted generation upon generation. (p. 279)

The responsibility therefore falls squarely on the shoulders of UWI to respond to the challenges faced by the sub-regional sector for an appropriate human resource development response.

The Caribbean governments have made tremendous efforts to facilitate increased access to tertiary education for its regional citizens, which has placed a tremendous burden on the Exchequer and has further exacerbated inequality within their societies. The typical approach has been for the taxpayer to shoulder the bulk of the cost of tertiary education. In the case of Barbados, the government pays the full cost of tuition and the students' economic costs. In the case of Jamaica and Trinidad and Tobago, even though the governments pay the full economic costs for students, the last two decades have seen attempts to transfer some of the costs of tertiary education to students; however, lower income students have little ability to finance their tertiary education from family income. The implication of this, for example in Jamaica, has been that the imposition of tuition fees while placing a financial burden on lower income students, has forced the Students' Loan Bureau to discontinue lending for non-tuition tertiary education expenses. Wint (2005) makes the following point:

> The student loan systems that have emerged in the Caribbean place barriers to the participation of the poorer residents of the respective countries because the mortgage-type loans that emerge from these systems do not address the risk-aversion of poor prospective borrowers, and these loan systems do not adequately deal with the challenges poorer residents confront in finding loan guarantors. (p. 17)

It is in this context that UWI is in a position of offering education at affordable rates through particular arrangements and payment schemes, which favour the student. The strategy then for resolving issues of human resource development was to establish and operate an open campus, which would achieve the following: improve access to its programmes; create a student–centered learning environment; establish a viable and sustainable financing mechanism; design and implement an administrative and organizational structure; formulate policy for managing, developing, and implementing open and flexible learning; and establish policy for managing/building inter-institutional relationships/partnerships.

Emerging Organizational Models

Campus-based education has dominated UWI's history, and its three campuses have attracted scholars and scholarship, which has benefitted the countries where they are located. By contrast, the other 12 countries have not been served in relation to their developmental needs. Bothersome aspects of this lower service have been marked by a modest intake of students to the institution from, and in, the 12 countries without campuses as well as the limited number and types of programmes that can be pursued in the distance mode. Additionally, these countries have had less automatic access to consultancy resources and to research capacity than the countries where the campuses are located. These disadvantages have been exacerbated by recurrent inefficiencies in the management and delivery of programmes in the distance mode as well as by the outmoded technology and policies that supported them.

Historically, UWI has sought to address these shortcomings in a variety of ways, including the creation of offices and boards with specific responsibility for the needs of the non-campus countries. The Board for Non-Campus Countries and Distance Education (BNCCDE), created in 1996, was intended to be the agency which would address these deficiencies to provide "… a stronger more unified presence in non-campus countries," and therefore enable the University to demonstrate that its work in these countries has equal priority with its work on the campuses (Marshall,1997/1998, p. 2). The Board was expected to co-ordinate and to manage the relationship between all outreach providers, particularly the School for Continuing Studies, the Tertiary Level Institutions Unit, and the Distance Education Centre. Marshall (1997/98), then Chairman of the Board, expressed the view that "with all units under one roof, hopefully we will eliminate the fragmentation and inefficiencies of earlier arrangements and create opportunities for the development of a focused and integrated approach to outreach activity" (p. 2). Subsequent to this, staff in The UWI Distance Education Centre (UWIDEC) began to re-engineer the delivery

systems for distance education to improve their efficiency. Their efforts required the vesting of authority in UWIDEC, which was normally exercised by faculties. In the same period, the School of Continuing Studies embarked on an initiative to shift the status of its programmes to add regional and institutional recognition to what had been only local level recognition of qualifications. The third department addressing issues was the Tertiary Level Institutions Unit (TLIU), which sought to improve the quality of performance and facilitate the acceptability of students completing studies in national and community colleges. Essentially, its mission is to enhance access to tertiary education in the region by linking the University's resources, programmes, and services to the development of tertiary education institutions in The UWI-12 countries and to those sites located off-campus in the campus countries. Collectively, all three departments under the BNCCDE have been pursuing pathways to overcome deficiencies and to meet contemporary demands in the face of growing competition from an increasing number of tertiary education providers.

It should be noted that the primary reasons for these persistent shortcomings were that the offices and boards did not control the academic, administrative, or financial resources that could correct them; programmes were being delivered as off-shoots of primarily campus-generated activities; and the secondary status of the offices and boards caused adverse affects. Correcting this situation requires that there be an academic authority capable of independent decisions on the nature of programmes appropriate for the specific clientele. It should be able to manage the delivery of programmes and services in the distributed environment of all contributing countries without managerial reference to faculties and departments that have primary responsibility to the three campuses.

The UWI's decision to establish an open campus was meant to address the shortcomings experienced over the years. A series of consultations was undertaken by UWI in the UWI-12 countries to ascertain the developmental needs and plans of each of the countries and to determine ways in which UWI could better serve them. This process helped to inform the institution's decision to establish a separate entity because it provided worthwhile information for the construction of a five-year strategic plan. The data from these sources revealed a strong unsatisfied demand for quality higher education services delivered flexibly by UWI among the sub-region's communities, special professional and vocational groups, and those persons in campus countries who were unable to participate in the timetabled environment of a conventional campus by virtue of their location or their lifestyle.

Therefore, the impetus for creating a campus, rather than a department or faculty, a new office, or an administrative layer lies in the fact that a campus is the highest level of academic, financial, and administrative organization within the University. For a campus, in the context of the Caribbean, the statutes and ordinances of UWI establish a council, an academic board, and a financial committee. This gives it autonomy from other campuses while preserving the membership of the campus in the academic community through its special relationship with the University Council, the Senate, the Board for Undergraduate Studies, the Board for Graduate Studies and Research, the University Finance and General Purposes Committee, and other such governance instruments.

Perhaps the most important decision with respect to creating the new entity is the choice of institutional model. This decision will obviously have a wide impact on the policies needed as well as planning and management strategies. The institutional model must reflect the situation of the institution, demands from students, and access to technology, to name a few concerns. It must be borne in mind that there is no single model, and the opinion is voiced in many quarters that the best approaches have yet to be found.

Evolution of The UWI Open Campus

In April, 2007, the Council of The University of the West Indies approved the development of an Open Campus. In recognizing the importance of such an entity, the Vice-Chancellor described this development in Caribbean Net News (2008) as "an essential strategic element of the University's ongoing five-year strategic plan to transform its curricula and education systems, as well as to enhance the postgraduate programmes and research productivity." The Vice-Chancellor commented further:

> The Open Campus will insist on quality education relevant to the region, student-centredness, student-friendly services, and the creation of knowledge and outreach to the Caribbean Community outside the walls of the University, particularly in the Eastern Caribbean, Belize, the Cayman Islands and in rural areas in campus countries.

The Vice-Chancellor's remarks can be viewed as recognition of the need to improve the previous efforts by the institution to offer distance education across a region separated by time and space. His comments must also be seen within the context of streamlining the operations of the outreach sector to locate the student at the centre of learning, teaching, and administration and to provide greater access to the peoples of the region for whom there have been serious barriers.

The regional use of distance education had its genesis within UWI from as early as 1977. At this time, the Challenge Examination Scheme, introduced at the Mona campus, enabled students in non-campus countries to register to sit Part I of the degree programme in the social sciences without attending classes on a campus or being provided with any significant support, such as library facilities, from the University. After completing at least four of the five required courses, students would then enter Part II of their programme on a campus. While the Scheme was limited in its reach, it, nonetheless, provided an opportunity for students to access university education in a way that was advantageous to them. For example, there was no loss of income for the students; neither did they have to leave their families. As well, Sherlock and Nettleford, (1990) point out that there was no replacement cost for employers and both students and/or governments were spared economic and maintenance costs for one year. However, over its six years, the Scheme, while contributing to the enrichment of intellectual life and the reduction of costs associated with accessing a university education, did not fully satisfy a growing pool of secondary school graduates and those seeking to expand their knowledge base and professional qualifications.

The absorption of the Scheme into The University Distance Teaching Experiment (UWIDITE) in 1983 signalled UWI's intention to take distance education to a higher level. Lalor and Marrett (1986) describe UWIDITE as "one of the first experiments in the developing world to provide education and outreach by means of an interactive telecommunications network" (p. 72). According to Carrington & Thomas (2001), the main features of the delivery model were as follows:

- There was no face-to-face classroom teaching at the university.
- The classroom lectures were replaced by audio-conferences. This required attendance at pre-scheduled times at the university teleconference site in one's own country.
- Printed course materials supported the teleconferences.
- Face-to-face tutorials were provided in all five participating countries and from time to time campus-based lecturers visited these University centres to provide further academic support. (p. 7)

Initially, the system linked the three campuses to two non-campus countries (St. Lucia and Dominica). Other sites were added so that by 1993, 11 non-campus countries were being served as well as several off-campus sites in Jamaica and Trinidad & Tobago. At the end of the project, UWI assumed full responsibility for the programme retaining the acronym but with the word Experiment changed to Enterprise. Although the experiment/enterprise was useful in the delivery of DE, it nonetheless suffered from limitations; for example, the over concentration on teleconferencing as its main facet of delivery ignored the possibility of how its distance education activities could have been more closely related to its computer/communications facilities. Lalor &Marrett (1986) again noted that UWIDITE was particularly appreciated in the non-campus countries, which were greatly concerned with strengthening their education and training systems and improving educational facilities albeit with limited resources. These pioneers of the system identified the availability of funds as one among a number of other problems, including "the small size of certain demands which makes the economic viability of conventional training programmes uncertain; the difficulty of recruiting staff to work in relatively isolated environments; and the isolation from which staff works" (p. 72). These problems "could be ameliorated by the use of telecommunications" (p. 72). In spite of these limitations and based on its usefulness, it was felt that distance education would be better served if UWIDITE was more integrated within the UWI system as an independent operation yet maintaining links with the faculties to allow a more faculty-driven approach. Essentially, the DE operation would be administratively independent but academically integrated. This thinking gave birth to what became The University of the West Indies Distance Education Centre (UWIDEC) in 1996 as a means of mainstreaming DE activities.

However, it was in 1992 that the University Academic Committee (UAC) decided that The University of the West Indies should become a dual mode institution (UAC decision, 1992) to increase access, respond to environmental factors, and facilitate the pursuit of its mission to unlock the potential of the peoples of the region. A report by Renwick, Shale, & Rao (1992) explicitly provided the policy justification and guidelines for making distance education an

integral part of the University's higher education thrust. The decision to become a dual mode institution assumed the following:

- Students would be able to access programmes in face-to-face or in distance mode or a combination of both.
- Staff would treat the development and delivery of programmes by distance as an integral part of their work and have this suitably recognised by their faculties.

It was also assumed that student centredness, quality, and cost effectiveness would be hallmarks of all University programmes and not just those delivered in distance mode, and further, that sufficient resources would be allocated by the university's administration and faculties to enable attainment of these goals. The motivation for engaging in dual mode education differs from institution to institution, and there are examples of notable success as well as of failures to fulfill the expectations of the learners engaged in distance mode study.

The decision to deliver undergraduate, graduate, and professional programmes by face-to-face and by distance mode was shaped by the strategic direction that the University had set for itself in its *Development Plan, 1990-2000*. The plan included funding for DE in the 1993-1996 budgets, and in 1993 a Board for Distance Education (predecessor to BNCC&DE) was established to direct the process of educational planning and programme implementation. The aim of the decision was to widen student access and raise the quality of programme and course offerings and, by so doing, to increase the responsiveness of the University to the pressing demands of the contributing governments. In the period preceding the decision, the governments of the non-campus countries had been demanding a greater part of what the University could contribute to the economic and social development of the sub-region.

The case of The University of the West Indies (UWI) provides an excellent example of typical reasons for the introduction of dual mode education and of the problems that may beset attempts to integrate the two modes unless adequate attention is paid to the issues raised in the ensuing paragraphs. John Daniel, reflecting on his tenure as president of Laurentian University, a multi-campus dual-mode institution serving North–Eastern Ontario from its main campus in Sudbury, noted the difficulty inherent in managing dual mode type institutions. Daniel (2007) remarked that "watching the faculty struggle – or fail to struggle – to serve both on-campus and off-campus students gave me a conviction, which has never left me, that managing dual-mode operations is extremely difficult. Whatever arrangements are put in place seem inherently unstable" (p. 3). He was quick to point out that "Too much centralization of the organization of ODL and the faculty feel disempowered; too much delegation of responsibility for ODL to individual academics and student support becomes inconsistent" (p. 3). What Daniel has identified has relevance to UWI as a dual-mode institution.

In 1996, the operations of UWIDITE were incorporated into the UWI Distance Education Centre (UWIDEC), heralding the expansion of DE programmes, methodologies, and staffing. The mission statement crafted at the time for the Distance Education Centre reads as follows:

> The Distance Education Centre of the UWI is dedicated to becoming a centre of excellence in itself and a catalyst for excellence in distance education throughout the University, to developing and delivering quality programmes by distance, and in so doing, meeting the higher education learning needs of an ever widening population of students, in order to contribute to the University's mission of unlocking the potential of the peoples of the Region. (The University of the West Indies, 1996b, p.3)

It is clear that the Centre's mission had been conceived to fit into the strategic intent of the University to serve the region in more inventive ways. However, in 1996, faced with a new mandate to play a greater role in regional human development, "UWI embarked upon a process of transition to dual mode operation, but the process was fraught with difficulties" (Morgan, 2000, p. 108).

Table 1

Status of UWIDEC Policy Points (1998)

	Policy points	**Remarks**
1	To incorporate DE operations UWI would function as a 'dual mode' institution.	Has not happened.
2	Consequently, DE would become an integral part of staff workload/normal duties.	"
3	'Dual mode' would not be restricted to academic arena only, but would apply to administration as well.	"
4	In delivering DE, priority would be given to print material supported by local tutorials and audio and videoconferences.	Is being followed (minus video bit).
5	UWIDEC to enrol 2000 students by 2002.	2000+ since 1999.
6	Consideration would be given to 'mature students'.	Not done de facto
7	There would be no provision for 'open entry'.	Being followed.
8	DE in campus countries would be the concern both of the three Campus Principals and of the BNCCDE.	DE is only BNCCDE's concern.
9	Among others, UWIDEC's staff would include specialists in such instructional formats as are used for the Internet. (*This is obviously a later interpolation*.)	Internet experts never thought of.
10	"The professional faculties/schools are the natural home for professional continuing education, while some of this work will involve the DEC …	The position is not clear.

	much will not, and there is no particular reason to try to organise it as if it did."	
11	BNCCDE offers 'a platform for the exchange of ideas and plans between the faculties, campuses, and the specialised outreach units under the Board, so that duplication is avoided and emerging needs are attended to'.	"
12	DE operations would be under Centre Budget *in order that on-campus students subsidise them*.	Principals don't agree.
13	As campuses incorporate 'dual mode', funding for DE will become more and more prominent in campus budgets.	Has not happened.
14	UWIDEC course fees would be close to those for on-campus students—20% of the economic cost	Computation not clear.
15	DE income during the initial period would be used for developing DE.	Being followed.
16	UWIDEC budget was increased from J$23.5 million in 1993/94 to J$143 million in 1998/99.	J$ 143 million for 2000+ students is faulty estimation.

(Koul, 2003)

Table 2

Status of UWIDEC Operations (1998)

	Operations	***Remarks***
1	Initiative for policy articulation and change lies with UWIDEC and The Office of BNCCDE. Responsibilities of UWIDEC—management of network and course delivery, facilitating departments/faculties in planning and production of courses, etc…..	UWI regulations do not allow it. Can't be fulfilled without related powers.
2	*Academic aspects* remain the responsibility of faculties and the other two Boards. For any course to be launched the faculty has to agree and implement. UWIDEC is responsible for initiating and sustaining the necessary dialogue among the campuses in case the disciplinary areas are found at more than one campus. Courses to be parallel to those on campuses.	An undefined area, so slipshod work. A nightmare: UWIDEC can't bring them to a consensus. Being followed.

	Contracts for new staff to make *explicit mention* of types of duty required by the 'dual mode' operations. DE work to be counted in the regular assessment and for purposes of promotion. Faculties to identify *course developers* to work collaboratively and UWIDEC to provide specialist assistance and ensure that cross-campus discussions take place. Departments to identify and appoint course coordinators who are responsible for briefing local tutors, providing support through teleconferences, preparing question papers and other forms of assessment, making arrangements for assessing exam scripts in accordance with the university regulations. Campus registries are <u>responsible for examinations</u>. Resident Tutors are responsible for the conduct of examinations at the University Centres. BUS and BGS/R are responsible for the academic quality of DE and quality audit. As for Intellectual Property Rights, generally the DE material prepared for UWIDEC operations is the property of the University.	This does not help/work. Not done. Not dependable. Cross-campus meets difficult. The system does not work well, as DE is considered an 'added' responsibility. Meaning not clear. Being done. UWI not serious about the quality of DE. Being followed.
3	DE pedagogy: self-instructional printed course materials, readings, course guide, tutor's guide, audio/*video tapes, web-pages*, teleconferences and local tutorials. (Tutors to be appointed on the advice of the faculty concerned, who specify their duties. They may also serve as examiners).	No equip't or staff for video or Web *(interpolation)*. Telecon. not sustainable.
4	Resident Tutors to supervise Site Coordinators who will manage DE affairs at the University Centres.	This arrangement never put in place.
5	DE students are <u>full students</u> of the University. Matriculation requirements for DE students are to be the same as those for on-campus students. Students can move freely between DE and face-to-face modalities, but	Not clear. Being followed. Not easy, raises

	such movement is subject to the availability of seats and other resources at the receiving end. Student support system and personnel in position to help students.	problems. This had to be forced in.
6	University Librarian has responsibility for DE students and libraries in NCCs.	Some effort visible.
7	Training Committee to take care of training activities for all categories of staff.	Doesn't exist.

(Koul, 2003)

As Koul further notes,

> Of the 37 policy and implementation points, 29 points show 'negative' status….Its [UWIDEC] role has mainly been that of crises management, because the University launched an operation for which the necessary mechanisms had not been created, the required personnel had not been put in place, [for example, i) no staff was provided to handle course materials for about 2500 students — at an average of 90,000 items (3 courses per learner x 3 items per course x 4 instalments per semester) and ii) computer labs were set up without any technical support to keep them fully functional] and the whole operation had not been underwritten appropriately. (p. 3)

A chronological examination of the proposals for the re-engineering of UWIDEC are contained in a series of reports presented to the Board for Non-Campus Countries and Distance Education (BNCCDE) from as early as October, 1998. The 1998 UWIDEC report presented to the BNCCDE emphasized the following:

> …that UWIDEC is in a precarious situation (it has neither the authority to help learners and/or Centres/Sites out of their difficulties nor the power to purposefully influence the faculties and/or the administration) and that there was an urgent need for an overhaul as nothing short of an overhaul can help the distance education enterprise at UWI. (p. 3)

Nineteen operational facts/problems (related to the operational environment, process of admissions, study materials, tutors, course writing, etc.) were identified to be detrimental to DE operations, and 37 minor and major proposals were put forward to solve them. Koul (2003) reported that only a few of these were approved for implementation, many were met with incomprehension, and some were scoffed at (e.g., concern about delays in examination results). Some were submitted to the Board for Undergraduate Studies (BUS) for consideration and action, and the BUS response was as revealing as it was disappointing. It was revealing to learn that BNCCDE was functioning on the periphery as a subordinate board, that DE operations were governed by regulations established decades ago for campus-based students, and that to effect any reform one had to appeal to faculty boards, academic boards, BUS, and Board for Graduate

Studies and Research (BGSR) then wait for global consensus. However, it was disappointing that issues like 'pending examination results' were dealt with indifferently by as responsible a body as BUS. For example, "The Board was asked to note that the late submission of grades by Examiners caused disruption at the start of the Semester" (Minute 67.1, BUS Meeting of February 10, 1999). Koul (2003) recalls that the overall response of the BNCCDE was the admonition that UWIDEC should "articulate alternative models for the fundamental ordering of distance education at UWI" (p. 4). In weighing the alternatives available in such a difficult environment for DE, Koul concludes that, "We had either to give up or persist; we chose the latter course of action" (p. 4).

According to a report presented to the first meeting of the University of the West Indies Distance Education (UWIDEC) Academic Programme Committee, a note presented at a BNCCDE meeting in the Cayman Islands in 1999 spoke of the need for articulation of an alternative model since UWIDEC "*experienced deeper fissures in the system" (*p.4). UWIDEC identified four broad problem areas: administrative, financial, technological, and academic. Koul highlighted five distinct cases pertaining to administration, which made it clear to the Board that "DE students were treated as if they were nobody's concern" (p. 4). He further recalled six cases related to financial operations that exposed the tendency to count DE students as UWIDEC students rather than UWI students (the implications being obvious). In addition, mention was made of five technology cases that revealed the vulnerability of UWIDEC in this area. Finally, five cases related to academic matters showed that DE work was seen as an add-on and that *"so long as DE work is not seen as and arranged to be an integral part of an academics' mandate at UWI, the Faculty Driven Model remains a myth to be exalted in rhetoric and denigrated in practice"* (p. 4). Reformative proposals were listed for each of the four areas. Koul stated that the discussion was extensive and some of the proposals were accepted for implementation, but most had implications for various units and Boards of the University. He concluded that "*Not enough progress was made"* (p. 4).

In 2001, at the BNCCDE meeting in the Turk and Caicos, UWIDEC brought forward a detailed proposal, which focused on academic management, administration, financial management, and maintenance of standards/quality assurance. A work plan indicating the timeframe and individuals/units to share responsibilities for the implementation of the proposal was also included for consideration. The ensuing discussion brought forth various suggestions, and the proposal met with approval for further action. One of the major follow up action points was to share the proposal with and seek (as appropriate) the views, agreements, and/or approvals of UWIDEC and SCS staff, the Executive Management Committee, and the University Bursary. By and large, the proposal was supported by all of the relevant bodies. Among other items under academic management, a separate body, UWIDEC Academic Programme Committee, was proposed to look after the academic affairs of UWIDEC, but the budget design was to be developed.

Koul makes the point that having incorporated the inputs and comments received from the relevant quarters, a revised note regarding the proposed new governance of UWIDEC was presented to the Board at its meeting on May 10, 2002, in Dominica. An elaborate note on the

new UWIDEC budget design, the size of the required budget provision including that for technology (which was non-existent in the then present provision), elaborated detail of the timeframe, the required staff provision, and details regarding the allocation and placement of the proposed staff was presented. The document met with appreciation and attracted approval for further concomitant action. The relevant documentation was submitted to and discussed with the University Bursary for their consideration and action, and as Koul concludes "*here we are commencing with the new governance"* (p. 5).

However, despite this gloomy assessment of the operations of UWIDEC, student evaluations have shown that graduates did perform well, and in some instances, achieved better results than those students enrolled in the face-to-face mode.

The limitations mentioned above contributed in part to the motivation to create a fourth campus, which would favour distance learning and streamline the operations of UWI's outreach efforts. However, the idea for the creation of a fourth campus was not new. Bird (1984) cites Ramesar (1978) as one who had "called for a reopening of the idea of establishing within the university of an additional campus—an Open Campus—to address itself to three distinct areas of activity" (p.419). In July, 1992, the Appraisal Report of the Caribbean Development Bank spoke to several different types of issues that needed resolution if outreach activity and distance education at UWI were to grow in desirable ways. The document refers to the recommendation of the Renwick et al. Report, which saw the issue as a choice between dual mode and some form of autonomous distance education operation, what has often been referred to as a fourth campus. It emphasized that just as each campus was able to propose programmes and arrangements with Tertiary Level Institutions (and is now able to decide upon such matters independently, though within general policy guidelines set by the new Board for Undergraduate Studies), a fourth campus for distance education would propose programmes, enter into agreements with other providers, and employ people to carry out its work, either full-time or as part-time consultants from one or other of the campuses or other tertiary institutions. The document further claims that this would centralize planning for distance education and permit greater flexibility than some campus-based faculties would be willing to countenance. The document concludes that Renwick et al. rejected this option on the ground that it would forego the opportunities for mutual enrichment of the on- and off-campus programmes. It might also open the door to a belief that the distance education programme was of lesser stature than the on-campus one. Dual mode was intended to provide the assurance that neither modality was superior; neither would be given preferential treatment. Even thoughUWI had opted for the dual mode operation in 1996, demands on the institution by stakeholders and the policy and implementation weaknesses highlighted by Koul dictated that they reverse the earlier decision to embrace the concept of a fourth campus, which would be autonomous in terms of its overall operations.

Koul's view is not without support in the debates about dual mode institutions. One of the key factors that has impeded the development of a fully integrated dual mode system of delivery in some traditional face-to-face institutions has been resistance from the academic staff, a factor alluded to earlier in this paper in reference to UWI. This resistance may be born out of "concerns about additional workload; perceptions of the status of external students vis-a-vis their full time

counterparts; or the fact that the design and development of distance teaching materials carries little weight in terms of career path aspirations" (Freeman, 2004, p. 50). Moran and Myringer (1999, p. 62) suggest that the resistance is born of insecurity and the tension that exists between the academics' desire to offer individualized learning and the standardization that is inherent in self-instructional learning packages. Faculty alienation can arise from a perceived loss of authority and a sense of redundancy that is often compounded by a skills and knowledge gap in matters related to advanced technology and curriculum development, a situation which should be addressed by staff development. Olcott and Wright (1995) propose a further list of barriers: Distance education is considered inferior to traditional face-to-face teaching; faculty members have a perception of inadequate compensation, training and incentives for DE programmes; and there is a lack of institutional support. They conclude that without an administrative infrastructure to support distance teaching faculty, the barriers will outweigh the incentives.

In 2003, the Commonwealth of Learning (COL) issued a pamphlet in its Knowledge Series, *Open and Distance Learning Policy Development (Particular Reference to Dual Mode Institutions)*, in which it notes that a policy environment friendly to open and distance education delivery and practice must contain the following values:

- Commitment to maintaining academic quality and standards in all programmes, irrespective of mode of delivery;
- Equal consideration for student, professional, and community esteem across all modes of delivery;
- Guaranteed access for DE students and faculty to a range of services comparable to those available for on-campus students;
- Sufficient training for and numbers of staff to successfully deliver DE programming;
- Commitment to providing or finding financial resources for the DE programme. (Bottomley and Calvert, 2003, p. 6)

Earlier, Koul (2000, p. 236) had identified 15 areas of dysfunction caused by the unrealistic nature of the basic assumptions that underpinned the original planning process at UWI. These areas are summarized here:

- The model assumed that all faculty had 20% of unused time that they could devote to DE operations. Faculty disputed this, though they would have been willing to work for DE in their own time for extra pay;
- Administrative units did not uniformly accept responsibility for DE related work, to the extent that DE students are not counted as those of the university and they are treated indifferently;
- Existing rules and regulations are insensitive to the needs of DE students, leading to bitterness and disaffection among the students;
- Faculty indifference or antagonism results in poor quality delivery to DE students, and a strong faculty power base results in a 'toothless' DE Centre without authority to demand results;

- Failure to cost services properly and lack of understanding of or concern for DE operations leads to inefficient use of funds;
- Low priority given to DE work leads to delays and results in a poor reputation;
- The special board created to oversee DE is subservient to other senior boards that are well recognized and well entrenched within the institutional ethos, so that its power to effect change is severely hampered;
- DE work is given no place in the scheme of career advancement in the university and is therefore scoffed at;
- Conflicts between faculty and instructional designers lead to delays in course production and delivery;
- Mandated local tutorial support is not always available at all local centres.

The consequences for the students were inevitable:

- Confusion with registration, selection of courses, and award of exemptions;
- Delayed and/or piecemeal supply of study materials, defective instructional design, and confusion in assignment handling;
- Confusion in the organization of teleconferences, absenteeism among course coordinators, local tutors, and students, and indifference to learners' enquiries;
- Delayed appointment/non-availability of tutors and demotivating size of tutorial groups;
- Confusion in the conduct of examinations, distribution of wrong question papers, loss of answer scripts, problems with remarking or review of scripts, inordinately delayed and lost results.

Koul's prescription for corrective action includes the following:

- The establishment of an effective and well documented quality assurance system relating to academic and administrative functions;
- A concerted effort to bolster the key major operations that DE depends on — support services, course preparation, dispatch and distribution of materials, recruitment and training of tutors, accurate scheduling of teleconferences, and top level functionality of the digital network;
- Modification of relevant rules, regulations and related practices, and associated changes to administrative structures and work culture;
- Dedicated and independent budgeting to ensure appropriate investment in DE;
- Investing in technology and training to maximize the use of technology mediated learning; and
- *Establishing a board that is able to formulate policies and implement them effectively.*

The existing board merged with the other entities within the outreach sector to create a single entity, which it was anticipated would successfully address the issues raised by Koul. This entity would take the form of a fourth campus, an open campus of The University of the West Indies.

The newly created fourth campus will merge the three existing arms of the outreach sectors of The University of the West Indies: The UWIDEC, TLIU and the SCS with its five specialized units of the Caribbean Child Development Centre (CCDC), the Hugh Lawson Shearer Trade Union Education Institute (HLSTUEI), the Human Resources Development Unit (HRDU), the Social Welfare Training Centre (SWTC) and the Women and Development Unit (WAND). The merged entity will be an amalgamation of some 42 sites spread across the Caribbean.

The student-centred Open Campus will employ the use of a range of methodologies and formats in the delivery of its programmes, including blended learning modalities, face-to-face, online, and distance, and involving the distribution of print and software materials. These include pre-university education courses, certificate, diploma, and undergraduate programmes and courses, post-graduate degree programmes, distance education courses, extension courses, technical and vocational courses, and other lifelong learning activities. As mentioned earlier, John Daniel (2007) noted his reservations about the blending of distance and classroom learning to solve the problems encountered by dual mode institutions. This is highlighted when he states that "…some would say that the blending of distance and classroom learning through eLearning has made this distinction irrelevant". He opined that although this may be true, dual-mode eLearning raises another fundamental question: "Does not the cottage-industry approach to eLearning through dual-mode operation effectively ensure that this powerful new tool performs below potential?" (p. 3). Further, Daniel makes the point that those who believe one of the fundamental missions of distance learning is to improve access should also worry that eLearning is diverting attention and resources away from disadvantaged students and back to those who are already well served. He questions whether eLearning is another example of "the empire striking back, with traditional academe undermining attempts to widen access?" (p. 3). This confirms the view mentioned above that in the case of the UWI, the best model is yet to be found.

Nonetheless, UWI Open Campus (UWIOC) has begun the processes for further development, working within the constraints of a budget that has not provided adequately for the extensive work to be undertaken in establishing a campus. Despite these imposed constraints, UWI Open Campus staff increased their efforts to meet the agreed-upon targets of achieving full implementation by September, 2008, and progress has been made with respect to the preparation of a unified UWI Open Campus budget for consideration at the Technical Accounts Committee (TAC) meetings held in February, 2008. In addition, the Campus a completed detailed assessment of its development needs for the purpose of preparing grant proposals for submission to funding agencies. Without additional resources from external sources, it would be difficult for the Campus to fund the technological enhancements required at existing sites. In the interim, UWI Open is accessing resources for technological development support through partnerships with agencies such as the Caribbean Knowledge and Learning Network (CKLN) for the provision of services (e.g., training). The Campus is working to improve the partnership arrangements even as it explores other avenues for funding.

Organizational Structure of the Open Campus

The organizational structure of UWI Open is based on the imperatives for efficient functioning within a distributed environment. These include the entities indicated in Figure 1, in which Student Services is centrally placed and is the focus of the other units that form the organizational structure of UWI Open. In keeping with the concept and the vision articulated for the Open Campus, the existing outreach sectors, namely the School of Continuing Studies, with the sites established in the UWI-12 as well as the sites existing in communities within countries with established campuses, the Tertiary Level Institutions Unit, and The UWIDEC, are incorporated and integrated into the campus structure to facilitate efficient functioning and delivery of services. Accordingly, UWI Open will comprise 10 functional units that will be responsible for the management of the affairs of the campus and for the delivery of its services. These are: (i) the office of the Principal; (ii) the office of the Deputy Principal; (iii) the office of the Director of the Open Campus Sites in the region; (iv) the office of the Director of Academic Programming; (v) the office of Student Services managed by the Registrar; (vi) the Division of Computer and Technological Services; (vii) Library and Information Resources; (viii) the office of the Director of External Relations and Inter-Institutional Relationships;(ix) the Consortium of Social Research and Development and (x) the office of Finance and Administration. Figure 1 is the most recent version of the structure circulated to staff of the Open Campus and staff of the sister campuses for input and suggestions.

Chart 1 – An Organizational Structure – Based on Functional Imperatives

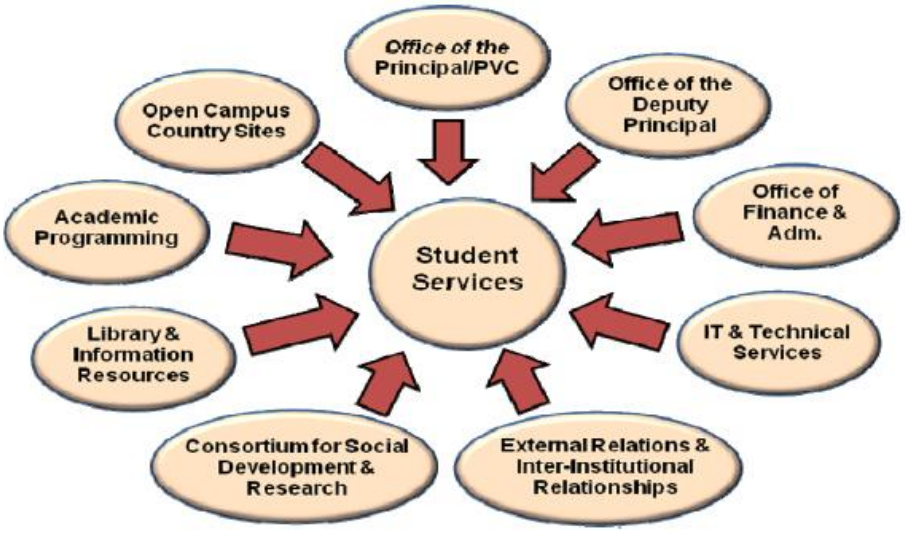

Figure 1. An organizational structure based on functional imperatives. Adapted from The University of the West Indies Open Campus Progress Report, 2008.

These structures are not stand-alone in the operational sense but are functionally linked with respect to what must be performed and the collaboration required for the efficient delivery of services.

The managerial functions are represented by Figure 2 below and represent some existing positions within the existing entities to be merged as well as some newly created ones. Some positions are also expected to be filled by a redeployment of existing staff.

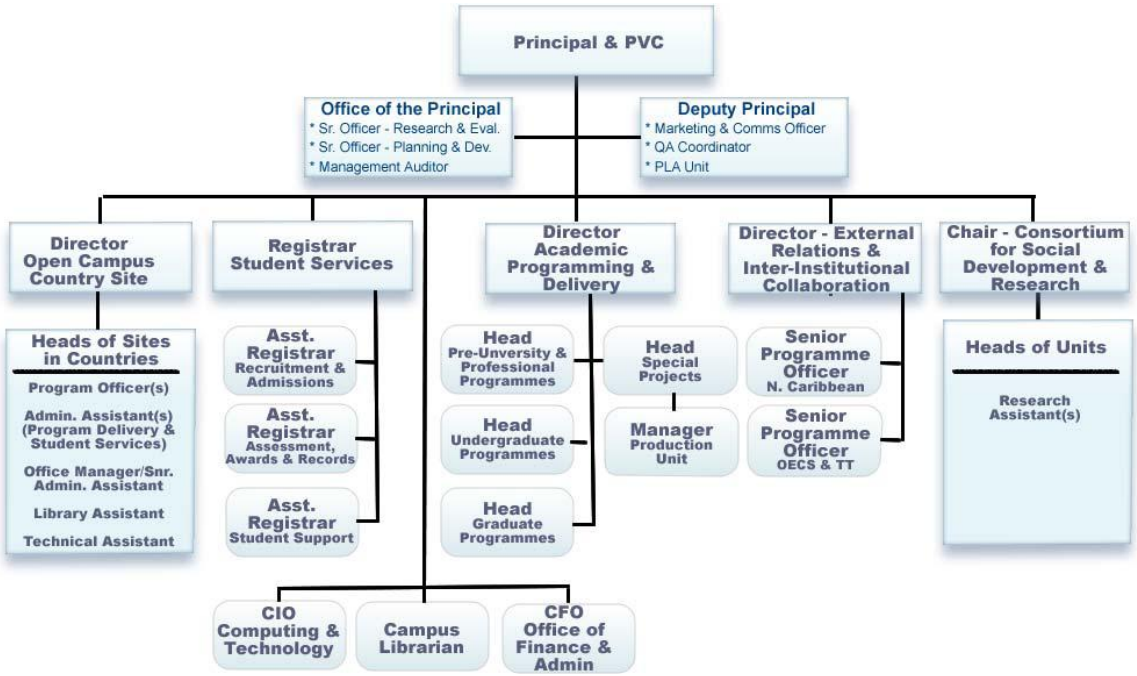

Figure 2. Open Campus Organizational Chart. Source: Adapted from The University of the West Indies Open Campus Progress Report, 2008.

It is proposed that the directors/chairs and senior administrative staff of UWI Open will comprise the management/steering committee of the campus with heads/managers/officers co-opted on the basis of items tabled for discussion on the agenda of monthly management meetings.

UWIOC, which has been described by principal, Professor Hazel Simmons-McDonald, as "a campus for the times and a campus for the future", will enjoy the same level of autonomy as other UWI campuses with its own Academic Board, financial management, registry, administrative, and student support systems. Within this structure, UWIOC will function as a network of real and virtual modes to deliver education and training to anyone with access to Internet facilities. That physical presence in each contributing country will be enhanced to permit services that are more appropriately provided through face-to-face delivery. UWIOC will deploy the technological and instructional design capabilities of the staff in what is now UWIDEC to permit the blending of online and face-to-face learning experiences that enrich the social aspects of learning in a collegial environment. It will build on the record and work of the TLIU to facilitate the interaction of the UWI with other universities, colleges, educational institutions, and scholars as part of a movement towards a seamlessly linked education system for the development of the Caribbean region. The Open Campus will continue to enhance the work of the School of Continuing Studies in responding to local needs and in fostering social and cultural development.

The Open Campus will be governed by a Campus Council in keeping with the statutes and ordinances of The UWI, adjusted to accommodate its virtual character. The Campus will draw its intellectual sustenance from the entire academic array of the existing campuses, and like them, will also draw upon external resources where necessary. Its organization will be driven by the functions required for the effective delivery of its programmes, of teaching, of research, and of consultancy. Students of the Open Campus will enjoy the same quality of instruction and receive the same qualifications as students in the three fixed campuses even though the nature of instructional practice might entail differences in the management of their studies and their scholarly experience.

The programmes of the Open Campus and its academic operations will be governed by its Academic Board, subject to the overarching authority of the Boards for Undergraduate Studies and for Graduate Studies and Research. A new Finance and General Purposes Committee will fulfill the mandate of Council in the affairs of the campus. Accordingly, separate administrative and financial bodies will manage the affairs of the campus, subject to the established reference points of the financial code and the body of UWI administrative practice.

The *Revised Draft Strategic Plan 2007-2012* outlines the aims, strategies, timelines, milestones, performance indicators, and the anticipated outputs of UWIOC, which include the following: increased opportunities for access, increased enrollment in UWI-12 countries, improved retention and completion rates for all students, more flexibility and convenience in access, broadened scope of research, and generally higher satisfaction levels for students in both underserved and served communities. All of this will be made possible through the formulation of policies that focus on centralization in the UWIOC of the development, management, and delivery of the UWI distance offerings, decisions on the procurement and development of UWI distance learning programmes, campus-specific policy related to open admission, internal stakeholder agreement on collaboration, roles and responsibilities of the four campuses, and issues related to cost of service and fees.

Conclusion

The UWIOC is to be seen as The UWI's commitment to addressing the region's development imperatives in ways that will transform the regional pattern of development from one that is principally dependent on natural resources to one that is dependent on human resources and knowledge. In so doing, it will widen its role as a catalyst for change and an instrument of development by providing the services needed in the region to facilitate personal, intellectual, and professional growth and to enhance the economic, social, and cultural development of the peoples of the region.

In establishing this campus, after merging the three critical units that comprise the Outreach sector, The UWI has begun to consolidate the institution's scarce managerial, academic, and professional skills, reduce the high levels of duplication endemic in Caribbean higher education, and provide greater opportunities for lifelong learning to thousands of underserved students. In

addition, the understanding of the need to expand the scope of research and to introduce new research projects signals the institution's intention not just to create an institutional research agenda and to encourage academic research, but also to assist in the crafting of a regional development agenda for the governments of the region. In this way, the Open Campus is well positioned to contribute to the existing body of literature on issues relating to educational theory, open and distance learning, and higher education administration and policy. It will also be well placed to comment on and contribute to evaluation studies and formal research on which future open and distance learning projects can be built.

The Campus, according to the Vice-Chancellor, is designed "to capitalize on advances in online technologies and on the platform of 50 sites...to advance a more student-friendly, much broader basket of degree, diploma and certificate programmes for Caribbean people" who live beyond the walls of the institution (Caribbean Net News, 2008). The Open Campus will be invaluable in extending access to underserved groups of learners in those countries without campuses, to groups in some campus countries who are located in remote areas, and to groups of diasporic Caribbean students. It has the potential to become the largest sector in terms of a pool of students among the other campuses and the opportunity to defend the DE market share in face of the burgeoning competition from international and virtual institutions. It will also be critical in enhancing the tertiary sector to reach beyond the region and into the Caribbean diaspora.

However, successful DE providers have learned that while technology can facilitate low cost access to and delivery of content, effective student support in the form of systematic interaction between teacher and learner is a necessary component of all successful programmes and is by no means inexpensive (Ryan and Stedman, 2002, p. 46). In addition, moves from face-to-face or traditional DE to online education represent significant changes in the assumptions of teachers, learners, and support staff and to the technological infrastructure and skill base that support this migration. Achieving a migration from the post-box and hard text delivery of conventional DE to online learning 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 (Nunan, Reid & McCausland, 2002, p.10).

Although these may not be guarantees of future success, two strategies are available to small and medium-sized universities, such as UWI, as they embrace open and distance learning modalities in a competitive environment: the provision of value-added differentiating services and the development of a recognizable brand. The first can be achieved by assigning as much importance to the *open* as to the *distant* in ODL and by establishing flexibility in the following areas: admission criteria; programme regulations (recognition of prior learning, block transfer, residency, time for completion); course design (individualized and self-paced learning modules, minimal course prerequisites); course availability (uncapped and continuous enrolment); and responsive institutional structures (for approval of new programs, learner-centred academic regulations, and continuous improvement). The second strategy, recognizable branding, can be

achieved by emphasizing quality, not just in academic content and exchange, but in all student support services, so that learners are treated more and more like valued customers.

Overall, the new entity is expected to make a significant contribution towards the understanding of open and distance learning issues and theory, especially in the context of the Caribbean region.

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Research and Practice in K-12 Online Learning: A Review of Open Access Literature

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Abstract

The literature related to online learning programs for K-12 students dates to the mid-1990s and builds upon a century of research and practice from K-12 distance education. While K-12 online learning programs have evolved and grown over the past decade, the amount of published research on virtual schooling practice and policy is limited. The current literature includes practitioner reports and experimental and quasi-experimental studies, both published and unpublished. This paper reviews open access literature in K-12 online learning and reports on a structured content analysis of the documents. Themes in the literature include steady growth and a focus on the benefits, challenges, and broad effectiveness of K-12 online learning. In addition, newly developed standards for K-12 online learning are emerging in descriptions of effective practices.

Introduction

In North America and other industrialized countries, distance education for elementary and secondary students is seen as a solution to several educational problems, including crowded schools, a shortage of secondary courses for remedial or accelerated students, a lack of access to qualified teachers in a local school, and the challenge to accommodate students who need to learn at a pace or in a place different from a school classroom (Cavanaugh & Clark, 2007). In less industrialized nations, K-12 online education is seen as a social and economic development strategy (Moore & Kearsley, 2005). Thus, it is clear why K-12 distance education programs are developing rapidly around the world and why growth in K-12 online course enrollments has outstripped that of other educational formats in recent years (Setzer & Lewis, 2005). A

fundamental challenge in this relatively new educational field for program developers, managers, and instructors is locating guidance from successful practice and from research and literature.

Online learning is a form of distance education whose central defining characteristic is the separation of teacher and learner (Keegan, 1996). Watson, Winograd, and Kalmon (2004) defined online learning as "education in which instruction and content are delivered primarily via the Internet" (p. 95). Many K-12 online learning programs in North American are referred to as virtual schools. Clark (2001) defined a virtual school as "an educational organization that offers K-12 courses through Internet- or Web-based methods" (p. 1). The literature related to online learning programs for K-12 students began to grow in the mid-1990s, building upon a century of research and practice from K-12 distance education (Clark, 2003; Edelson & Pitman, 2001). Although K-12 online learning programs have evolved and grown over the past decade, there is a limited amount of published research on virtual schooling practice (Barbour & Reeves, 2009). The current literature includes practitioner reports and experimental and quasi-experimental studies, both published and unpublished.

The authors reviewed the existing open access literature in K-12 online learning and report on a structured content analysis of selected documents. Previous reviews of the research on K-12 online learning have used both qualitative and quantitative methods (Cavanaugh, 2001; Cavanaugh, 2004; Rice, 2006; Smith, Blomeyer & Clark, 2005). These reviews were limited to dozens of studies and reports, compared to recent reviews of the literature on adult online learning, which included hundreds of studies (e.g., Machtmes & Asher, 2000; Allen, et al., 2002; Bernard, et al., 2003; Shachar & Neumann, 2003; Ungerleider & Burns, 2003). As an example of the growth in the published literature in K-12 online learning, of 226 publications that were reviewed for this paper and published since 1997, 29 were published during the first three years of that period and 69 were published since 2006.

The findings of the previous reviews were limited to generalizations about broad effectiveness because insufficient data were available to substantiate analysis of factors that contributed to effectiveness. However, the picture is changing as data from the first ten years of virtual schooling have become available. This paper moves beyond the blanket endorsements of the effectiveness of virtual schooling to examine the themes that are prevalent in the open access documents published online from 1997 to July 2008. Examining these themes revealed the emphases in virtual schooling research as well as the needs for future study.

Literature Review

To date, the amount of research evidence in refereed journal publications and papers from refereed conferences in the field of virtual schooling is limited (DiPietro, Ferdig, Black, & Preston, 2008). Much of the published literature is based upon the personal experiences of those involved in the practice of virtual schooling; as well, much of the research is available only in unpublished masters' theses and doctoral dissertations. In many ways, this is indicative of the foundational descriptive work that often precedes experimentation in any scientific field. In other

words, it is important to know how students in virtual schools engage in their learning in this environment prior to conducting any rigorous examination of virtual schooling.

Expanding upon his definition of a virtual school, Clark (2001) indicated that there were different types of virtual schools, which he categorized in seven ways (see Table 1).

Table 1

Clark's Seven Categories of Virtual Schools

Type	Description
State-sanctioned, state-level	Virtual schools operating on a state-wide level, such as the Florida Virtual School
College and university-based	Independent university high schools or university-sponsored delivery of courses to K-12 students, such as the University of California College Prep Online (UCCP).
Consortium and regionally-based	Virtual schools operated by a group of schools or school districts, such as the Virtual High School (VHS)
Local education agency-based	Virtual schools operated by a single school or school district, such as the Gwinnett County Online Campus.
Virtual charter schools	Virtual schools created under the charter school legislation in many states, such as Connections Academy, also commonly known as cyberschools.
Private virtual schools	Virtual schools that are operated in the same manner as a brick and mortar private school, such as the Christa McAuliffe Academy.
For-profit providers of curricula, content, tools and infrastructure	Companies that act as vendors for the delivery of courses or the use of course materials, such as APEX Learning.

Watson, Winograd, and Kalmon (2004) offered a slightly different classification consisting of five types of virtual school, which were summarized by Rice (2006) in Table 2.

Table 2

Watson, Winograd, and Kalmon's Five Categories of Virtual Schools (p. 427)

Type	Description
Statewide supplemental programs	Students take individual courses but are enrolled in a physical school or cyber school within the state. These programs are authorized by the state and overseen by state education governing agencies.
District-level	Are typically operated by autonomous districts and are typically

supplemental programs	not tracked by state agencies.
Single-district cyber schools	Provide an alternative to the traditional face-to-face school environment and are offered by individual districts for students within that district.
Multi-district cyber schools	Are operated within individual school districts but enroll students from other school districts within the state. This represents the largest growth sector in K-12 online learning.
Cyber charters	Are chartered within a single district but can draw students from across the state.

Barker, Wendel, and Richmond (1999) provided a similar but more exclusive definition of a virtual school as "one that offers the mandated provincial instructional program to students through web-based means (i.e., computer-mediated and online via the Internet" (p. 2). In the full description, Barker et al. stated that a virtual school was one where students were enrolled full-time in the virtual environment. According to this definition, most statewide virtual schools (such as the Florida Virtual School (FLVS)) and the longstanding Virtual High School Global Consortium (VHS) only provided virtual schooling opportunities, but were not virtual schools. Within the literature, Clark's definition has been generally accepted.

It should be understood that there is a great deal of variety in the different types of virtual schools that currently operate in North America, and virtual schooling is primarily a North American phenomenon (Cavanaugh, Ferdig, Johnson, Lowes, Smith, & Blomeyer, 2006). Powell and Patrick (2006) found that while many other countries operate some form of Web-based or online curricular support program for students and teachers (e.g., a SchoolNet such as the one found at http://www.schoolnet.org.uk/), and some even offer Web-based or online distance education programs, of the 30 countries surveyed, only Canada and the United States operate entities that can be classified as virtual schools. In fact, Australian Glenn Russell is one of the few scholars outside of North America who has written about virtual schooling (e.g., Russell, 2001, 2006b).

Barbour and Reeves (2009) have classifed virtual schooling literature as outlining the benefits of virtual schooling or describing the difficulties or challenges of virtual schooling. They argued that the benefits could be divided into five main areas: expanding educational access, providing high quality learning opportunities, improving student outcomes and skills, allowing for educational choice, and achieving administrative efficiency (see Table 3).

Table 3

Benefits of Virtual Schooling (Barbour and Reeves, 2009, p. 409)

Benefit	Selected References
Higher levels of motivation	Kellogg and Politoski (2002)
Expanding educational access	Berge & Clark (2005); Cavanaugh (2001);

	Freedman, Darrow, Watson, & Lorenzo (2002); Fulton (2002b); Hernandez (2005); Kellogg & Politoski (2002); Zucker (2005)
Providing high-quality learning opportunities	Berge & Clark (2005); Butz (2004); Elbaum & Tinker (1997); Fulton (2002a); Kaplan-Leiserson (2003); Kellogg & Politoski (2002); Thomas (1999; 2000; 2003); Tinker & Haavind (1997)
Improving student outcomes and skills	Berge & Clark (2005); Zucker & Kozma (2003)
Allowing for educational choice	Baker, Bouras, Hartwig, & McNair (2005); Berge & Clark (2005); Butz (2004); Fulton (2002b); Hassell & Terrell (2004)
Administrative efficiency	Keeler (2003); Russo (2001); Vail (2001)

However, whether these benefits are realized through virtual schooling remains in doubt in the minds of some critics, and the research to support these conjectures is limited.

Along with the benefits, there were a number of challenges associated with virtual schooling. Barbour and Reeves described these challenges as the high start-up costs associated with virtual schools, access issues surrounding the digital divide, the approval or accreditation of virtual schools, and student readiness and retention issues (see Table 4).

Table 4

Challenges of Virtual Schooling (Barbour and Reeves, 2009, p. 111)

Challenge	Selected References
High start-up costs associated with virtual schools	Cavalluzzo (2004); Morris (2002)
Access issues surrounding the digital divide	Hernandez (2005)
Approval or accreditation of virtual schools	Berge & Clark (2005)
Student readiness issues and retention issues	Ballas & Belyk (2000); Barker & Wendel (2001); Berge and Clark (2005); Bigbie & McCarroll (2000); Cavanaugh, Gillan, Bosnick, Hess, & Scott (2005); Clark, Lewis, Oyer, & Schreiber (2002); Espinoza, Dove, Zucker, & Kozma (1999); Haughey & Muirhead (1999); Kozma, Zucker, & Espinoza (1998); McLeod, Hughes, Brown, Choi, & Maeda (2005); Zucker & Kozma (2003)

The literature that reports research on virtual schooling tends to fall into one of two categories: research into the effectiveness of virtual schooling (see Barbour & Mulcahy, 2006, 2008; Cavanaugh, 2001; Cavanaugh et al., 2005) and student readiness and retention issues (those studies listed in Table 4 under the heading "Student readiness issues and retention issues"). Over the past decade, several studies have shown that the only students who were typically successful in online learning environments were those who had independent orientations towards learning, who were highly motivated by intrinsic sources, and who had strong time management, literacy, and technology skills (Cavanaugh, 2007). These characteristics are consistent with traits that are typically associated with adult learners. The problem with this focus is that adults learn differently from children and adolescents (Bright, 1989; Cavanaugh et al., 2004; Knowles, 1970; Moore, 1973; Vygotsky, 1962, 1978)[i]. This supposition has led to the call for more research into the factors that account for K-12 student success in online learning.

Methodology

Qualitative metasynthesis involves synthesizing literature to provide an overall perspective on a given topic or issue (Thorne, Jensen, Kearney, Noblit, & Sandelowski, 2004). The authors used a type of metasynthesis called template analysis, which entailed designing a template for the coding of the literature (Au, 2007). For our metasynthesis, the literature about K-12 virtual education was collected from systematic searches of refereed conference proceedings, refereed journals, dissertation indexes, and reports in the education press. A significant portion of the research and reporting on K-12 distance education hadbeen conducted by public and private research centers (e.g., the North Central Regional Educational Laboratory or the Appalachian Technology in Education Consortium), which required the authors to search the World-Wide Web using the Google® search engine and Google® Scholar. Search terms included but were not limited to the following: *virtual school*, *cyberschool*, *K-12 online learning and distance education*, *web-based learning*, and *e-learning*. Our analysis was based on both the general literature on virtual schooling and the research on virtual schooling.

A systematic review of the literature in K-12 online learning provides a history of this new field of inquiry as well as a context for decision-making. Content analysis of the documents, such as metasynthesis, reveals the values and needs that dominate a field in its early stages (Marshall & Rossman, 1999). Content analysis is also used to study distance education at the level of the course, across programs, and within the literature. Recent studies have analyzed the content of titles, authors, and abstracts of distance education articles (e.g., Ritzhaupt, et al, 2007; Rourke & Szabo, 2002).

This metasynthesis commenced with a description of the literature base and its purposes. Template construction afforded both a classification of the literature and its meanings and messages. The categories for the template were drawn from current emphases within the field. The broad themes were the models of virtual schooling (seven categories), the roles of professionals in virtual schools (seven categories), benefits and challenges of virtual schooling (ten categories), adopted standards for virtual school courses (six categories), and adopted

standards for virtual school teaching (thirteen categories). Documents were coded according to whether they address each category. This coding matrix was consistent with the broad to narrow classification used in template analysis. The categories revealed patterns of an emerging and maturing field of educational study. An inductive process was applied to the categories to draw inferences about the body of literature and about practice in the field (Merriam, 1998).

From an initial sample of over 500 literature sources, 226 documents met the inclusion criteria of relating directly to K-12 online learning and being openly Internet-accessible. The documents included refereed journal articles and conference papers, books and chapters, evaluation reports, dissertations, and online publications. The decision to use only open access documents was made for two reasons. The initial search of literature revealed that individuals outside of the academy authored the majority of documents; thus, the authors may not have regular or free access to subscription-based publications. Also, because the authors were interested in presenting this paper to the practitioner community, we wanted to ensure that this audience was able to access the documents on which our metasynthesis was based. An additional consideration in reviewing the literature of a rapidly-changing field like K-12 online learning was to account for effective practices that emerged from practitioners and evaluators before they were studied and published by the researcher community. Although the literature describing K-12 distance education reached back to the 1930s, the first uses of online learning and virtual schooling only began to appear in 1997. The pace of research and other documentation of K-12 online learning rose steadily from 1997 through 2008 across all document types. Each document was reviewed by two of the three coders. The individual coder used an MS Excel spreadsheet to indicate the presence or absence of a particular theme in the document. After the three coders completed their coding, the spreadsheets were compiled. There was 85% inter-coder agreement. The emergent categories and inferences from this body of work follow.

Results

The results of our metasynthesis were organized according to the five thematic areas that we identified in the methodology. The first theme of analysis that we considered was the type of virtual school. We utilized an inclusive combination of Clark's (2001) and Watson et al.'s (2004) categories to account for all identified and accepted categories of virtual schools.

Table 5

Percentage of Literature about Different Types of Virtual Schools

Type of Virtual School	Percent of Literature
Statewide	53
University	15
Consortium, multi-district	38
Single-district, LEA	32
Charter	26

Private	13
For-profit provider	15
Other	7

The literature reflected a great deal of variety in the types of virtual schools that operated in North America; there was likewise a sizeable quantity of literature about each category of virtual schools. A smaller percentage of literature focused upon university, private, and for-profit provider virtual schools, which we attributed to the fact that these categories of virtual schools make up a smaller percentage of the virtual school community. The higher percentage of statewide and consortium/multi-district virtual schools was likely related to the fact that these two forms of virtual schooling were among the first to appear in North America and have a history established over the past decade.

As of fall 2007, only eight US states had neither multi-district full-time nor multi-district supplemental virtual school programs (Watson & Ryan, 2007). Since then, Wyoming has announced plans to implement a state virtual school, and several other states have expanded their virtual school. The lines between public and private virtual schools has blurred as public online schools choose to become franchises for private course vendors. Virtual schooling has also been growing in Canada as more rural districts in Western Canada and more districts throughout the populous province of Ontario become involved in consortium like the Ontario Learning Consortium (see http://oelc.ca/) (O'Haire, Froese-Germain, & Lane-De Baie, 2003). The literature has not yet addressed the relative efficacy of teacher-developed, school-developed, and vendor-developed courses.

The second theme we analyzed was the professional role addressed in the document's findings and/or recommendations: instructors, support staff (tutors, technical support, guidance, media specialists, etc.), administrative/management, or course designer/developer. These categories originated in the virtual school professional preparation and development spectrum and continua developed for *Professional Development for Virtual Schooling and Online Learning* (available at http://www.nacol.org/docs/NACOL_PDforVSandOlnLrng.pdf).

Table 6

Percentage of Literature about Various Levels of Impact

Level of impact	Percent of Literature
Teacher	83
Designer	33
Site facilitator	34
Administrator	54
Guidance counselor	15
Technology coordinator	20

Library media specialist	6

As noted earlier, the literature about virtual schooling largely focused upon descriptive work that often precedes experimentation in most new fields. The high percentage of literature related to the roles of teachers and administrators supports this belief, as much of this literature concentrated on the practice of virtual schooling and its implementation within the K-12 context. Indeed, the success of any school hinges on the educators who are in direct contact with students and on the administrators who support them (Darling-Hammond, 2000). Other support personnel including media specialists and site facilitators are pivotal to the success of schools (Lance, 2005; Kleiman, 2007) but have a less central role (Cavanaugh & Cavanaugh, 2007). Therefore the roles of teachers and administrators received the majority of the scrutiny, while the impact of other professionals was just beginning to be explored.

The third thematic area pertained to the benefits and challenges that had been identified by Barbour and Reeves (2009) in their review of the literature.

Table 7

Percentage of Literature about Various Benefits and Challenges

Benefit or Challenge	Percent of Literature
Motivation	35
Expanding educational access	60
High quality learning opportunity	45
Improving student outcomes and skills	38
Educational choice	33
Administrative efficiency	22
Start-up costs	37
Access issues	41
Approval/accreditation	22
Student readiness/retention	27

Based upon this analysis, much of the literature about the benefits of virtual schooling was focused upon the promise of virtual schooling and its initial rationale for implementation (i.e., the ability to expand access to educational opportunities to students in a variety of jurisdictions or the opportunity to provide high quality learning through virtual schooling). On the other hand, the literature related to the challenges of virtual schooling was focused upon largely administrative issues (i.e., the high start-up costs associated with virtual schools, access issues surrounding the digital divide).

The promise of virtual schooling as the focus of the benefits-related literature was noteworthy because the literature about the advantages of online learning generally was mixed. For example, there was no agreement in the education community or the public that online learning provides

high quality learning experiences at any level. Reeves (2003) concluded that there is almost no evidence to support the claim that instructors who adopt new and emerging technologies also adopt new pedagogy. Further, Herrington, Reeves, and Oliver (2005) concluded that commercial course management systems restrict most instructors to the delivery of information rather than to the provision of engaging, authentic learning experiences. So although virtual schools may facilitate better instruction than the traditional classroom, there is no guarantee that this will occur.

The fourth theme corresponded with NACOL's *National Standards for Quality Online Courses* (available at http://www.nacol.org/nationalstandards/NACOL%20Standards%20Quality%20Online%20Courses%202007.pdf). Rather than using the individual standards as variables, we chose to code the standard areas. For example, the standard area of content included the following specific standards: clear and measurable objectives; alignment with content standards; alignment with required assessments; sufficient rigor, breadth, depth; integrated ICT skills; clear, complete overview and syllabus; requirements consistent with goals; information about communication with instructor; copyright issues addressed; clear expectations regarding academic integrity, netiquette; clear privacy policies; instructor resources included; and assignment and assessment keys included. We coded whether the document addresses the following online course standard areas: content, design, assessment, technology, management, and/or 21st century skills. While it may be revealing to explore the presence of each individual standard in the literature, the body of literature appeared too limited for such examination at this time.

Table 8

Percentage of Literature about Online Course Standard Areas

Online Course Standard Area	Percent of Literature
Content	53
Design	43
Assessment	52
Technology	78
Management	33
21st century skills	18

Unlike the majority of themes we analyzed, this theme had a considerable percentage of literature distributed across each of the categories. The amount of literature concentrated on the technology standard area was clearly dominant, understandably so for an educational enterprise mediated entirely by technology. Apart from technology, approximately one half of the literature touched upon the standard areas related to course content and design. The lower percentage for the 21st century skills standard area may be related to the fact that the *Partnership for 21st Century Skills*

(see http://www.21stcenturyskills.org/) only began in 2004, which reflected approximately the final four years of the twelve year time frame considered in our analysis.

Across virtual schools, course-level decisions are not made in uniform ways or in ways that resemble such decision-making in physical schools. A continuum of course development responsibility is evident in virtual schooling. At one end, teachers and/or designers make all content and design decisions at the school level. At the other end, vendors make all content and design decisions, and the role of the schools is to purchase and distribute courses to students. Schools select their level of involvement in course development based on personnel, funding, time, and other factors (Cavalluzzo, 2004).

The final thematic area corresponded with NACOL's *National Standards for Quality Online Teaching* (available at http://www.nacol.org/nationalstandards/NACOL%20Standards%20Quality%20Online%20Teaching.pdf). As with the previous theme, we coded for the broad standard topic and not the individual standards within each area.

Table 9

Percentage of Literature about Online Teaching Standards

Online Teaching Standard	Percent of Literature
Teaching A-Credentials	37
Teaching B-Tech Skills	20
Teaching C-Strategies-active	43
Teaching D-Leadership, feedback	49
Teaching E-Legal, ethical, safety	8
Teaching F-Experiential OLL	5
Teaching G-Special Needs	36
Teaching H-OL Assessment	27
Teaching I-Goals & Standards	42
Teaching J-Data in Instruction	14
Teaching K-Frequent assessment	7
Teaching L-Collaborate w/colleagues	17
Teaching M-Media & materials for education	30

The most frequently referenced teaching standards in the literature related to the core behaviors of online student-teacher interaction: use of active learning strategies and feedback to students. These standards were followed in frequency by the three that are related to policy and compliance: goals and standards, addressing the needs of all learners, and teaching credentials. The next group of three standards addressed materials and technology, followed by two standards that addressed professional behavior: collaboration with colleagues and use of data to drive

instruction. Providing frequent meaningful feedback to students and preparing active learning experiences were accepted as critical elements in both distance and face-to-face teaching (Jonassen, et al., 2008; Moore, 2007), so it was no surprise that they figure prominently in the literature about virtual schools.

Conclusions and Implications

To date, the literature on virtual schooling has concentrated upon first defining and then describing the benefits and the challenges of K-12 online learning. The research in the field in the earlier years (i.e., 1990s) focused on the effectiveness of virtual schooling by comparing it to traditional schooling and issues surrounding student readiness for and retention in virtual schooling. In recent years (i.e., post-2000), the growing body of literature shifted to a refined description of practice and outcomes in virtual schools. Our analysis of the open access literature indicated that a majority of that literature focused on statewide and consortium/multi-district virtual schools, the roles of teachers and administrators, the promise of virtual schooling and its initial rationale for implementation, administrative challenges, the technology utilized, and interaction with students.

However, the amount of empirical research was still limited. Based on the limited research included in our metasynthesis and in our review of the literature for the preparation of this manuscript, we have identified areas for future research. The first area is to establish best practices for online teaching strategies. Dipietro et al. (2008) was one of the few studies that examined effective asynchronous teaching strategies in virtual schooling (Cavanaugh, 2007; Clark, 2007). Some of the literature provided personal accounts of strategies that teachers at the FLVS and the VHS find useful (Elbaum, McIntyre, & Smith, 2002; Johnston, 2004; Johnston & Mitchell, 2000; Pape, Adams & Ribeiro, 2005; Zucker & Kozma, 2003), but there has not been systematic research into the best practices of virtual school teaching strategies, particularly asynchronous teaching strategies (Hill, Wiley, Nelson & Han, 2004; Rice, 2006).

The second area is to improve upon the identification of characteristics that are necessary for adolescents to be successful in online learning environments and to provide remediation for students who are lacking these characteristics. The range of students enrolling in online learning opportunities is expanding (Barbour & Mulcahy, 2007; Cavanaugh, 2007). Yet the ability of virtual schools to support a broad range of student abilities appears to be limited. After describing the promising results associated with the use of the Educational Success Prediction Instrument (ESPRI), Roblyer (2005) stated that the next step in this line of inquiry is to create materials to assist in the remediation of those students whose ESPRI results indicated potential for problems. Rice (2006) also suggested that researchers need to continue the research into and development of prediction tools, such as the ESPRI.

The third area concerns how virtual school and brick-and-mortar school personnel can encourage more interaction between in-school and online classmates. Interaction was one of the key components to create a learning community for virtual school students (Barbour, 2007). Research

into the field of learning communities in online learning environments has been growing over the past decade (e.g., Alavi & Dufner, 2004; Berg, 1999; Carabajal, LaPointe, & Gunawardena, 2003; Dirkx & Smith, 2004; Fung, 2004; Hill, 2002; Hill, Raven, & Han, 2007; Kollock, 1998; McAlpine, 2000; Rovai, 2001; Stacey, 1999). However, like the literature on distance education and online learning in general, the research into online learning communities is almost exclusively focused upon adult populations (including all of the references cited above). There is a shortage of research exploring the development of K-12 online learning communities.

Finally, the fourth area is to examine the quality of student learning experiences in virtual school environments, especially those of lower performing students. As stated earlier, the range of students enrolling in online learning opportunities is expanding. Scherer (2006) indicated that as the range of students with new and different needs expands, research is required to ensure that online learning is a realistic and accessible opportunity. Research studies investigating the online learning experience for lower performing students will assist personnel to design appropriate supports as this particular population of students continues to grow within virtual schools.

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[i] Some have contested the belief that children and adults learn differently (see Bransford, Brown, & Cocking, 2003).

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Integrated Networks: National and International Online Experiences

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Abstract

There is an increasing impression among online geography educators that interaction can be developed based on specific teaching and learning methods. The authors developed a practical research study to investigate this issue. The study was based on advanced graduate courses in geography at Beijing Normal University and Texas State University. International interaction was complemented by online collaboration among the US local group. Both synchronous and asynchronous communication systems were used, which spanned two platforms. Results of this experience indicate that teaching and learning methods must be enhanced by a flexible online learning model and extensive organizational support in order to increase interaction and reach a certain level of cooperation.

Introduction

The effective use of instructional technology requires not only training (Solem, 2001) but also organizational decision-making that supports adopting new Internet teaching technologies (Rogers, 1995; Taylor & Swannell, 2001). Today, opportunities abound to develop new instructional technologies for a large variety of courses, prepared mainly for undergraduate studies. Within the field of geography, and particularly within the realm of geography education, both instructors and students face many challenges when dealing with intensive and extensive contacts in cyberspace. Training for teaching and learning must include organizational support related to increasing the level of online interaction, cooperation, and collaboration. In this paper, we analyze and discuss the level of integration of a flexible online learning model through a specific dual example in higher education. A systematically integrated network of American and Chinese graduate students was tested to verify the level of interaction.

Online Geography Education

Social Construction of Knowledge

The emergence and development of global higher education through what was generally called distance education can be sequentially organized in four generation models to explain the process of cybernetic interaction: the correspondence model, the multimedia model, the telelearning model, and the flexible learning model (Taylor & Swannell, 2001). Within the context of the most up-to-date online education, the flexible learning model has to be understood as systematically integrated and institutionally comprehensive (Taylor & Swannell, 2001).

Interaction is a continuous and dynamic process. It is not a simple process of communication, either through synchronous or asynchronous modes of operation among several individuals, but an increasingly flexible way of acquiring and transmitting knowledge within a group of people who are engaged by a common interest. The term flexibility guides us towards actual models of pedagogical thinking, such as self-organized learning and multi-perspective approaches (Albrecht & Tillmann, 2004).

Knowledge distribution, within the context of online interaction, means reflexive learning in a constructivist sense, and a construction of geographical knowledge entails interactivity. Albrecht and Tillmann (2004) point out that the learning process involves interactivity, either with different structured learning modules or in collaboration via communication tools. They add that the first form of interactivity enables an individual construction of knowledge while the second form makes socially embedded knowledge construction possible (Albrecht & Tillmann, 2004). However, we think that the process is more complex since interaction always starts with two people as a simple form of learning. The next step is not collaboration but a possible cooperation, in which more than two people interact as a group. This stage is too early to reach socially embedded knowledge construction, but it is necessary that a group engaged in a discussion forum or an asynchronous type of communication demonstrates a certain degree of mutual confidence. The social construction of knowledge requires an expression of confidence and trust in which leadership is offered by one member at a given time. Further, the social construction of knowledge requires that most of the members play the role of a leader in one way or another, according to the problem to be resolved. Once the group reaches this stage, it could be called a team, working at the level of collaboration. Therefore, knowledge construction within the context of online interaction supports two superior stages of progressive development: e-learning by cooperation and e-learning by collaboration. The first is associated with a group and the second is characterized by teamwork (Figure 1). The most common process is the transition stage between interaction and cooperation. Normally, this process requires an increasing level of technological development to respond to the increased number of contacts and the need for efficient interaction. The following figure has been adapted from Albretcht and Tillmann (2004) to explain graphically the reorganization process of knowledge construction and the difference between cooperation and collaboration.

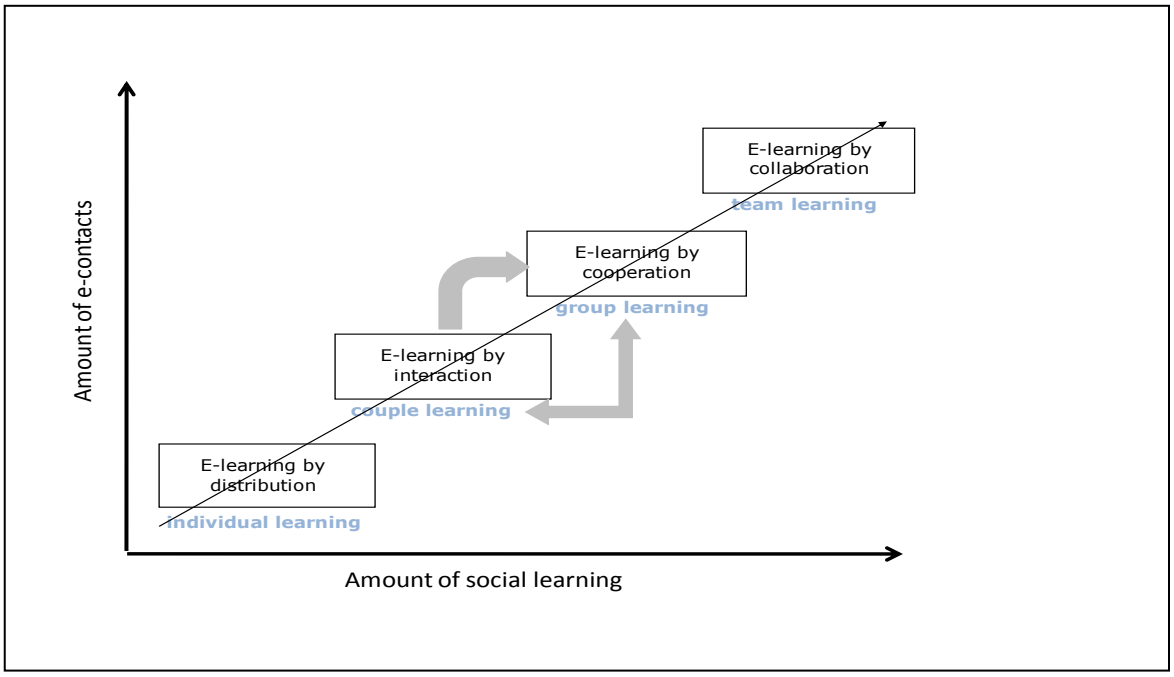

Figure 1. Knowledge construction by increasing social learning. Adapted from Albrecht and Tillmann (2004).

E-Learning

The emergence of e-learning in geography education presents both challenges and opportunities for instructors. In order to fully embrace the use of technology, instructors must learn a new language, the language of e-learning, where many terms are foreign to them. One challenge is the acronyms that the instructor must learn in order to successfully use Web-based technology for course delivery. These acronyms often refer to the same basic set of tools for course delivery and the management of learning content online. Essentially, students and teachers are brought together through a set of computer-based and computer-supported education and training systems accessed via Internet-connected computers. This defines e-learning, the contemporary version of distance education (Pollalis & Mavrommatis, 2008). The set of Internet-connected computers and the software required for course delivery may be referred to as LCMS (learning content management system) (Pollalis & Mavrommatis, 2008), LMS (learning management system) (Monahan, McArdle, & Bertolotto, 2007), CMS (course management system) (Blackboard, 2008), or TLE (teaching and learning environment) (Pahl, 2003).

Regardless of the terminology used, there is far more to the deployment of an e-learning system than simply the selection of the course delivery system. A system framework, an e-learning "ecosystem," must be developed that specifies the learning system architecture for pedagogical development and systems integration. The framework must be flexible enough to change and evolve as needs arise (Ismail, 2001). As well, the e-learning system must allow flexible, learner-centered education (Lee & Lee, 2008).

In the development of an e-learning system, two options are available: closed or open source systems. A closed source system is a commercially available system where the source code (programming) is not available. Closed source systems are self-contained, pre-packaged systems that cannot be modified by the consumer. Some examples of commercially available systems are Blackboard (Blackboard, 2008), WebCT (Blackboard, 2008), and TopClass (TopClass, 2008). Systems with freely available source code are called open source systems (Open Source, 2008). Open source systems provide an alternative to the higher cost proprietary commercial online learning solutions and are distributed free of charge under open source licensing (Romero, Ventura, & Garcia, 2007). One advantage of an open source system is that it enables an organization to fully access the source code, make changes, and add improvements and features continually. Some examples of open source or free systems are .LRN (.LRN, 2008), Sakai (Sakai, 2008), Moodle (Moodle, 2008), Ilias (Ilias, 2008), Eledge (Eledge, 2008), and Claroline (Claroline, 2008).

Each open source system offers flexibility and infrastructure, which can be modified based on organizational needs and instructional design. For example, Moodle (Moodle, 2008) is designed to support social constructivist pedagogy (Rice, 2006). Sakai (Sakai, 2008) is an online collaboration and learning environment, which has been deployed to support teaching and learning, collaboration, and research collaboration at Texas State University – San Marcos. The Teaching, Research, and Collaboration System (TRACS) is the new Texas State University open source collaborative learning environment, and it is based on Sakai. TRACS consists of course and project sites. A course site is used to present documents and materials for a course, and a project site is used for research collaboration. (Texas State University [TRACS], 2008).

In addition to formal e-learning or learning management systems, auxiliary technology that operates outside of the formal system can be used by instructors and students during the e-learning process. Internet communication technologies, such as Skype (Skype, 2008), email, and social Web sites for communication and data sharing, as well as traditional telephone communication, all contribute to successful e-learning experiences.

Both closed and open source systems offer similar access to common Internet communication tools, such as e-mail, chat, and discussion boards. However, a limitation of these communication tools is that they are mostly asynchronous. A need exists to incorporate real-time synchronous technologies for text, visual, and audio communication (Monahan et al., 2007). The incorporation of synchronous technologies can enhance a student's sense of belonging to a supportive learning community (McInnerney & Roberts, 2004).

In the United States, it is generally assumed that students have full access and freedom to use computers both at the university and at home, although knowledge about communication platforms and tools is not widespread. The availability of technology as well as the quality and quantity of computers in Chinese universities, schools, public institutions, and households is not as developed as in the United States. The use of computers and communication systems can be restricted by government regulations. Even in e-learning operations in which interaction and cooperation could take place, there are restrictions to freedom and equality in the process of

individual and mutual knowledge construction. Restrictions due to the social, political, and technological climate of a country cannot be ignored. Strict control over the use of the Internet is a barrier to developing online education. Some countries, as in the case of China, fear a number of social security problems (Lo Choi, 2001). Also, restrictions can include limited access as well as imperfect monitoring. Consequently, the state where the e-learning is conducted, according to Brunn (2003), remains important.

Inquiry-Based Learning

Our study involves an Inquiry-based Learning (IBL) process, in which two different groups of participants are engaged in interaction and seek appropriate resolutions to questions and issues. The setting can be characterized as an "open room," which is based on two different online platforms. The members of both groups have never had experience with this type of environment. In Figure 2 (below), Case 3 shows the most common learning environment encountered by participants who are acting as self-directed learners and who have the opportunity to be differentiated among their peers by their individualized way of learning.

Even when it is acceptable to recognize these four environments as typical classroom settings, it is also possible that Case 3 could be initially developed for an online learning process. Cases 1 and 2 are based on a receptive and non-active type of environment, which is unsuitable for distance education. A typical Case 3 environment might take place through a process of Inquiry-based Learning (IBL), and cooperation might be possible. Case 4 is the most advanced environment for active learning. It is characterized by a group of participants who play the roles of dynamic actors. Interaction flows from Problem-based Learning (PBL) techniques, which require students to solve problems collaboratively.

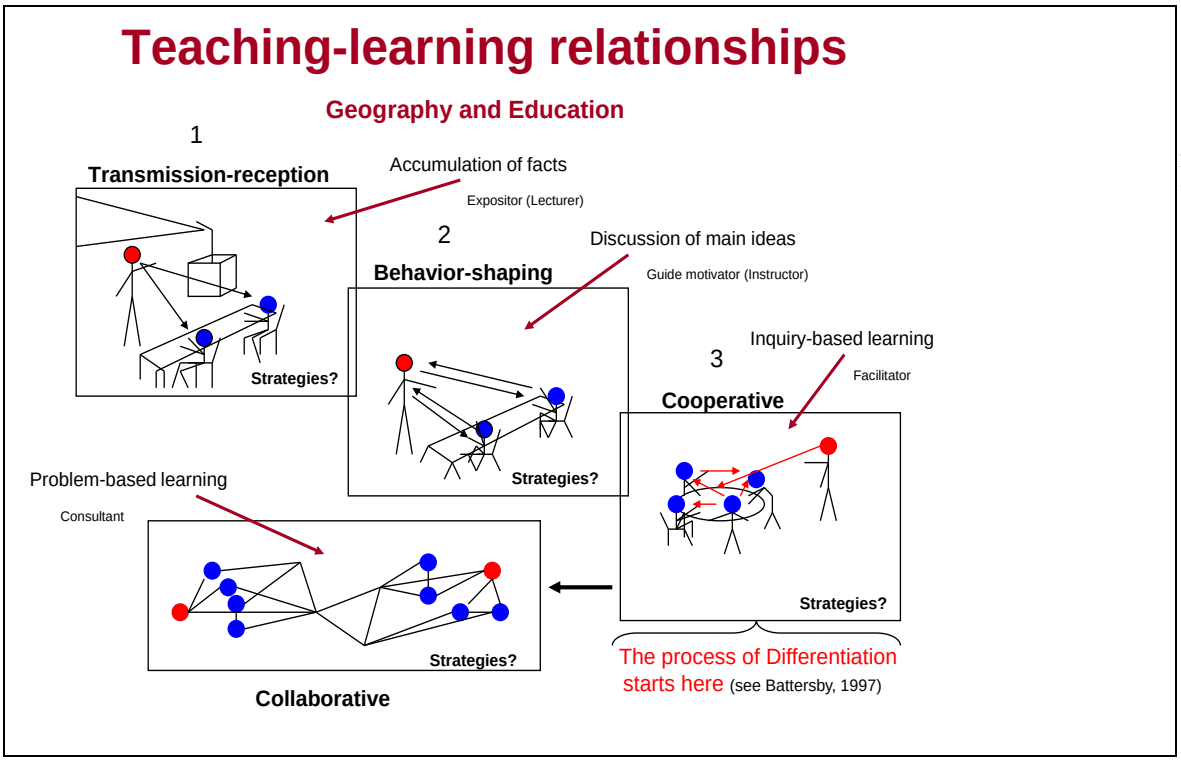

Figure 2. Case 3 as the most common typical environment of the study.

Method

The online experience was constructed as a part of a graduate course in Geography Education in the Department of Geography at Texas State University. It was based on learning modules developed between 2003 and 2006 by the Online Center for Global Geography Education (CGGE) project, funded by the National Science Foundation. The modules are available through the Association of American Geographers' Web site to instructors and undergraduate students at universities and colleges for use in formal geography courses (Association of American Geographers [AAG], 2008). Among the three available modules created by the CGGE project, the module on Population was chosen. This module had been tested several times by undergraduate students in formal courses developed and coordinated between U.S. and foreign higher education institutions during numerous trials between 2005 and 2006 (Klein & Solem, 2008). For the purpose of this teaching and learning experience, the Population module was tested with graduate students.

Fourteen students from two academic institutions, Beijing Normal University and Texas State University – San Marcos, participated in the advanced geography graduate course. The Chinese students consisted of seven graduate students at the master's or PhD level. For the American students, the local group was composed of seven PhD students from Maryland, Kentucky, Texas, and California, who communicated exclusively in the online environment.

Students participating in the class were assumed to have basic technology skills, such as Microsoft Word, Excel, PowerPoint, and Internet navigation, before the process of online interaction could take place. However, students in the United States had to learn to navigate both the TRACS and Blackboard platforms in order to create a reasonable and steady interaction process. Prior to initial contact, the Chinese and American students developed personal Web pages as a source for introductions. The Web pages allowed the students to develop personal identity and social presence in the online environment.

The overall U.S.-China experience was set in three stages. The first stage was developed by each local group to interact and discuss some issues related to online interactions for a month before engaging themselves in the international experience. One faculty member from each university served as the local coordinator and facilitator during the student interactions. For the U.S. group, the facilitator interacted with students in TRACS and instilled confidence in the process by providing selected readings about online teaching and learning. The TRACS discussion forum was used for asynchronous interaction, and the chat room allowed the local group to develop synchronous communication. In contrast, the Chinese counterpart worked with a facilitator at the local level by using only a face-to-face traditional classroom environment.

The second stage was initiated when members of the local groups were randomly assigned to international teams by the instructors. Four mixed teams learned how to use the *Blackboard* platform and to develop personal Web pages prior to their work with the first two lessons of the Population Module (Phase 1). For the final two lessons (Phase 2), two new mixed teams were assigned. All teams utilized the Blackboard platform for their exercises. The students interacted through established discussion forums, which were set up based on questions from the lessons.
The third stage was developed by the U.S. local group once the international experience was over. This stage focused on revisions of the instructional design, learning process, curriculum structure and platform operations, and IBL-PBL propositions (Figure 3).

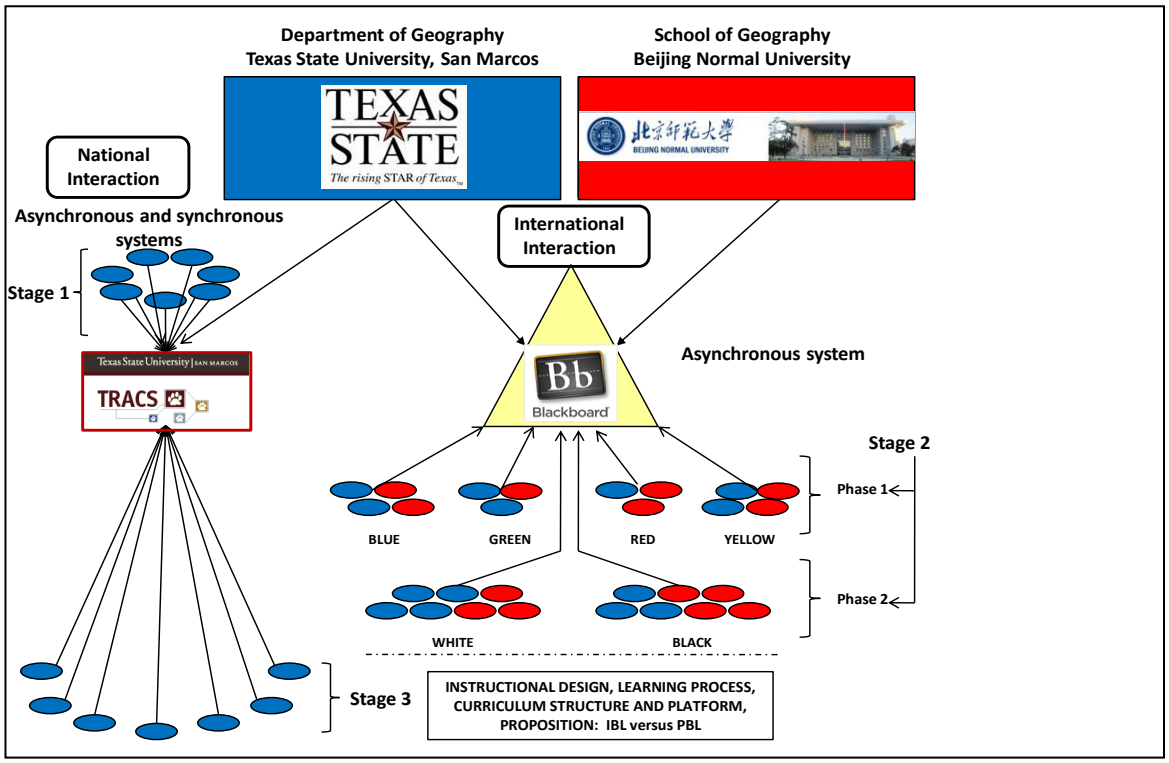

Figure 3. The setting of the online national and international structure.

The method employed to analyze the process of learning during the three stages was both direct and indirect observation. Direct observation was conducted by the Chinese instructor during the face-to-face traditional class in the School of Geography at Beijing Normal University before the international experience was developed (first stage). In contrast, indirect observation was performed with the U.S. group during all stages. Likewise, during the second stage, that of the international interaction , Chinese students were observed indirectly. A particular method of observation was selected for this purpose, which followed complete observer and unobtrusive observer procedures (Gold, 1958; Gorman and Clayton, 2005). For the purpose of this research, the "passive" role as described by Spradley (1980) was adopted as an indirect approach for systematic readings of discussion forums and chats. As observers, the instructors did not participate or interact to any great extent with the students when they were engaged in online discussions and interactions.

Three observations were performed during the national and international online experiences:

1. *The level of network operation for the local group (i.e., national) and international mixed groups*. The most critical procedure was to verify whether or not the two platforms (i.e., TRACS and *Blackboard*) were used efficiently.
2. *The conditions of group activities at the national and international level*. The most critical procedure was to observe the social construction of knowledge within the context of online interaction.

3. *The characteristics of the learning process to resolve problems*. The most critical procedure was the level of resolution achieved by the students who were focused on inquiry-based learning and problem solving strategies.

Overall, observation focused on the flexible learning model to verify to what extent the students gained experience and mastered learning procedures in the two digital platforms and using several integrated telecommunication technologies.

Results: The National and International Interaction

The local group represented the interaction on the national level. The national interaction was different between the Chinese and American student groups. The American students, utilizing two platforms, were playing a dual role during the exercises: regular students going through the lessons, exercises, discussion forum, and tests, and instructors, observing the whole process in order to offer suggestions on how to improve the module and the learning method. During the three stages of the national and international interaction, the TRACS platform was used for course development, and Blackboard was used for the international practice and access to the CGGE Module (Table 1). Blackboard was the only platform accessible to the Chinese students for their international activities. A Blackboard tutorial was provided as an initial assignment in the class for both international groups.

Table 1

Three Stages of the Online Interaction Program

MONTH	TOPIC	SETTING	ACTIVITY
1st **Stage 1**	1. E-learning Pedagogy 2. Platforms (technical issues)	Virtual Classroom (*) National Interaction (**)	Chat-Room TRACS
2nd **Stage 2**	Population Module PHASE 1: Lesson 1and 2	International Mixed Groups Blue, Green, Yellow, Red	Discussion Forum *Blackboard*
3rd	Population Module PHASE 2 : Lesson 3 and 4	International Mixed Groups Black and White	Discussion Forum *Blackboard*
4th **Stage 3**	Evaluation 1: Instructional Design	Virtual Classroom (*) National Interaction (**)	Chat-Room and Discussion Forum TRACS
4th	Evaluation 1: Learning Process	Virtual Classroom (*) National Interaction (**)	Chat-Room and Discussion Forum TRACS
4th	Evaluation 2: Curriculum Structure and Platforms	Virtual Classroom (*) National Interaction (**)	Chat-Room and Discussion Forum TRACS
4th	Evaluation 3: Inquiry-based Learning and	Virtual Classroom (*) National Interaction (**)	Chat-Room and Discussion Forum

	Problem-based Learning		TRACS

Note: * Virtual Classrooms were developed by PhD participants as part of the national group attending the seminar in geography education from different locations in several states (California, Kentucky, Maryland, and Texas). **National Interaction was performed individually.

Though largely successful, the local group interactions exhibited a few negative characteristics. Whereas some students tended to dominate the forum, getting in early with multiple postings, other students participated infrequently or not at all. Some students were confused about which platform to begin on or where to download the initial lesson in order to start the process. Also, during the activities, students used the technology most familiar to them. For example, some students used email to communicate instead of TRACS.

Students naturally formed sub-groups with previous acquaintances. There was a noticeable tendency to bounce ideas off of one another before participating in the official TRACS forum. Students expressed concern that they could not preview their responses prior to posting; also, they were concerned about whether or not their responses were appropriate or "academic" enough. The use of such outside interactions may strengthen ties between some group members but unintentionally alienate others.

In preparation for the international interaction, lessons were downloaded from the CGGE Module in Blackboard. In the American local group, students provided support and feedback to one another as the group worked through the lessons using TRACS prior to the international interaction. Once the local group discussion was over, members of the local group split into the international teams and worked through the lessons in Blackboard. After initial hesitations, students felt more relaxed working together and they became partners in the learning process.

The conflicting schedules of Texas State University and Beijing Normal University hindered interaction between the students. Semester start dates, national holidays, and semester breaks all contributed to uneven participation in the discussion forums. The time difference between China and the United States as well as the time differences among the American national group students hindered synchronous communication. There was a significant lag time in the posting of responses, which caused frustration. The Chinese local group met in the classroom, however it was not known if this was their designated online communication time.

At the national level, some of the American students had attended face-to face classes together in the past, whereas others had no prior knowledge of one another. Outside emails were used by some students in both the national and international interactions as an additional, less formal means of introduction. Initially, it was apparent from the communications and Web sites of both student groups that there was a sense of excitement and an eagerness to communicate with one another. Overall, the students developed a working relationship (Example 1). Some students used the Internet to conduct additional research beyond the requirements of the class. The students actively shared their research with their national and international colleagues through the posting of Web site links or PDF documents.

Example 1:TRACS. Local group members participating and referencing one another's responses in a constructive way

AS 5 (Nov 1, 2007 10:05 PM CDT) I agree with AS 7 and AS 1 concerning the need to cooperate among these three countries to conserve water as well as conduct land and water resource management. I am also going to post my personal opinion based upon some Internet research that I did regarding this ongoing conflict. There has been several research studies conducted on this issue. One is listed in the Middle East Policy Journal that I have been tried to retrieve.

AS 6 (Nov 1, 2007 11:14 PM CDT) AS 5, the research you unearthed regarding the historical water agreements among these nations is a crucial piece of material as it is 100% clear that this isn't a simple problem you can throw a little bit of money at and make it go away. A comprehensive land use/ water resource management study is a solid recommendation. i bet if we looked into the research further, we'd find that many have been conducted. i think the conflict has persisted for thousands of years, no?? :) in any case, thanks for your terrific leadership.

The international experience was not developed to be a competition between teams, but rather was intended to foster a dialogue and to provide a bridge for the students to communicate and discuss relevant issues. Examples 2 and 3 are typical cases of the initial and advanced international interactions, respectively:

Example 2: Blackboard. International initial interaction

Current Forum: Lesson 1: Bolivia
Date: Mon Sep 24 2007 9:03 am
Author: CS 3 (Blue Team)
Subject: Hi~I am CS 3. I am a chinese girl and glad to communicate with you. China is a country which has
the largest population in the world so i have a lot of thing to discuss with you. I hope that we can discuss it
actively in the future.

Current Forum: Lesson 1: Bolivia
Date: Mon Sep 24 2007 10:16 am
Author: AS 1 (Blue Team)
Subject: Re: Hi~I am CS 3.
Hello, it is very nice to meet you. My name is AS 1 and I look forward to working with you.

Example 3: Blackboard. International advanced interaction

Current Forum: Lesson 2: Demographic Transition Model
Date: Mon Oct 1 2007 8:38 am
Author: CS 6 (Red Team)
As far as I am concerned, a country's population change may attributes to many factors, and economic development is one of the main. For example, in China, as the country's economic develops more and more young couples want to achieve their own goals, then child may became their burden. So they don't want to have more children, one is enough (this act also welcome by the government),even some couples don't want to have any children. In a word, one country's economic development can stabilize its population. But there are also some other factors, as country's population policy, traditional culture, living conditions, etc.. What do you think?

Current Forum: Lesson 2: Demographic Transition Model
Date: Sun Oct 7 2007 12:03 am
Author: CS 8 (Red Team)
CS 6- Hi. sorry for the delay. As I said, I've had spotty internet in rural midwest America (I had to leave California for a week), plus, we were informed you were on vacation this week in China.
I do think your comments are right on the mark. I agree that as a country industrializes and urbanizes (usually leads to economic growth), that families tend to become smaller, largely out of necessity. As people move to the city for work and fewer farm the land, not as many children are needed in the fields.

As comments, suggestions, and questions were posted in the discussion forum, the instructor evaluated the dialogue based on the level of critical thinking and knowledge demonstrated by the students (Table 2). Thus, a typical Inquiry-based Learning (IBL) process was developed at the international level.

Table 2

Lesson 1: Example of guide checking the interaction level for some activities

GROUP Participant (S)	HOMEPAGE CONSTRUCTION	PARTICIPATION CASE STUDY: BOLIVIA	PARTICIPATION THEME: CARRYING CAP	COMMENTS	MORE INFO
BLUE		TOTAL: 12	TOTAL: 4	Slow start and late participation. Unequal number of interventions and very low level of interaction.	Blue group see guide
S1, China	Ok. No photo	1	0		
S2, USA	Complete	7	4		
S3, China	NO	1	0		
S4, USA	Complete	3	0		
GREEN:		TOTAL: 15	TOTAL: 5	Weak participation of one member and late participation of another member.	Green group see guide
S5, China	Ok. No photo	1	0		
S6, USA	Complete	5	2		
S7, USA	Complete	9	3		
RED:		TOTAL: 16	TOTAL: 3	Good interaction during the first Disc. Forum. Participation for the second task was weak.	Red group see guide
S8, China	Complete	5	0		
S9, China	Complete	5	2		
S10, USA	Complete	6	1		
YELLOW:		TOTAL: 15	TOTAL: 19	Good interaction	Yello

S11, China S12, USA S13, China S14, USA	Ok. No photo Complete Complete Complete	2 4 4 5	1 6 3 9	during both Disc. Forums. Participation was balanced with the exception of one case.	w group see guide

Note: The first column represents the groups and participants. The second column represents the Web page and photograph created or not by each participant. The third column represents an exercise about population in Bolivia and the number of interactions. The fourth column represents a theme related to the concept of carrying capacity and the number of interactions. The fifth column represents a brief comment sent by the instructors to each team. The sixth column indicates that each group can see a more detailed comment by accessing their own guide.

Self-directed learning increased the ownership of work but did not increase the quality and level of involvement and motivation of the students, as students generated ideas about how to address the problem and how to identify resources that were available to help them investigate the problem. The IBL approach of the Module could develop into a problem-oriented approach. The use of Problem-based Learning (PBL) in the Module would give the students an opportunity to reflect on their own way of thinking about a situation or problem. PBL is driven by challenging, open-ended problems, where students work in small collaborative groups, and teachers take on the role of facilitators of learning (Grabinger & Dunlap, 2002; Pawson et al., 2006). This process was not detected by direct or indirect observation in the national or international interaction.

Through online interaction, the students learned how to network and work together at a distance, laying a framework for the future where students may form research groups and networks with researchers around the world based on their interests and work. There may be no opportunity for face-to-face interaction before such online interaction begins. Therefore, this technology also teaches students to become comfortable with online interaction and to express themselves in this environment.

The international component was not fully developed. The American responses dominated the discussion forum in most cases; although, some American students failed to participate in some of the lessons, perhaps due to a lack of interest. In some cases, there was no participation from the Chinese team members. However, the most active students interacted and tried to encourage their colleagues in both countries to participate. One of the possible problems faced by the American students was that the structure of the Chinese local group was not well understood.

Throughout the process, students experienced a learning curve as far as how to share digital files and how to develop the final submission for each lesson. Each participant exhibited initiative and creativity by incorporating technology such as GIS and the use of collaborative Web sites; for example, Google Docs was used to facilitate file sharing and to develop the lessons.

In accordance with the approach proposed by Lick (2000), which is that teamwork shows the willingness and ability of team members to work together in a truly cooperative way toward a common goal, in this case, a basic level of teamwork and cooperation was achieved. To some extent, it was possible to observe group cohesiveness at the national level based on a certain disposition and an ability to work together. The attraction of certain members to each other as a result of common forms of operation or previous activities developed through face-to-face academic experiences facilitated learning and internalized cooperation. However, collaboration as a representation of strong bonds and deep trust among members was not present**.**

This case was based on an approved curriculum structure; however, the organizational decisions did not include the whole spectrum of the administration of the two international institutions. Innovation took place as a part of a learning process in which the flexible learning model was supported by partial organizational support. University technical support was available to each participant, but the participants exercised mutual assistance to resolve technology issues, such as where to upload data, where to chat, and where to hold discussions. Instructors acted as true, risk-taking innovators as they fulfilled the academic requirements and ran both the national and international online interaction.

The technology platform selected to conduct collaborative learning activities in geography should facilitate, not hinder, students as they move from interaction to cooperation to collaboration. In order to improve the collaborative activities for the CGGE Population Module, simple problems that hinder performance or delay interaction could be addressed in both TRACS and Blackboard in order to facilitate the information exchange between students. The form of information exchange between students in the local group was not well understood. For example, to share work, some students used email, two created Web sites, while others communicated using Skype and the telephone. Cooperation among the entire group was sacrificed as individuals communicated with each other rather than with the group. The group as a whole could not provide input to the isolated interactions that occurred outside of the TRACS environment, so it is possible that insights were lost.

Conclusions and Remarks

The flexible learning model, systematically integrated across two platforms (i.e., TRACS and Blackboard) and including a structured teaching module, allowed a certain level of interaction between two blended groups of international graduate students. However, in addition to the social construction of knowledge being affected by conflicting schedules and the time difference between China and the United States, there was a learning curve as far as sharing information and results for each topic and lesson.

In order to reach collaboration, the different groups working together must show a reasonable level of confidence that is not only a result of mutual understanding but also of effective and complete organizational decisions. In this case, the online initiative was developed entirely by the instructors of Texas State University and Beijing Normal University, and full organizational

support, controlled by the administration, was lacking. There was only indirect support offered by the technology resource office at the U.S. institution. This kind of innovation must be supported by the administration in the future in order to reduce random acts of innovation that are initiated by risk-taking instructors.

The IBL approach developed during the online experience did not lead to a complete and efficient self-directed learning process. The problem-oriented perspective was still based on a traditional way of communicating knowledge. Therefore, to apply PBL to any structured learning module, modifications are needed. The thematic strands of each lesson are universal; however, the mode of questioning and the level of involvement of the instructor(s) must change when moving from IBL to PBL. For example, the instructor can guide the students to the appropriate tools and technology once they are identified. Also, the instructor must work to ensure the groups function as teams that are organized to obtain a result. Finally, the instructor would become a more active participant in the discussion forum, learning with the students as the problem defines what is to be learned.

Final relevancy and the application of the findings to related settings beyond this online international experience should be concerned with the level of interaction a group of students can reach. Whether or not the interaction may develop into cooperation and collaboration will depend on effective organizational support and decision-making from the institutions engaged in this type of integrated network. Furthermore, a flexible learning model of any kind will be efficient only if the curricular structure guides the students toward an effective, self-directed learning process.

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Interaction Equivalency in Self-Paced Online Learning Environments: An Exploration of Learner Preferences

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Abstract

This mixed methods study explored the dynamics of interaction within a self-paced online learning environment. It used rich media and a mix of traditional and emerging asynchronous computer-mediated communication tools to determine what forms of interaction learners in a self-paced online course value most and what impact they perceive interaction to have on their overall learning experience. This study demonstrated that depending on the specific circumstance, not all forms of interaction may be either equally valued by learners or effective. Participants differentiated among the various learning interactions available and indicated that informal interactions were as important as formal interactions in determining the quality of the online learning experience. Participants also reported the activity of blogging as being equally valued and in some ways superior to instructor-directed asynchronous discussion via the discussion board in a learning management system.

Keywords: interaction; equivalency; mixed methods; distance education; instructional design; self-paced; online learning; online; learning environments; blogs; blogging; educational social software; social networking

Introduction

It is widely accepted that learning takes place through active engagement rather than passive transmission (S. W. Brown & King, 2000; Dobrovolny, 2006; Jonassen, 1999; Mezirow, 1997). This principle of active intercourse with either concepts or agents has been commonly labeled as "interaction." It is through such interactions that knowledge can be constructed in a meaningful and memorable fashion. The precept of interaction is perhaps one of the most documented and disputed aspects of education, serving as a foundational component for many seminal and contemporary approaches to understanding the phenomenon of learning (Anderson, 2003). Having been hailed as one of the catalysts for movement from teacher-directed to learner-

centered approaches, interaction is understood to be a fundamental element for quality learning environments (Flottemesch, 2000; Garrison & Anderson, 2003; Juwah, 2006; Kearsley, 1995; Picciano, 2002; Sherry, 1996). Often conceptualized as the mechanism whereby participants in the learning environment communicate with each other and respond to each other's needs, interaction can also be generalized to reflect a wide array of processes – whether intrapersonal, interpersonal, or interfacing with technology agents (Hirumi, 2006; Mayes, 2006). In the simplest context, however, interaction is engagement in learning (Wanstreet, 2006). Yet the design and support of learning interactions that are both genuinely engaging and conceptually stimulating within online learning contexts remains a significant challenge in contemporary education as institutions seek to not only meet the needs of learners but also to accommodate the disciplinary differences in the ways that learners prefer to interact and the affordances of the communication tools selected (Ravenscroft & McAlister, 2006; Smith, Torres-Ayala, & Heindel, 2008).

No matter how one defines interaction, based on recent research it is clear that when the level of interaction is inadequate or nonexistent, learners often feel isolated and an overall degradation of the learning experience can take place (Bibeau, 2001; Howland & Moore, 2002; Mann, 2005; Wanstreet, 2006). Conversely, the learning experience is enriched as learners engage in interactions within the learning environment that serve to scaffold the synthesis, evaluation, and application of knowledge (Rovai & Barnum, 2003; Wiley, 2006). Interaction has been identified as a central component of such engaging learning environments and a catalyst for the development of thriving learning communities (Hodge, Bossé, Foulconer, & Fewell, 2006; Swan, 2002). The higher education establishment has recognized the value of interaction as new distance education programs emerge that embrace a socially constructed paradigm and foster various levels and types of interaction (M. Brown & Long, 2006). Often, the goal of such efforts is for learners to develop a sense of engagement by interacting in meaningful ways with each other, the instructor, and the content of the course (M. J. W. Lee & McLoughlin, 2007; Ouzts, 2006; Rovai, 2002).

The advancement of communications technology continues to spawn new applications and opportunities for interpersonal interaction within online education, which forces designers and instructors to revisit the construct of interaction and select activities purposefully that will foster the most beneficial learning experience. The rise of synchronous and asynchronous computer-mediated communication (i.e., e-mail, threaded discussion, synchronous chat) combined with the integration of a structured learning management system environment has been mistakenly hailed by some as the panacea for developing quality online learning (Koszalka & Ganesan, 2004). Reminiscent of the Clark (1994) versus Kozma (1994) debate, the battle of media versus instruction rages as educators and designers make decisions about the appropriate implementation of various media and communication technologies within the development of online learning environments. The needs and preferences of learners ought to influence such decisions.

In an effort to meet the ever-increasing needs of adult learners, educational institutions are recognizing the potential of emerging educational models that place increasing emphasis upon both formal and informal learning networks; as well, they are seeking to develop more flexible learner-paced models that provide learners the freedom to customize aspects of the learning

experience to meet their personal and educational preferences (Dron, 2007; Kahn, 2007; Twigg, 2003). The pedagogical possibilities inherent in these emerging approaches hold great promise for adapting learning environments to meet the individual needs and preferences of learners while strengthening learning conditions that preserve learner independence (McLoughlin & Lee, 2008b). These new models are especially attractive to administration because of the potential to not only meet the needs of the rapidly growing demographic of adult learners but also to support economies of scale (Anderson, Annand, & Wark, 2005; Ellis, Jarkey, Mahony, Peat, & Sheely, 2007; Taylor, 2001). Such flexible learning environments represent a unique and still unexplored segment of the expansive territory of online learning. Whereas an imposed-pace model sets definitive parameters for the course and stipulates that all learners engage in the same learning activities at specific time periods, the self-paced approach affords more autonomy to learners, allowing each to proceed at an individualized pace while providing benchmarks for progress and achievement. In contrast to an imposed-pace course that lends itself to regular or occasional collaborative activities, a self-paced course presents a challenging environment for fostering collaboration because individual learners may be at different stages of the course at any given time (Anderson et al., 2005). Rather than judge the self-paced approach as a failure to provide guidance, it is helpful to acknowledge how the self-paced approach affords learners an increased measure of flexibility in terms of the pace of engagement in the various course activities and in communications with others.

Emerging tools and approaches for interaction based upon the new social computing capabilities of the semantic Web now make possible an array of interactions not only within the specified course environment but also across learner-defined domains beyond the virtual “walls” of the course (Dalsgaard, 2006; Dron, 2006; McLoughlin & Lee, 2008a). Learners have the opportunity to engage not only with the instructor and fellow learners in the given course but also with countless “experts” and other supporting resources that are available online only a few clicks away. As the options for interaction within the online learning environment grow, so does the necessity for identifying the types of interactions that are valued most by learners.

Substantial attention has been paid in the literature to focusing upon interaction within cohort-based, instructor-paced online environments characterized by specified start and end dates, limited entry points, and instructor-led discourse (Ho, 2005; Jung, Choi, Lim, & Leem, 2002; J. Lee, Carter-Wells, Glaeser, Ivers, & Street, 2006; Maor, 2003; Ouzts, 2006). Yet, the perspectives of students about their interactions within learner-paced education models is notably absent from the literature (Anderson et al., 2005). Online learning initiatives that incorporate open and self-paced approaches create unique learning environments that differ significantly in format and structure from instructor-led modes (Ngwenya, Annand, & Wang, 2004).

Interaction Equivalency Theorem

Recognizing the wide range of learner needs and distance education program formats afforded by emerging computer-mediated communication tools as well as the reality that no single medium supports the educational experience in a manner superior to all others (Russell, 2005), Terry Anderson (2003) sought to formulate a theoretical framework for explaining the dynamics of

learner interactions in the context of self-paced courses delivered online. He noted the utility for institutions involved in distance and online education to routinely examine and adjust delivery models to accommodate both the largest number of students and significant niche groups of learners. In an effort to account for the numerous approaches to designing online learning curriculum and to build upon previously espoused theoretical rationale regarding interaction, Anderson proposed his *Interaction Equivalency Theorem*:

> Deep and meaningful formal learning is supported as long as one of the three forms of interaction (student–teacher; student-student; student-content) is at a high level. The other two may be offered at minimal levels, or even eliminated, without degrading the educational experience. High levels of more than one of these three modes will likely provide a more satisfying educational experience, though these experiences may not be as cost or time effective as less interactive learning sequences. (Anderson, 2003)

This theorem forms the foundation for an extensible model of community-based learning support, which permits learner-learner interaction in a cost effective manner while also maintaining the qualities of self-paced learning (Anderson et al., 2005). In addition to preserving the value of diverse types and quantities of interaction, Anderson's theorem opens the door for exploration of emergent curriculum designs and interaction approaches that extend beyond the common instructor-paced class model of education. This theorem implies that one type of interaction may be substituted for others without a degradation of the educational experience. Yet, this proposition of substitutivity isn't as straightforward as Anderson's theorem may suggest. Not all students may interact meaningfully with peers or content and may therefore require or prefer interaction with an instructor. Moreover, some students may prefer to interact with the content or other students in a greater proportion than with the instructor. The key to Anderson's thesis is that each student is different and requires a specific mix of interaction to fit specific preferences and needs. Numerous corollaries and implications for the design and facilitation of learning stem from the extent to which such varying interaction is perceived as being equivalent by learners.

Statement of the Problem

Interaction has long been identified as a key element to successful online learning programs (Beldarrain, 2006; Moore, 1993). While not the sole indicator of high-quality and effective online education programs, there is significant evidence to suggest that meaningful interaction with other students and the instructor is integral to the development of thriving learning environments (R. E. Brown, 2001; Garrison & Cleveland-Innes, 2005; Greene, 2005; J. Lee et al., 2006; Swan, 2002). Such engaging interactions contribute to the development of a sense of social connectedness and have been found to enhance both the learning experience and course completion rates (Garrison, 2003; Su, Bonk, Magjuka, Liu, & Lee, 2005; Swan & Shih, 2005).

The rapidly expanding approaches to online education have given rise to varying theoretical bases for judging the appropriateness of incorporating interaction. Insufficient or ineffective interaction

may lead to student isolation, whereas exorbitant levels may lead to overload or frustration (Berge, 1999; Willging & Johnson, 2004). This study aimed to explore the preferences of learners about the various interactions they engage in during a self-paced online course while questioning the presumption espoused by Anderson (2003) that a measure of equivalency exists among these commonly identified forms of interaction in an online learning environment. Anderson's theoretical basis for judging the essential quantities of each of the various types of interaction maintains that as long as one of three primary forms of interaction (student-teacher; student-student; student-content) is at a high level, other forms may be minimized or eliminated without adversely affecting the learning experience. This hypothesis is increasingly attractive to institutions pursuing initiatives to rapidly expand online course offerings as it addresses the limitation that such institutions commonly face regarding the ratio of faculty to students and the amount of student-teacher interaction. This rationale is being extrapolated to support the design of learning approaches that maximize the student-content and student-student interaction and reduce the level of student-instructor interaction. Yet, little empirical evidence currently exists as to the value that learners place upon the various types of interactions in a self-paced learning environment.

Method

This exploratory study sought to examine the experiences and preferences of adult learners concerning the various interactions that they encounter in a self-paced online course. The following four primary research questions guided data collection and analysis efforts:

1. What forms of interaction do adult learners engage in most in self-paced online courses?
2. What forms of interaction do adult learners value most in self-paced online courses?
3. What forms of interaction do adult learners identify as equivalent in self-paced online courses?
4. What impact do adult learners perceive interaction to have on their self-paced online learning experience?

Building upon previous research in human-human interaction in online learning environments, this mixed methods study, which utilized a concurrent data collection methodology, documented the experiences of adult learners who participated in a self-paced online course that employed various levels of interpersonal interaction. The selection of the mixed methods framework for this research study was based upon the value of the resulting first-hand accounts from participants of their experiences and perceptions of interaction within a unique online learning environment. The resulting data from the mix of quantitative and qualitative interview questions included a combination of rich narrative accounts along with numeric frequencies of engagement.

Participants

The participants for this study were online adult learners enrolled in a fully-online professional development certificate program offered by a private, higher education institution located in the northeastern part of the United States. This study was specifically limited to investigating the interaction experiences and preferences of self-paced online learners in order to provide in-depth data about the distinctive aspects of interaction within this unique learning ethos. The one-year online certificate program employs a self-paced, emergent, and flexible design and was selected as an appropriate context in which to explore the dynamics of the interaction preferences of adult online learners.

Sample Course Characteristics

The study sample included all learners successfully completing either of two concurrent sections of an undergraduate certificate program course in educational technology. This course utilized a unique self-paced format whereby a new cohort of learners began the course with an instructor each month. Participants were afforded the freedom to proceed through the course materials and activities at an individualized pace with the only stipulated deadline being an end-of-course deadline. The researcher happened to also serve as the course instructor and therefore was privy to the intimate details of the course design, development, and facilitation processes. Explicitly detailed research design and methods were therefore essential to combat the existent opportunity for bias as well as threats to reliability and validity.

The course was constructed within the Blackboard learning management system (LMS) and incorporated a variety of asynchronous computer-mediated communication tools standard in the LMS. The course also included integration of a personal learning landscape powered by the open source Elgg platform, which contained an assortment of social networking features such as blogging, tagging of resources, e-portfolios, and learner-driven communities. While communications within the framework of a given course only last for the duration of the course, learners can use such a learning landscape to collaborate and build networks that will be accessible long after the course(s) have ended.

The course was also a unique selection for this study in that it mandated as required learning activities the use of both the Blackboard LMS and the personal learning landscape by each of the learners. This made possible a unique discovery of learner preferences for different types of interactions fostered by these varying suites of online communication tools. Such emergent collaborations included blogging, podcasting, social bookmarking, and informal search for additional supplementary resources. In addition, the course sections selected were equally unique, as one section had only a single learner compared to fourteen learners in the other. One might expect that such a disparity of course sizes would adversely affect results as a course scenario with a lone learner would eliminate all possible interpersonal interactions beyond one-on-one contact with the course instructor. However, due to the integration of a course community and course blog that included learners in multiple sections of the same course, the lone learner in the course section had the opportunity to interact with others outside of the formal learning space in

Blackboard. Therefore, unique comparisons and contrasts were gleaned between the perspective of the learner in a course section where formal interaction with other learners was limited and the perspectives of learners in a simultaneous course section where formal interactions with other learners were feasible.

Participant Selection

The study sample included all learners enrolled in two concurrent sections of the selected course. A common approach within education research, the convenience sampling technique, is often utilized when the characteristics of a specific group of individuals matches the attributes of the phenomenon being studied (McMillan & Schumacher, 2006). The sample size was restricted to this select group of learners as they were the most current cohort of learners to be actively enrolled in a self-paced online course at the institution at the time of the study and had the freshest memory of their experience, which is considered vital by researchers who claim that the farther removed a participant is from the direct experience, the more problematic recall becomes (Fink & Kosecoff, 1998). The course enrollment for the August 2007 and September 2007 sections of the course totaled fifteen learners, with one learner enrolled in the August 2007 section and fourteen learners enrolled in the September 2007 section. Invitations to participate were sent via e-mail to the eleven learners who successfully completed 75% or more of the course, of which 10 responded and agreed to participate in the study. The lone learner from the August section was among those who successfully completed the course and agreed to participate. Therefore, the resulting study sample size study was 10 (n=10).

Data Collection

Data was collected in the form of semi-structured, in-depth interviews, which were conducted near the conclusion of the course to record the learners' perceived value of various modes of interaction as well as their interaction experiences and preferences. Transcripts of the interviews with learners were analyzed and coded for emerging themes. Self-reported frequencies of engagement in the various interactive components of the course were collected from participants during the interviews and analyzed as well. The findings include both the collective and comprehensive perspectives of the adult learners as they shared their experiences and preferences for interaction within the self-paced online education environment.

Interview questions addressed the three main types of interaction described in the literature (e.g., student-student interaction, student-instructor interaction, and student-content interaction) in regards to both formal and informal learning activities; the interview questions also explored the tenets of Anderson's (2003) Interaction Equivalency Theorem. The interviews yielded rich narrative descriptions of learners' interaction experiences, preferences, and frequencies in an attempt to understand the interaction dynamics and optimal integration within an online self-paced adult learning program.

Since sampled learners were distributed across North America, interviews were conducted over the phone rather than in person. Interviews were comprised of semi-structured, open-ended

interview questions about learner perceptions and preferences for interaction in the self-paced online learning environment. The interviews were conducted to gain deeper insight into learners' experiences when they engaged in the various forms of interaction within the course. All interviews were recorded digitally and then manually transcribed and coded as part of the data analysis process. The QuickTap telephone handset tap, in conjunction with a laptop computer and the audio recording software Audio Hijack Pro, was used to record each phone interview. Interviews were then manually transcribed using the software package HyperTRANSCRIBE and then coded for emerging themes. Member checking strategies were utilized and involved sending transcripts of interviews to the corresponding interviewees to confirm accuracy prior to coding.

Each interview consisted of a total of ninety-four pre-determined questions. Interview questions were derived from a review of premier themes within interaction literature and addressed the three main types of interaction described in the literature (e.g., student-student interaction, student-instructor interaction, and student-content interaction) in regards to both formal and informal learning activities. The questions also explored the tenets of Anderson's (2003) Interaction Equivalency Theorem. Questions were provided to all participants prior to the interview to allow learners to reflect on the questions and give substantive responses. At times throughout the interview, additional follow-up questions were asked to help clarify or expand upon responses.

Discussion of Research Questions and Findings

Interview questions explored the recent experiences of participants as they completed the course, noting their preferences for various interactive components of the self-paced learning experience. Questions sought both quantitative and qualitative descriptors from participants and emerging themes are summarized below.

The primary focus of this research was to investigate the preferences of learners about the various interactions they engage in during a self-paced online course while questioning the presumption espoused by Anderson (2003) that a measure of equivalency exists among these commonly identified forms of interaction in an online learning environment. A total of ten learners from among two sections of a self-paced online course participated in semi-structured, in-depth interviews and shared their first-hand experiences. Interview transcripts were reviewed and coded to determine emergent themes. The triangulation of data through multiple sources, which included verbatim transcripts, comparisons of qualitative responses to quantitative data gleaned from interview questions, reviewer notes, and member checks of transcribed interviews, aided in strengthening and validating the findings. Four primary research questions guided the research study, and each is discussed below.

Research Question 1: What forms of interaction do adult learners engage in most in self-paced online courses?

To gain a sense of the forms of interaction that learners engaged in most in a self-paced online course, participants were asked to first reflect on their overall self-paced learning experience.

Successive questions investigated their preferences for various components of the course as well as the frequency in which they utilized such features.

Participants expressed overwhelming pleasure with the various course activities and instructional content. Such instructional content included a mix of both instructor-developed online multimedia presentations including audio and static slides as well as supplementary video presentations linked to from outside of the online course room. Others identified overarching characteristics of the course as being what they found to be the best parts of their learning experience, such as the self-paced format of the course and the opportunity to learn to use the various Web 2.0 technologies covered in the course.

Participants self-reported that they engaged most frequently in interactions involving either the course content or course instructor, on both formal and informal levels. Such interactions support the notion of the informal influence of the *network* and *collective* proposed by Anderson and Dron (2007). Emerging influences extend beyond the confines of the defined learning space and can potentially serve as an option for learners and designers alike to leverage within the self-paced learning environment.

Participants further noted that they engaged most actively with the instructor and course content, commensurate with findings of previous research pointing to the necessity of such fundamental interactions (Gallien & Early, 2008; Heinemann, 2003; Pawan, Paulus, Yalcin, & Chang, 2003; Perry & Edwards, 2005; Stein, Wanstreet, Calvin, Overtoom, & Wheaton, 2005). The results of this study further strengthen the literature calling for the development of specific competencies not only for those designing online learning but also for those who facilitate online learning experiences of various formats (Klein, Spector, Grabowski, & Teja, 2004; Varvel, 2007). Therefore, the interactions with the instructor as well as with the content should not be discounted.

Research Question 2: What forms of interaction do adult learners value most in self-paced online courses?

Participants were asked to rate on a scale of 1-5, with 5 being *most important* and 1 being *least important,* 30 different elements of the course. These elements varied from specific technological tools employed to pedagogical components of the course experience. Tables 1-3 depict how the respondents ranked each of the course elements. Rankings were computed by multiplying the number of responses at each rating level by the corresponding rating numerical value and then totaling. Relative frequencies and rankings are displayed in three sections of importance: highest, intermediate, and lowest. Table 1 displays the course elements ranked by participants as having highest importance.

Table 1

Course Elements of Highest Importance

	Response Frequencies					
	Most Important			Least Important		
Course Element	5	4	3	2	1	Rank
Application Assignments	10	0	0	0	0	1
Communications from Instructor	8	2	0	0	0	2
Instructional Presentations	8	2	0	0	0	2
External Resources	8	2	0	0	0	2
Comments from Instructor to Blog Postings	8	1	1	0	0	5
Receiving E-mail from Instructor	8	1	1	0	0	5
Supplementary Instructional Media	7	2	1	0	0	7
Sending E-mail to Instructor	7	2	1	0	0	7
Course Blog	4	4	2	0	0	9
Instructor’s Bookmarks	5	3	1	1	0	9

The top ten elements ranked highest by participants all involved interactions either with the content or instructor. Table 2 presents course elements ranked by participants as being of intermediate importance. Again, the course content and instructor interaction items were ranked among the highest elements.

Table 2

Course Elements of Intermediate Importance

	Response Frequencies					
	Most Important			Least Important		
Course Element	5	4	3	2	1	Rank
Learning Landscape	4	2	4	0	0	11
Instructor Comments to Discussion Board	3	5	1	0	1	12
Course Bookmarks	5	3	0	1	0	12
Learners' Bookmarks	4	4	0	1	0	14
Personal Blog	3	4	1	2	0	14
Course Podcast	5	1	3	1	0	16
Learners' Blogs	2	4	3	0	0	17
Reflection Activities	0	6	2	2	0	18
Course Textbook	5	1	4	0	0	19
Receiving E-mail from Learners	0	6	2	2	0	20

Table 3 contains the course elements ranked by participants as being of least importance. While participants ranked the majority of course elements as being at least moderately important, they consistently ranked elements involving interactions with other learners as lowest in comparison to all the possible choices. The narrative responses by participants to the remaining interview questions served to validate this trend, as participants indicate their preferences for quality content and instructor interactions and the necessity for such components in preferred self-paced online learning experiences.

Table 3

Course Elements of Lowest Importance

	Response Frequencies					
	Most Important				Least Important	
Course Element	5	4	3	2	1	Rank
Communications from Learners in Course	0	4	5	0	1	20
Discussion Board	0	3	6	0	1	22
Synchronous Chat with Instructor	3	1	3	1	0	23
Sending E-mail to Learners	1	2	4	1	2	24
Posting Comments to Discussion Board	1	2	3	2	1	25
Posting Comments to Learners' Blog Posts	1	2	3	1	2	26
Comments from Learners to Blog Postings	1	2	4	1	2	27
Learner Comments to Discussion Board	0	4	2	1	1	27
Communications from Learners Diff. Sects.	0	3	2	1	3	29
Synchronous Chat with Learners	0	1	5	1	1	30

Participants rated interactions with the instructor and quality course content as the most important aspects of a self-paced course. In their ratings, learner-learner interaction trailed behind. This limited exploratory study provides only a glimpse into self-paced learning, but these findings directly support previous research that emphasizes the importance of the roles of the instructor and content in the overall quality of online learning experiences (Abdulla, 2006; Gallien & Early, 2008; Heinemann, 2003; Perry & Edwards, 2005; Strachota, 2003; Su, 2006; Yang & Cornelious, 2005). Simultaneously, these findings contradict the notion purported by some that collaboration with fellow learners is either preeminent or can potentially compensate for well-designed content and active instructor involvement (Anderson et al., 2005; Rovai & Barnum, 2003; Russo & Benson, 2005; Tu & McIsaac, 2002). Participants noted that although they enjoyed the interactions with other learners and often wished for more, they conceded that in the self-paced, online learning environment such interactions are challenging. The qualitative rankings applied to the course elements correspond with the qualitative responses that participants shared about the importance of various course elements.

Participants hailed the blogging and social bookmarking activities as integral to the quality of the overall learning experience, noting the synergy of formal and informal interactions that such activities fostered. Responses reinforced the value of components of informal, learner-directed learning environments that extend beyond the restrictions of the formal online learning space. While learners did not take full advantage of the numerous external resources and informal interactions that were available, participants expressed overwhelming satisfaction with the content and formal interactions designed and therefore may have been less likely to engage in superfluous interactions. Yet, the informal learning environment that was crafted placed maximum control with the learners. Such informal learning environments provide an open venue for learners to connect with others interested in the same concepts either in a different course section or at a different stage of the course (Rhode, 2006).

Responses from participants support Paulsen's (1993) Theory of Cooperative Freedom, which argues that many students who choose a distance learning format do so in search of freedom from not only the time and place learning constraints, but also freedom to choose the type of media and content, times of access, and pace of the learning. Participants unanimously noted that the unique self-paced format was a pivotal factor enabling them to enroll in an online program of study. Such responses give credence to the call for flexible and emergent learning designs that meet the needs of an ever-changing adult learner population.

Participants in this study esteemed quality interactions with content and the instructor above interactions with other learners, which reiterates the need for instructional design that facilitates active engagement with content and instructor-learner interaction. Although some may contend that true self-paced learning models diminish the role of the instructor, a host of hybrid approaches to self-paced online education have been shown to accommodate flexibility and customizability and incorporate considerable measures of instructor-learner and learner-learner interactions. As participants' responses in this study reiterate, a balanced approach to incorporating the various interactions is often preferred by adult learners in the self-paced online course.

Research Question 3: What forms of interaction do adult learners identify as equivalent in self-paced online courses?

Participants identified interaction with the instructor and content as very nearly equivalent in a self-paced online course. Participants pointed out that quality interaction with content is indispensable in the self-paced learning environment and can not in any way be replaced. They also indicated that interaction with the instructor could potentially be diminished and compensated for through increased quality interactions with content or learners. Participants further noted that while interaction with other learners is desirable within the self-paced learning environment, the self-paced nature of the course makes such interactions challenging. Therefore, learners were willing to forgo interpersonal interactions deemed by some as tangential in exchange for the flexibility afforded by the self-paced learning approach.

In a granular analysis of the various interaction activities, participants generally reported the activity of blogging as equivalent or superior to asynchronous discussion via the discussion board in Blackboard. Such findings add to the burgeoning body of research supporting the pedagogical possibilities of blogging as a flexible asynchronous communication alternative to threaded discussion via a restricted learning management system (Chen & Bonk, 2008; Ellison & Wu, 2008; Namwar & Rastgoo, 2008; Schmidt, 2007). Participants also found the mix of formal and informal interactions with the content and instructor as essential to the optimal self-paced online learning experience. Interactions with other learners, both in the formal learning space as well as fostered by informal activities, were seen as tangential and while helpful are not necessary to achieve a desirable learning outcome.

Research Question 4: What impact do adult learners perceive interaction to have on their self-paced online learning experience?

Participants reported their experiences of the various types of interactions they engaged in throughout a self-paced online course and indicated the important part that the interactions with the instructor and course content played in their overall online learning experience. While interaction with other learners was not the most influential component of the particular course studied, the logical assumption may be drawn that in other courses where interpersonal discussion with other learners is in fact maximized, such interactions could be equally important.

Participants confirmed that quality interaction is a critical component of a quality self-paced online learning experience. Such conclusions support long-standing claims about the necessity for systematic design of instruction that encourage pedagogically-sound methods and incorporate emerging approaches as appropriate to meet the needs of learners (Kays & Sims, 2006; Koszalka & Ganesan, 2004). The substance and frequency of expressed quality interactions deemed necessary by learners may in fact vary from one learner population to another and may be influenced by the specific context and discipline. Participants refuted the claim that interaction with the instructor or content could be diminished or eliminated and compensated for by other forms of interaction. Further studies will be necessary to explore whether such hypotheses are in fact confirmed.

As Nicol, Minty, and Sinclair (2003) note, “The social context of online learning is qualitatively different from face-to-face learning and…this has significant implications for online learning design” (p. 270). Interaction is a key component to the development of the distinctive social context of online learning. Interaction may serve numerous purposes within the online learning environment, but the primary focus for many instructional designers and instructors may continue to center around improving student outcomes within the online learning experience.

Recommendations

While this study provides important contributions to the field, some recommendations may enhance its impact as well as guide further studies. As with any exploratory study, the insights gleaned provide an initial and focused understanding of an educational intervention from the

perspective of those involved and pave the way for future studies. The very nature of such inquiry is based on the premise that multiple perspectives for any given experience exist and that the significance of the experience to the participants is what comprises reality (McMillan, 2000). The rich insights gleaned from the participants are specific to that population and cannot be projected upon other classifications of individuals. This study focused on learner preferences for interaction in a self-paced online learning environment and did not simultaneously investigate instructor-preferred or administration-preferred tenets worthy of analysis. Further studies could explore such perspectives within the self-paced online learning environment as well as extend beyond a single institution in order to see if the sentiments expressed by learners in the selected course sections are isolated to the specific course or program or are more indicative of interaction trends in other contexts.

Similar future studies would add valuable contributions to the field by studying interaction in similar course environments, but also in alternative institutions where the researcher is not the instructor and with multiple sections of a particular course facilitated by different instructors who have different approaches to interacting with students. Successive studies could also involve a variety of learner populations (e.g., of different ages and socio-cultural status) to determine whether such influences impact interaction. Furthermore, additional studies are necessary to measure the affect that emerging interaction types have on the overall learning experience. While this study focused on the perceptions and values of learners regarding interaction equivalency, further study of learners' behavior is needed to determine whether online learners actually accept or reject interaction equivalency. In particular, it would be helpful for instructors and designers alike to understand in what instances learners will forgo interaction with one another to maintain the flexibility of the distance learning experience.

This study briefly explored learners' preferences for asynchronous discussion and compared a discussion board with the more open format of a blog. Further research is necessary to explore the unique aspects of emergent asynchronous communications approaches such as blogging, collaborative authorship, social bookmarking, and social networking compared to more traditional asynchronous online communication approaches. In particular, when given the choice, do learners prefer a more open form of communication made possible through emergent computer-mediated communication technologies to the discussion board provided in an LMS? In addition, to what extent can a social network system meet the needs of designers, instructors, and learners and therefore be capable of replacing an LMS? Finally, it would be beneficial to learn in future studies what impact course size may have on the self-paced online learning experience.

Conclusions

A host of interactions are possible in contemporary online learning environments. Some are viewed as essential while others may be viewed as supplemental. Prior to conducting this study, it was proposed that one or more types of interaction could potentially surface as being preferable for adult learners in the self-paced online learning environment. Others have conjectured that learners may value formal, learner-instructor interaction highest, but little evidence was previously available in the literature to support or refute the notion of interaction equivalency

among interaction modalities. This study demonstrated that depending on the specific circumstance, not all forms of interaction may be either equally valued by learners or effective. Participants reported that informal interactions were as important as formal interactions in determining the quality of the online learning experience.

Participants also maintained that the flexibility and independence characteristics of self-paced learning opportunities supplanted the need for certain types of interaction. They were willing to forgo interaction with one another to preserve the flexibility of their self-paced studies. In addition, the activity of blogging was shown to be equivalent to or even superior to instructor-directed asynchronous discussion via the discussion board in a LMS. While it may be possible to design opportunities for interpersonal interaction that rival interaction with the instructor or content, in the particular self-paced online learning environment that was studied, this was not the case. And as learners' preferences indicated that one or more types of interaction were valued over the other, it is certainly possible that in other learning environments such findings may differ. Further study is necessary to determine whether the initial insights of participants in this limited study reflect noteworthy trends in interaction or are merely an isolated instance.

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Recurring Issues Encountered by Distance Educators in Developing and Emerging Nations

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Abstract

This article explores a number of challenges faced by e-learning or distance educators in developing and emerging countries, provides a context for many of the challenges, and outlines some measures devised to overcome them. These educators must determine a sound rationale for employing online learning, recognize that technology is only part of the educational transformation process, address the lack of infrastructure and the cost of Internet bandwidth and equipment, counter the cultural imperialism of courseware from Western nations, deal with limited educational resources, place a greater emphasis on quality assurance systems and change negative perceptions of distance education, respond to the needs and concerns of both students and faculty, access or develop up-to-date educational resources, and consider the implementation of mobile learning. The continued growth and success of distance education in developing and emerging nations will depend on the extent to which issues covered in this article are addressed as they bear on the quality of the learning experience provided to students.

Keywords: distance education; online learning; e-learning; technology; developing countries; emerging countries

Introduction

> *Education can be the difference between a life of grinding poverty and the potential for a full and secure one; between a child dying from preventable disease, and families raised in healthy environments; between orphans growing up in isolation, and the community*

> *having the means to protect them; between countries ripped apart by poverty and conflict, and access to secure and sustainable development*. (Mandela & Machel, 2002, p. A15)

Leaders in developing and emerging nations promote education as a means to improve their peoples and countries. "There are many reasons for the growth [of distance education] but none is as compelling as the hunger for learning felt by those who have been denied it for generations" (Dhanarajan, 2001, p.61). A number of recurring issues seem to emerge when developing countries attempt to implement a technological form of distance education or its many variations – e-learning, distributed learning, or online learning. This article provides an overview of key issues faced by distance educators in developing countries, describes some of their successful practices, and outlines additional measures that these educators could consider or are implementing. Note that many of these issues are not new (Muilenburg & Berge, 2001; L.Bunn, 2001; Leggett & Persichitte, 1998); they tend to re-emerge with every significant development or paradigm shift in the educational system. Also note that developing and emerging nations are not homogeneous. Just as each country displays different attributes pertaining to population, culture, language, social structures, politics, economical development, resources, the use of technology, and so forth, the issues described below do not apply equally to every developing or emerging nation.

The Issues

Developing a Sound Rationale and Vision for the Distance Education Initiative

Government and institutional personnel in developing countries often decide to employ e-learning or online learning without fully realizing what it means for their students and their institutions. If students are still reading by candles and kerosene lamps, expecting them to learn online may not be realistic. Online learning is attractive to institutions that want to be perceived as being progressive; however, establishing online programs may not be the wisest use of scarce resources. It may be better to use the limited funds to encourage greater school attendance, ensure students are well fed, and/or hire more tutors. Effective teachers, whether they meet students face-to-face or via a videoconferencing system or prepare online course material, are still the key ingredient in any educational system. According to Wagner et al. (2005) "…the past decade provides strong evidence that misguided policies and funding for internet communication technology (ICT) in education may fail to have the desired education outcomes, while costing more than other education interventions" (p. 12). Technology may not be the appropriate or only solution to an educational problem (Wells & Wells, 2007).

Some institutions and government departments are attracted to online learning because they think it will save them a significant amount of money and human resources. They frequently imply that distance education and technology are panaceas for all that ails their educational system. Cost

savings can occur if a large number of students are involved (Trindade, Carmo, & Bidarra, 2000) and/or if fewer educational facilities are built, but instructors, tutors, course production teams, technical support personnel, and other human resources are still required, and they make up a substantial portion of the educational budget. According to G. Pruitt, president of Thomas Edison College, "One of the biggest myths about online education is that it's cheap. To produce high-quality distance education courses, it's very expensive" (Silberstein, 2007). Distance learning should be about access, equity, and the distribution of quality products to a wide audience; cost savings are just one of the potential benefits.

There are numerous legitimate reasons why governments and institutions should introduce technologies into distance education, such as "greater information access; greater communication via electronic facilities; [the introduction of] synchronous and asynchronous learning; increased cooperation and collaboration; cost-effectiveness [e.g., by reaching different students and in greater numbers]; and pedagogical improvement through simulations, virtual experiences and graphic representations" (Sife, Lwoga & Sanga, 2007), as well as the opportunity to offer those who are working full-time or have household commitments "a second chance …to improve their skills and further their education, regardless of age, gender, ethnicity or social background" (Ng, 2007). Distance education may also be used to bridge the digital divide, to reduce the "brain drain" of individuals who leave to study abroad, to broaden access to individuals who have had limited opportunity, and to spur social and economic development. Many distance education initiatives have been established to assist those who are poor and those who live in rural areas. However, despite the growth in information and communication technologies, inequalities between rich and poor, urban and rural, and male and female continue to exist (Gulati, 2008).

Educators in developing countries have employed distance education successfully to provide accreditation to teaching and health professionals, to inform youth of various lifestyles or career paths, to help farmers improve agricultural production, and to increase literacy. More recently, distance education has been used to facilitate an interest in local governance and to introduce e-governance. For many students, distance education provides a path to a better life: the more educated they are, the better jobs they will obtain, and the better they will be able to meet the needs of their families.

Recognizing that Technology is only One Component of the Educational Transformation

While shiny new technology appeals to politicians and educators alike, it should not be adopted uncritically or without careful planning. Wright (2007b) identifies necessary conditions for the effective use of technology in a distance education setting:

1. Decision-makers must identify the problem the technology will address or the benefits the technology will bring to education and/or administrative processes.

2. Educational and governmental bodies must be committed to the goals toward which the technology will be applied, ensure that issues regarding accessibility and equity are addressed,

develop measurable objectives and realistic timelines, assign specific responsibilities to individuals and groups who will facilitate the change process, and provide the necessary resources.

3. Key individuals, in collaboration with other stakeholders, must develop a plan to guide the implementation.

4. The selected technology must be effective for its intended use and meet the needs of potential users.

5. The curriculum should be adjusted to make the best use of existing and possible future technological developments; the technology should promote meaningful interaction between the learner and the learning material, instructors, tutors, other learners, and the community.

6. Instructors must receive hands-on training in the use of the technology and its potential benefits to learning and instruction. They must learn to provide effective student support and to conduct simple troubleshooting.

7. Incentives should be provided to encourage instructors to get involved with this new method of delivery. The time and effort required to develop and support online courses must be recognized.

8. Copyright policies should be adjusted, if necessary, to enable the conversion of existing materials into electronic media.

9. The technology must be maintained, supported, and secured.

10. Organizational policies and management structures must be adjusted to cope with flexible delivery methods, provide prior learning assessment, support independent study students, address issues such as security, plagiarism, and ethical online behaviour, and assist students who lack access to and/or experience with the technology.

11. Consideration must be given to how the technology and software will be updated in the future.

12. Procedures for continuous assessment should be established.

13. Educational administrators must be willing to review technological implementation plans regularly and revise them as necessary.

Planning is an imperfect art as there will be unforeseen developments and challenges. “Nevertheless, the imperfect nature of planning and management does not diminish the need for deliberate strategies to implement effective technology-based teaching” (Bates, 2000, p. 212). The extent to which an institution adjusts its practices and processes greatly affects the success of

technological implementations. In one institution in Southeast Asia, computers were installed up to two years after staff requested them; by then, the equipment was outdated, new software was required, and those who asked for the equipment had moved on to other positions. As computer performance seems to double every 21 months (Strong, 2007) and new software is developed to take advantage of this increased performance, equipment specifications and implementation plans must be revised on a regular basis.

When distance education is being implemented, especially when it has a technological component, there is a need for leaders who are flexible, open to new ideas, and willing to make decisions. In many developing countries the decision-making process is flawed due to the involvement of decision-makers who have limited or no experience with technology, distance education, and change management. Those who will be making significant decisions about technology should use it on a daily basis. They should have some experience with specific equipment or programs they are selecting; be aware of the potential impact of the technology upon learning, instruction, and administrative systems; and keep abreast of emerging trends.

Institutions must put in place a clear, detailed plan for implementing technology in distance education. They must involve all stakeholders so there is a common vision and shared ownership for the plan (Levy, 2003). Implementation plans are likely to fail if they do not involve stakeholders such as the department or ministry of telecommunications, or if they imply that teachers will lose their jobs when courses are placed online. The plan must be updated continually to accommodate new information and communication technologies, and a strong yet flexible leader must convincingly communicate the plan to all constituents. Purchasing hardware is just one of the many steps involved in implementing technology successfully in a distance education setting.

Despite the emphasis on the use of educational technology in this article, it must be recognized that developing countries continue to have success with paper-based and broadcast media forms of distance education as these are reliable and sustainable (Leary & Berge, 2006).

Addressing the Lack of Infrastructure and the Cost of Bandwidth

The lack of a sustainable and accessible electrical and telecommunications infrastructure inhibits not only economic growth (Wallsten, 2005; Fay & Morrison, 2007), but also growth in the educational sector. In June 2007, Kenya's education minister, Professor George Saitoti, stated that approximately 80% of the primary schools and 35% of secondary schools were not connected to the power grid (Ngare, 2007). Introducing e-learning to these schools will be a challenge. Alternative power sources such as solar and wind must be considered as well as equipment that uses minimal power or includes electrical generating devices. In Namibia, solar panels and wind turbines are being used to generate electricity to support Internet services, computers, and servers in rural areas. This type of infrastructure has, in part, enabled SchoolNet Namibia (see http://www.schoolnet.na/) to provide computers, training, and support to more than 300 schools via a significantly discounted flat-rate wireless Internet network. Affordable and reliable electric power would greatly facilitate the adoption of online learning.

In eastern and southern Africa, the cost of Internet access can be 20 to 40 times the cost in North America, as 80 per cent of the Internet traffic is routed through satellites (Wadvalla, 2008; World Bank, 2007a). Satellites over Africa and the South Pacific provide slower transmission rates than optical cable primarily due to signal delays and narrow bandwidths. Further, many of the satellites supplying signals to Africa and the South Pacific were launched more than 20 years ago and are aging. A marine and terrestrial infrastructure backbone, recently approved by the World Bank to serve eastern Africa, would substantially reduce costs (World Bank, 2007a). In addition, 03b Networks, Google, Liberty Global, and the HSBC Bank plan to launch a high-speed, low-cost network of 16 satellites which "will enable the spread of locally generated content and e-learning, [thereby] encouraging social and economic growth in the developing world" (BBC News, 2008). Once a robust link to countries beyond Africa is established, it would be helpful if a network of telecommunication or Internet hubs were implemented in Africa. Seventy-five percent of e-mail and telephone messages between African countries are routed through Britain or the United States (Nixon, 2007), thus, it can be expensive to communicate and use services such as Web 2.0 tools (e.g., wikis, podcasting, and multimedia sharing services) that may require large bandwidth. A fixed basic Internet line in Rwanda costs US$90 per month and wireless Internet service is US$63 per month. The average Rwandan makes US$220 a year (Nixon, 2007). The high cost of Internet access partially explains why Africans comprised only 1.6% of the world's Internet users in 2005 (Zeleza, 2005) and 3.6% in 2008 (Association for Progressive Communications, 2008). Only 6% of the Latin American population had access to the Internet in 2006 (Mahan, 2007).

> Even if the infrastructure is somehow present, the operating cost has ensured that [the] internet remains out of reach from the bottom of the pyramid. Poor speed, erratic connection-drops, and pathetic electricity supply has buttressed the cause for no use of the internet even in the areas which are advanced in relative terms. (Narayan, 2007, p. 3)

The cost of bandwidth is relatively expensive for most people living in developing countries, but at least they potentially have access to it. This is definitely progress, because in 1996 only five countries in Africa were connected to the Internet and now all are connected (Zeleza, 2005).

Once the telecommunications backbone is established, wireless systems could be added to deliver services locally and to serve rural areas in which many marginalized and under-served people live. The developing countries have the advantage of learning from the experiences of other countries and are able to leapfrog over various stages of development. For example, instead of implementing hardwired terrestrial systems, developing countries can employ wireless technology. An accessible and reasonably priced electrical and telecommunications infrastructure is essential if e-learning is to spread beyond large urban areas.

According to Gross (2006), "The challenge [in Africa] from a governmental and regulatory perspective is what can and should be done to create an environment to encourage investment, both domestic and foreign, by the private sector" in the telecommunications industry. Perhaps governments should ensure that no one company has a monopoly for this service and that a healthy competition among wireless providers is nurtured. Governments need to remove regulatory barriers that prevent the establishment of a healthy competitive environment and encourage investment (Thornton, 2008) or take a more socialist view and ensure that all citizens have access to the Internet at a price they can afford. Countries such as Tanzania have eliminated taxes on computer equipment and reduced license fees payable by telecommunication companies. Liberia intends to follow Tanzania's policies by "waiving custom duties on imported ICT-related equipment so as to enable Liberians to have more access to them" (Balancing Act New Update, 2008). By connecting learning centres to the Internet, Sri Lankan officials can introduce the web to local communities. Once the Internet connection to learning centres has been made, private contractors can take the Internet connection from the learning centres into the local communities. These contractors may establish Internet cafes which are flourishing in developing countries such as Peru where "more than 80 percent of internet users connect from collective places" such as cyber cafes (Fernández-Maldonado, 2004). The money generated by the private contractors can be used to partially cover the cost of delivering the Internet to the learning centres. By providing an Internet connection to a learning centre and enabling local contractors to link to the connection, the contractors are able to provide a service that might have been unaffordable if they had to bear the entire cost of bringing the Internet to the community. This type of government-private partnership is beneficial to all.

Bandwidth is not the only issue in the development of network infrastructure: ease of installation, susceptibility to interference, coverage, data security, and costs also are relevant. Maseno University in Kenya considered using copper wire, optical fibre, wireless networks, and/or satellite signals to provide the connectivity it required. The National Open University of Nigeria decided to use Nigeria‟s Communications Satellite (NIGCOMSAT) to link its main campus with its video conference facilities located in study centres across the country. Each institution had to carefully assess its infrastructure and learning needs then determine a solution that took into account environmental constraints.

The infrastructure challenges in Africa are similar but not identical to those in Latin America and the Caribbean, where the infrastructure has slowly improved in quality, reliability, and coverage. However, governments must still make regulations that foster infrastructure development, increase their infrastructure spending, and spend funds wisely on initiatives that will broaden access (Fay & Morrison, 2007). Regardless of the type of infrastructure that is implemented, it must be designed to accommodate the goals of the distance education program (Bates, 2000).

Obtaining Equipment When Funds are Limited

When compared to the average wage, the cost of equipment can be expensive in many developing and emerging nations. Consider that 650 million of India's 1.1 billion people still earn two dollars a day or less (World Bank, 2007b) despite India's emerging status as an economic powerhouse.

Personal ownership of a computer is a dream for many; telecentre operators (see http://www.telecentre.org/) provide services to local communities as they attempt to bridge the digital divide.

There are a number of low-cost computers that educators in developing countries can consider. These options are significantly less expensive than a used Pentium III computer, which can cost up to US$800 in Brazaville in the Democratic Republic of Congo (Chibomba, 2007). Computers available through the One Laptop per Child Project (OLPC, see http://laptop.org/), which are currently sold at US$180, seem to be built with constructivism and connectivism in mind. They are capable of mesh networking and the software seems to accommodate collaborative activities easily. These computers appear to be well suited for elementary school-aged students in areas where electrical and Internet infrastructure may be non-existent as they consume 10% to 20% of the wattage of normal laptops; can generate their own power by use of pull chords, solar panels, and hand cranks; are water- and dust-proof; and have very few moving parts. While the Intel Classmate PC (see http://www.classmatepc.com/), priced at US$230 to US$250, may be best for a secondary school market, the OLPC laptop and Intel Classmate PC are not the only low-cost personal computers. A Canadian company, InkMedia (see http://www.ink-media.com/) has produced a US$300 Linux-based laptop for the developing world. Lenovo, which bought the IBM Thinkpad license in 2005, offers a US$199 computer to the 800 million people who live in rural China (McDonald, 2007). That sounds like a good deal until you realize that the average wage in rural China in 2006 was US$560, although it is increasing at a rate of 10% each year. Currently, there are over 50 initiatives that involve the use of low-cost computers to serve students in developing countries (see http://www.infodev.org/en/Publication.107.html). Despite recent downsizing of the management of the OLPC initiative, OLPC is credited with shining a light on the technology needs of these students and for inspiring others to develop low-cost computers.

Rather than purchase new computers, some countries such as Kenya, Namibia, Trinidad and Tobago, and Uganda have the option of obtaining refurbished computers from non-governmental agencies. Computers for Schools Kenya (see http://www.cfsk.org/) has provided computers to 300,000 students in marginalized communities (Okono, 2007). This organization receives donated computers from Canada, Great Britain, the Netherlands, Norway, and the United States, then repairs them, removes residual data installed by previous owners, loads appropriate software, and tests the equipment. This work is primarily completed by student interns and volunteers who acquire ICT skills that enable them to obtain gainful employment. However, a number of challenges are related to refurbishing computers, including dealing with the compatibility problems associated with the wide variety of computers received, the potentially high maintenance costs, and restrictions on software because old machines may not be able to run new programs (Ministry of Education, Science, and Technology, Government of Kenya, 2005).

Educational institutions and governments must assess the true cost of the technology, not just its initial purchase cost which may be only 20% to 25% of the actual cost of ownership (Wheeler, 2004). Maintenance, software, and training costs must also be considered. Whatever the cost of information and communication technologies (ICTs), they are competing against food and health services for the limited funds of developing and emerging nations.

Countering Cultural Imperialism and Addressing Cultural Diversity

Western courses bring Western values (Edmundson, 2007). Many in developing countries, particularly Africa, feel that they are forced to accept courses from Western societies when, in fact, they have a choice. They prefer to use materials developed locally.

There are at least 6,912 living languages in the world, of which about 347 have more than one million speakers (Gordon, 2005). In Africa, where several countries have more than 20 languages or dialects, it may not be feasible to develop print materials and courseware in a variety of languages. If the courseware is produced in one language, which should it be? Often, the language selected is one from colonial times thus complaints of cultural imperialism are heard. Further, a variety of cultural groups have an oral tradition that is best supported by lectures and group discussions. Other cultural groups are uncomfortable with the concept of critical thinking espoused by many distance educators, as they feel it will lead to criticism of their elders. For example, in an article describing the development of distributed learning in Bhutan and Nepal, Rennie & Mason (2007) state, "…the concept of 'critical thinking' so highly regarded by Western academics, is anathema to the traditional Buddhist educational system, and this actively works against the idea of student-centred learning that values curiosity, rationality, and creative approaches to learning" (p. 3). A telemedicine project in Thailand failed not only because of the high satellite communication costs, but also because medical personnel in urban areas were reluctant to consult with those in rural areas. The technology was not able to bridge social barriers. The implementation of technology does not mean that cultural and social differences disappear; sometimes, the differences are magnified. Overcoming cultural and religious perceptions relative to technology and its use can be more difficult than actually implementing technology.

In an effort to maintain an indigenous culture and to reach those who live in rural areas or on the street, presenting courses in local languages makes sense. However, if equipment manuals for vocational courses are available only in a foreign language, or if business is conducted in a language such as Mandarin and English, it might be beneficial to expose students to these languages. If the need to have resources in a local language is paramount, groups of ten or more educators could establish a language-specific version of the Wikiversity (see http://www.wikiversity.org/), which was founded by the Wikimedia Foundation to create and host free learning materials and activities. Also they could consider using Jottit (see http://jottit.com/) , which is a wiki that is easy to set up and does not require students to have an e-mail account in order to access the information.

Dealing with Limited Resources

Educators in developing countries are aware that external funding from international development agencies and corporations may not always be available; projects may not be sustained once the external funding has ended. Thus, educators need to collaborate across borders, especially regarding the development and delivery of courses (Nafukho, 2007) and should consider the use

of open-source course management and delivery software (Wright, 2006), such as Moodle (see http://moodle.org/) and Sakai (see http://sakaiproject.org/) . "Open source software offers the potential to reduce the cost of the software while providing an institution greater control over its destiny" (Coppola, 2004).

Educators can easily minimize the duplication of effort required to develop materials. The Commonwealth of Learning (COL), for example, worked with the eight countries of the Southern African Development Community (SADC, see http://www.sadc.int/) to develop training materials to enable teachers to enhance their professional skills through distance and open learning. Teams of writers from Botswana, Namibia, South Africa, Zambia, and Zimbabwe developed the modules. Throughout the writing phase, content input and review of the materials remained the collective responsibility of all participating countries. Once the core modules were developed, each country was able to adapt them to meet the needs of its people. The COL has also initiated the Virtual University for Small States of the Commonwealth (VUSSC, see http://www.col.org/colweb/site/pid/100), which is a collaborative initiative to develop and share courseware (Butcher & West, 2007), and the WikiEducator (see http://wikieducator.org/), which is a collaborative initiative to develop and make available a free education curriculum by 2015.

With collaboration, the cost of a particular initiative to any one institution, agency, or country is minimized and the quality of the finished product can be higher than if only one institution or country undertook the development of the learning materials.

Developing and emerging nations could establish regional learning repositories that contain learning objects or digitized learning activities that meet their specific needs as well as complement the contents of existing open-source learning repositories such as the Multimedia Educational Resource for Learning and Online Teaching (MERLOT, see http://www.merlot.org/). If educators develop their own learning objects or online activities, they should ensure these are more than just electronic page-turners. According to Wright (2007a), the online learning activities should achieve the following:

- engage and motivate the learner by including online games, role-plays, and simulations;
- demand that learners interact with the online material, with their peers, and their community by using the various socialization tools that are available on the web;
- encourage critical thinking, creativity, and problem-solving;
- provide opportunities for online practice and knowledge transfer;
- offer timely, constructive, relevant, and frequent feedback; and
- provide links to resources beyond the content and the learners' communities.

If regional learning repositories are to be successful, educators must be willing to contribute some of their own funds and energy. They cannot rely solely on external funding from organizations such as the William and Flora Hewlett Foundation (see http://www.hewlett.org) that support open educational resource initiatives designed to equalize access to knowledge and educational opportunities. The Teacher Education in Sub-Saharan Africa (TESSA, see http://www.tessafrica.net/) initiative is an example of a successful collaborative effort that develops open educational resources and provides guidance to teachers. This initiative involves 18 international organizations and educational institutions. African Virtual Open Initiatives and Resources (AVOIR, see http://avoir.uwc.ac.za/), which comprises 13 African universities, focuses on developing free software that is relevant to African users.

Collaborating on course delivery and student support may be more difficult than collaborating on course development. However, the Association of African Distance Learning Centres (AADLC, see http://www.aadlc.com/), part of the Global Development Learning Network (GDLN, see http://www.gdln.org/), has enabled individuals and teams to share knowledge and learn how best to offer distance education. One of its priorities is the provision of effective, cost-efficient support to distance learners. The partnership of 15 ADLC learning centres connects governmental, non-governmental and development agencies, and private-sector individuals across countries via interactive videoconferencing and the Internet. Distance educators in developing countries also need to explore the establishment of a cadre of tutors who could serve more than one institution. Companies in India and in many developed countries provide 24/7 online tutoring and student support services. If there is a lack of specific content expertise or the number of students does not justify hiring full-time faculty at one institution, then institutions could consider collaborating on the provision of tutoring services. Collaborative efforts can address the challenge of limited resources and can be beneficial to all involved.

Working across borders can address the lack of educational resources and the need to introduce faculty to new instructional methods. Recently, the United Nations established UNeLearn to collaborate on the deployment of e-learning in over 160 developing countries. In addition, the U.S. Agency for International Development stated that it plans to establish a virtual network that will enable institutions in Africa to collaborate with their American counterparts (Lindow, 2008). Thus, the institutions will be able to partner on projects in education, economic development, food security, and health. According to Silas Lwakabamba, rector of the National University of Rwanda, the partnership will benefit African universities by "building the capacities of their graduate programs, introducing interactive teaching methods, providing training and mentorship opportunities for senior faculty members, and bringing more women into academic ranks" (Lindow, 2008).

Placing Greater Emphasis on Quality Assurance

Frequently, face-to-face instruction is associated with quality teaching even if the instructors are poorly trained or lack suitable credentials. Conversely, distance education has been viewed as second-rate education that focuses on memorization rather than on problem-solving and is seen as a costly enterprise, especially when information and communication technologies are introduced. Perraton (2007) expresses one view of distance education in the developing world:

> Open and distance learning is regarded, by students and ministries of education alike, as a second-rate system, used to offer a shadow of education while withholding its substance. It is an inefficient but cheap way of containing educational demand without meeting it. (p. 207)

This view of distance education is widespread not only in Southeast Asia and Africa, but also to a lesser degree in developed countries "…as this was a common attitude in the West until about twenty years ago (and some may say is still prevalent in subject-specific areas)" (Rennie & Mason, 2007, p. 3).

According to Professor Dhanarajan, vice-chancellor of Wawasan Open University,

> The mode of delivery, whether face-to-face or virtual, actually has little to do with the quality of education. What‟s more important are things like, is there a careful measurement of learning outcomes and is the university benchmarking its development? … [and] whether the curriculum is relevant to the environment. (Ng, 2007) High-quality educational materials tend to be produced by people who have a positive attitude towards change and care about what they do and how they do it. (Wright, 2008b)

Those who are likely to make key decisions about technology and distance education and those who are highly regarded as people of influence are generally in their fifties or sixties. These individuals may subtly resist technological solutions because technology was not part of their educational experience (Omofaye, 2006). Technology is not the issue, but rather how it is used and the attitudes people have about it. Educators should not only be exposed to the literature about effective distance programs, but must also see them in operation and speak to students whose lives have changed because they were able to access distance education courses. Increased awareness should improve attitudes towards the implementation of technologically-enhanced distance education.

One of the reasons why distance education is not respected in some countries is the lack of quality assurance systems that continually measure the congruency of organizational goals with actual achievement, instructor training, course development, instructor-learning interactions, student support, assessment, and paths of student success upon graduation (Wright, 2007c). Also of concern is the lack of meaningful interaction that promotes higher-order or critical thinking. Quality affects student achievement, graduation rates, the potential for students to obtain a job or to pursue further education upon graduation, the support of educational stakeholders, and the image or creditability the institution has within the community.

Various countries need accreditation agencies to develop and customize quality criteria for assessing distance education; they should not simply use those for traditional institutions, some of which do not address the peculiarities of distance learning systems. In some cases, staff who migrate from traditional systems to open and distance learning (ODL) institutions bring with them protectionist policies that may not help the ODL institutions to achieve their overall goals, especially goals related to accessibility, flexibility, and equity. Staff in new ODL institutions in emerging nations must be introduced to attributes of ODL that differentiate it from classroom teaching.

Quality assurance systems should have a higher priority when resources are limited, but they often receive little or no funding. Distance educators do not need to develop their own standards from scratch; they can obtain existing standards and modify them for their environment. In any event, they should publicize the standards they are using and ask external examiners to review their progress in achieving these standards.

Recognizing those who are Likely to Succeed and Addressing Student Needs

Educational opportunities should be available to everyone. People who live on the street and in rural areas, as well as those in affluent communities, have a right to an education. However, when new programs and institutions are established, government and funding agencies usually focus on completion or graduation rates in determining whether funding should be continued and programs expanded. Since distance education programs may suffer from low completion rates (Perraton, 2007), it might be advantageous for project initiators to consider who will likely be successful with distance education courses and initially offer programs that will meet the needs of these types of students. The results should yield high completion rates thus attracting further funding that can be used to develop programs for higher-risk students.

Successful online or e-learning students are likely to be highly-motivated, well-organized, self-disciplined, good time managers, supported by family and colleagues, able to tolerate ambiguity, flexible, goal-oriented, and interested in using technology (Wright, 2008a). Post-secondary level students are likely to be more successful with distance education than primary students (Perraton, 2007). This does not mean that only these types of students will succeed, but rather that they are more likely to complete a certificate, diploma, or degree program.

Adult learners are particularly motivated if at the end of their studies they will obtain an accreditation, a salary increase, and/or a promotion that will enable them to leave poverty behind and improve the lives of their families. Distance education seems to be ideally suited for those who have full-time jobs and family responsibilities, are disabled or house-bound, are geographically dispersed, or are far away from home, for example, military personnel, embassy staff, missionaries, international volunteers, and refugee workers. These individuals recognize the need for access to education that is not bound by time and place. Distance education is also of interest to those who want life-long learning courses. If developing countries want to maximize their investment in distance education, they should take into account those students who are likely to make the best use of this form of educational delivery system and provide effective student support.

Students may need access to financial support, equipment and technological support, learning resources, and academic advisers. A number of these student services may be provided in a virtual form (Brigham, 2001). In many cases, costs borne by the typical traditional institution, such as printing, are passed on to students who can ill afford an additional financial burden. In collaboration with the Canadian International Development and Research Centre (see http://www.idrc.ca), countries such as Benin, Egypt, Kenya, South Africa, and Uganda have established a network of telecentres to provide affordable access to information and to support students as well as to promote the use of ICTs for community development.

In addition to issues related to the cost of equipment, access to the Internet, lack of familiarity with technological tools, limited access to up-to-date and engaging resources, and the need for quality assurance systems that lead to accreditation and increased job prospects, students have other concerns that must be addressed. These concerns may contribute to attrition rates that can be 10% to 20% higher for distance education than for traditional face-to-face instruction (Angelino, Williams, & Natvig, 2007). Humans tend to be social beings who rely heavily on eye-contact, verbal cues, immediate feedback, and frequent contact with others. If these social factors are not addressed, distance education may lead to the feeling of isolation (Hellman, 2003). Students may feel the need to be part of a community – a community of learners. If educational technologies available to them do not provide opportunities for interaction then tutors, study groups, and the involvement of family and peers should be built into the program so learners do not feel isolated. It may be necessary to inform employers and family members about the long-term benefits of the education being sought and encourage them to support the learner. Students may want frequent contact with their instructor or tutor in order to obtain feedback that is timely, effective, and nurturing. The number of potential challenges facing students in developing countries is significant, but they can be overcome if careful attention is given to addressing their needs.

Dealing with Faculty Concerns

Faculty may not support a learning system that is substantially different from the traditional, post-colonial, face-to-face instructional environment in which they were trained. The implementation of distance education may be impeded by faculty who have limited or no experience with

distance education (Gulati, 2008). Their students may also need to be weaned from a face-to-face learning environment. If institutions value research and publications rather than the time and effort required to produce and support distance education courses, faculty may not have the support they need to make the transition to an electronic form of distance education (Anderson & Middleton, 2002; Levitch & Milheim, 2003). They may develop teaching anxiety associated with (a) the lack of training with the new technology and instructional methods, (b) the tension between allocating time to online course development and research, (c) increased workload, and (d) performance expectations in an unfamiliar learning and instructional environment in which learner-centred and constructivist approaches may be emphasized. These faculty concerns are evident in developing countries such as Botswana (Wright, 2007c) as well as in more economically advanced countries such as Brazil (Porto & Berge, 2008).

Technical support is often lacking in developing countries, as the few individuals with technical expertise focus on network infrastructure and security. Faculty must learn how to install and maintain computers and software and troubleshoot problems that they and their students encounter (Wright, 2007b). Instructors also need to learn a variety of online competencies (Smith, 2005), especially how to foster active learning (Moore, Fowler, & Watson, 2007), build effective interaction into their courses (Flottemesch, 2000), manage their time (Ally, 2000; Shi, Bonk & Magjuka, 2006), and write effectively (Thomas, 2007). Often overlooked is the need to inform instructors and students about copyright and electronic plagiarism as well as to encourage them to question what they locate on the web and to verify web content. Governments and institutions should be encouraged to establish laws and policies that support the free exchange of information for educational purposes.

One of the major challenges faced by faculty as they try to learn about technology is that they do not have easy access to it. Since 2006, the National Open University of Nigeria has provided laptops with general packet radio service (GPRS) and Internet-enabled wireless cards to ease communication among its staff, especially the study centre staff and instructors on the main campus. The computers are provided via a very flexible loan arrangement between the staff and the university management. Each Internet card has a monthly airtime credit of US$39. Some institutions purchase large quantities of computers at reduced rates and provide their distance education instructors with the technology.

Students are a resource that is often overlooked when faculty training is being implemented. In general, young people tend to pick up technology skills rapidly and can be used to assist instructors in learning computer skills and developing media-based materials (Wright, 2007b). If this is to occur, faculty may need to overcome their resistance to learning from students, which may be accomplished more easily in some cultures than in others.

To provide faculty with current information and skills pertaining to distance learning, institutions and governments in countries such as Bangladesh, Ghana, Nigeria, and Sri Lanka invite consultants from international development agencies that are usually based in Australia, Canada, England, Germany, the Netherlands, Sweden, and the United States. If the consultants are not careful, they bring with them their unfiltered Western views and provide one-way “information

dumps" that do not offer opportunities for participants to discuss how to adapt what they have heard. For example, the tutoring models in the West usually involve one instructor with a few students; however, this would be unsustainable in developing countries (Lentell & O'Rourke, 2004). Developing country hosts should insist that the training sessions be interactive and allow time for reflection and the development of local solutions. Educators should be encouraged to obtain diverse views from reliable Web sites and blogs such as EDUCAUSE (see http://www.educause.edu/), Stephen's Web (see http://www.downes.ca/), and ZaidLearn (see http://zaidlearn.blogspot.com/). Educators should actively participate in organizations, such as the MERLOT Africa Network (MAN, see http://man.merlot.org/), that focus on the scholarship of teaching and learning using electronic resources,

Accessing Up-to-Date Educational Resources

Open educational resources and digitized print resources can help alleviate situations arising from the paucity of up-to-date educational resources. Sources of open courseware include the OpenCourseWare Consortium (see http://ocwconsortium.org/), which provides access to university courses from Australia, China, Colombia, France, Japan, Korea, Mexico, the Netherlands, Spain, Taiwan, the United Kingdom, the United States, and Vietnam. The Open Educational Resources Commons (see http://www.oercommons.org/) offers teaching and learning material at the basic, secondary, and college levels. Items can be retrieved online and transferred to compact discs or memory/USB keys for use in areas where Internet accessibility and bandwidth are limited. In 2008 the South African Institute for Distance Education (SAIDE) established Open Educational Resources (OER) Africa (see http://www.oerafrica.org/) to harness the benefits of OER for higher education systems in Africa. The Opencast Community (see http://www.opencastproject.org/) is a collaboration of higher education institutions that provides audio and video captures of lectures at leading universities.

Most importantly, educators in developing countries need to overcome the "not-invented-here syndrome" by re-branding, localizing, or contextualizing material they obtain from other sources (Wright, 2007a). If a course developed by another institution is not available in an open-source format, they must obtain permission to use it and then simply re-brand it by adding their institution's name, logo, and contact information. The materials are not changed significantly and considerable time is saved. Educators may decide to localize material by removing inappropriate information, including local examples, or rearranging course components. The OpenLearn LabSpace (see http://labspace.open.ac.uk/), managed by the British Open University, enables users to download and remix course content. Distance educators may also contextualize the material for a local audience by changing its content and syntax. The African Virtual University (AVU, see http://www.avu.org/) aims to provide world-class quality education and training programs to educators in Africa as well as undergraduate and remedial academic courses. One of the major challenges is to adapt course materials developed in an affluent Western context to the educational environment in Africa. According to Lou Siragusa of Curtin University of Technology in Australia, material that has been adapted successfully must balance Australian, international, and African perspectives. It must allow students to reflect on the knowledge in their

own countries, yet enable them to draw on expertise and experience from other countries (Wright, 2007d).

The eGranary Digital Library (see http://www.egranary.org) or "The Internet in a Box" initiative managed by the University of Iowa enables people in developing countries to access recent information without incurring Internet charges or struggling with limited bandwidth (Jeffrey, 2007). The library comprises more than 10 million Web pages including Massachusetts Institute of Technology (MIT) OpenCourseWare (see http://ocw.mit.edu/), Project Gutenberg's (see http://www.gutenberg.org) classic literature collection, 40,000 books, and 200 full-text journals. The material is stored on Windows or Linux servers costing as little as US$2,800 that plug into existing local networks. These servers provide access to information that can be up to 5,000 times faster than the satellite links that are used primarily in Africa and the South Pacific. They are currently located in institutions in Africa, Bangladesh, Haiti, and India. Institutions are charged an annual fee of US$200 for twice yearly updates. A search engine is provided that allows users to search all content, including content they add themselves. The eGranary Digital Library, MIT's OpenCourseWare, and other similar open source initiatives have enabled learners such as Olumide in Nigeria to state, "As a student in a developing African country, OCW is helping me access knowledge and information I never dreamed of getting. It's inspiring me to push harder and enjoy learning with the assurance that I'm getting the best" (d'Oliveira, 2008).

Implementing Mobile Learning

Although implementing mobile learning is not a recurring issue as educators have not previously encountered this method of delivery, it is an emerging issue for developing countries. As they are trying to implement online learning effectively, developing countries are also exploring the use of mobile technology. As we all know, the small screen and the current inputting devices make them difficult to use for many educational purposes; however, the devices are more affordable than computers, are socially acceptable in all strata of society, are easy to use, and are everywhere. In Africa mobile phones are used to contact groups of educators such as teachers and principals with specific messages related to administration and educational content. Mobile phones are also used to transmit attendance or submit grades, to contact students about class activities or cancellations, and to record and distribute photographs and audio or podcast recordings. In Nigeria, mobile phones are used to teach literacy to some of the 9.3 million nomads who wander over its terrain or along its shoreline (Aderinoye, Ojokheta, & Olojede, 2007). The phones are also used to send job listings and health information to low-income residents of Cameroon and Uganda and to enable doctors to diagnose patients in remote areas in Kenya and Tanzania (Developments.org, 2007; TRALAC, 2008). Ericsson will establish an innovation centre in sub-Saharan Africa to develop mobile applications in health, education, agriculture, and small business that will focus on "meeting the needs of poor and rural populations…in Ericsson's ongoing commitment to support the achievement of the UN's Millennium Development Goals" (iConnect Online, 2008). The projects described in this paragraph do not currently have the individualized learning aspects that most would consider to be an important ingredient of quality distance education programs, but they are a step in the right direction; they are providing educational resources and opportunities to those who have had limited or no access.

A London Business School study indicated that an increase of ten mobile phones per hundred people boosts the economical growth rate of developing countries by 0.6% ("Economics Focus," 2005). There is no doubt that with the tremendous growth of mobile phones in developing nations, the interest educators express in using these devices, and the involvement of mobile phone manufacturers in projects that will expand educational opportunities, a time will come when the phones are used not just for communicating, conducting financial affairs, and performing administrative tasks, but also for in-depth learning and assessment. The future of mobile learning is unwritten, but it may become the foundation of an exponential growth in distance learning because mobile appliances are ubiquitous, affordable, and have wireless capabilities that can reach urban and rural areas that lack a terrestrial infrastructure. However, those who adopt mobile learning are likely to encounter the issues discussed above relative to online learning.

Conclusion

Despite the challenges described in this article, new institutions are launched each year, existing traditional institutions are expanding their open learning options, and enrolment in distance education courses continues in both the developed and developing worlds. The continued growth and success of distance education institutions will depend on the extent to which issues covered in this article are addressed, as they all affect the quality of the learning experience provided to students. For those in developing and emerging nations, distance education is the promise of a better life, not just an enhancement of existing educational offerings.

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Making Education Equitable in Rural China through Distance Learning

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Abstract

The Distance Education Project for Rural Schools (DEPRS) was implemented by the Chinese government between 2003 and 2007 to improve the quality of basic education in rural areas of China, especially in the poorer western provinces. It has been referred to as "the largest ICT project in the world up to now" because "it serves a larger population than any other similar projects and therefore will likely start a far-reaching information revolution in China." This paper offers a descriptive analysis of the effectiveness and impact of DEPRS, explaining how and why it was implemented as a solution to close the wide gaps in access to high quality basic education. Focusing on the initial achievements of DEPRS, this paper explores if, how, and to what extent the three learning tools employed in DEPRS have improved basic education in remote rural areas.

Keywords: three delivery models; Audio/Visual tools; DEPRS; ICT facilitated distance learning

Introduction

China has made great strides towards universalizing basic education in rural areas over the past two decades. Yet wide disparities in access to quality education continue to plague these areas. When the Hu-Wen regime came to power in 2003, it issued a development strategy that laid emphasis on the less developed inland provinces. Among the various programs and projects that the administration initiated to promote rural development, the Distance Education Project for Rural Schools (DEPRS) was a significant component. It aimed to improve the quality of basic education in rural areas of China, especially in the poorer western provinces. By early 2007, the bulk of the project had been successfully completed.

Distance education has been viewed internationally as a viable option for improving access to, and the equity and quality of, basic education in rural settings. A large body of literature has discussed different types of distance learning strategies and the contribution distance education has made to closing socio-economic gaps between developing and developed regions. Hilary Perraton states that distance education is a way to educate students who would otherwise get no

education, and it is a tool to support and supplement conventional education in developing countries. Others highlight the important role distance learning plays in teacher training (Perraton, 2000, pp. 31-41; Moon & Robinson, 2003; Graig & Perraton 2003; Siaciwena & Lubinda, 2008; Bof, 2004).

Some scholars, however, have questioned the merits of applying advanced information communication technology (ICT) in developing countries where children and adults lack even the most basic living standards. Shalni Gulati, for example, suggests that when developing countries implemented ICT-facilitated education projects, the efforts aimed at extending educational opportunities to disadvantaged and poor populations ironically often widened the socio-economic gap. In these countries traditional technologies, such as print media, radio, and television, remain more effective because the high cost of Internet service prevents poor people from accessing it (Gulati, 2008, pp.11-12).

A number of successful distance learning programs around the world seem to support Gulati's conclusion. In a study of India's National Open School, the most comprehensive distance learning program in the country to offer secondary education to learners from low income and disadvantaged social groups, K. Sujatha describes the school's delivery model as "combining self-study and Study Center support, complementing these with electronic media in a very limited way." (Sujatha, 2002, pp. 95-96). Similarly, Telesecundaria, created in Mexico in 1968 to respond to the needs of remote villages, is a distance education program that uses television to carry most of the teaching load. In 1998, Telesecundaria's enrollment accounted for 17.6% of the country's total enrollment in grades seven to nine. Although people complain about the rigid scheduling of television broadcasting, full Internet connectivity is still considered technically difficult and too expensive (Wolff, Castro, Navarro & Garcia, pp. 145,149).

In contrast to the above arguments, several researchers have highlighted the successful implementation of advanced ICT to promote rural economy and basic education in developing countries. Rabbi and Arefin, for instance, optimistically claim that wireless ad hoc networking will provide e-learning for rural people in developing countries and facilitate various educational services, such as Web-based learning, computer-based learning, visual classrooms, and digital collaboration, which are hard to obtain in underdeveloped areas (Rabbi & Arefin, 2006). Bernadette Robinson, a distance education expert involved in the EU-China Gansu Basic Education Project, emphasizes the significant role advanced ICT played in teachers' training in Gansu Province. The project set up 686 Teachers' Learning Resources Centers, of which "85% could connect to the Internet one way or another" (Robinson, 2008, p.3). Another case study focuses on Gansu, one of the most isolated, mountainous, and impoverished provinces in China. This study demonstrated that local communities benefited tremendously from ICT projects that were carried out to diffuse Internet technology in two rural counties (Zhao, Hao, and Banerjee, 2006).

By 2005, China was boasting the world's second largest Internet population with 103 million users. Rural users, however, still accounted for a mere 1.2% of the total (Zhao, Hao, and Banerjee, 2006, p. 294).[i] Chinese educators regard DEPRS as "the largest ICT project in the

world up to now" since "it serves a larger population than any other similar project, and therefore will likely start a far-reaching information revolution in China" (Yu & Wang, 2006, p. 276). With rare exceptions, however, the English-speaking world has paid little attention to the project (Yu & Wang, 2006; Baggaley & Belawati, 2007, pp. 40, 44). This paper offers a descriptive analysis of the implementation and impact of DEPRS and addresses questions that developing countries commonly face. The first section discusses the main factors that impeded the spread of basic education in rural China during the reform years (circa 1978 to the beginning of the twenty-first century). The second section explains how and why DEPRS was implemented as a solution to enhance the quality of rural basic education. The third section focuses on the initial achievements of DEPRS, exploring appropriate and effective distance learning technologies that have been employed in rural China. And the fourth section deals with the challenges and problems that DEPRS faces. The conclusion sheds light on the effectiveness of ICT-facilitated distance learning tools in rural areas of developing countries.

Main Factors Restricting Basic Education in the Rural West

Compared to the eastern coastal regions of China, most parts of the western interior are underdeveloped. National statistical data published in 2000 showed that of 592 counties under the poverty line, more than half were located in the west (Sun & Zhao, 2004, pp.111-2). In addition to having lower incomes, people in the rural west have had far less access to education, including basic education. A survey conducted in 1999 showed that illiteracy rates among the fifteen years and older age cohort in the western interior ran as high as 35.79%, 14% higher than the national average (R. Wang, 2004, p.105).

One of the most crucial factors hindering the development of basic education in rural areas is the lack of qualified teachers. During the reform years, when the government lifted the regulation and control over labor mobility, a large number of experienced teachers left the poorer regions or the countryside for developed areas and urban centers. In 2001, there were 705,000 primary and secondary school daike teachers (teachers who are not on the government payroll, but who are locally appointed and funded) nationwide, accounting for 6.6% of the total teaching staff. They were concentrated in the rural areas of western China. In Guangxi Zhuang Autonomous Region, Tibetan Autonomous Region, and Shaanxi Province, daike teachers accounted for 20% of the primary and secondary school teaching staff. Many of them were not well-trained (Zhuang & Lai, 2002, p. 26). In the urban centers in Eastern China, 44.4% of primary school teachers had a college diploma or university degree. By contrast, only 15.6% of those in the rural west had equivalent credentials (J. Zhao, 2005, p. 3; T. Wang, 2004, p.64).

The shortage of teachers compounded another problem, that of a shortage of teachers who could teach in special subject areas. Conventional subjects such as Chinese literature have not been problematic, but there has been a growing shortage of people who can teach in modern subjects, such as English, computer science, music and physical education. As a result, some courses listed in rural curriculums are no longer offered, while other subjects are taught by teachers trained in different disciplines. It is commonplace to find teachers in western rural schools

teaching subjects in which they have no training or expertise (J. Zhao, 2005, pp. 4-5; Wu & Yang, 2005, p. 12).

Another problem hindering the spread of basic education in western rural China is the shortage of funding. A large percentage of the rural population lives below the poverty line and there is not enough economic development to support local education. Under the new reforms, the administration initiated a fiscal policy which translates as "eating from separate pots." Unfortunately, this policy has significantly reduced the transfer of resources from rich areas to poor ones. As a result, the inequity in public spending has increased dramatically. To cite but one example, in the early 1990s, Shanghai, the most developed coastal metropolitan city in eastern China, spent about five times more than the poorest rural area on primary education. One decade later Shanghai spent ten times more than the poorest rural area (Hannum & Park, 2002, p. 9).

The lack of funding also had a negative impact on teachers' working and living conditions. Because of heavy workloads, tight budgets, and poor transportation, rural teachers had little opportunity to attend training sessions, to undertake research activities, or to observe exemplary teachers using innovative methods in the classroom. Funding shortfalls also meant that the income of rural school teachers was much lower than that of their city counterparts. In addition to lower wages, most rural teachers do not have guaranteed medical insurance, pension plans, or social security. The teachers employed in village primary schools are not entitled to any benefits (J. Zhao, 2005, p. 5). In spite of the media regularly advocating teaching as a "glorious" career, few graduates are willing to work in the countryside for lower wages and even lower social status (Zhang, 2003, p. 118).

Enhancing the Quality of Rural Basic Education through Distance Learning

For current Chinese leaders, universalizing basic education in rural China has been viewed as a way "to help narrow the social gap and to realize social justice." They emphasize the key role basic education plays "in alleviating social conflicts and constructing a harmonious society" (Wen, 2003; Chen, 2005, p. 3). Since the turn of the 21st century the government has instituted a number of education projects in rural China under the broad rubric of developing the underdeveloped western hinterlands. Distance learning tools have played a significant part in this goal (Yang & Yuan, 2006, p. 24; H. Zhao, 2005, pp. 3-10).[ii]

Drawing upon the success of other countries, Chinese educators have argued forcefully that China needs to develop distance education because it is adaptable, cost effective, diverse, and open (Zhang, 2002, p.102; Liang & Li, 2005, p.11). Ding Xingfu, one of the leading scholars in distance education, has convincingly argued that "Distance education is the only means by which high quality education resources can be conveyed from the eastern part to the western part. It is also the only means by which qualified teachers can be cultivated and retained in the West" (Ding, 2003, p.13).

In September, 2003, the State Council issued the ground-breaking document *Decision on Further Strengthening Rural Education*. It explicitly stated that the government was to "implement the distance education program in rural schools for the purpose of promoting educational resource exchanges between urban centers and rural areas and to enhance the quality and effectiveness of education in the countryside." Central and local governments committed twelve billion RMB Yuan to the program (Ding, 2005; Liu & Sun, 2006, p. 39).[iii] Between 2003 and 2004, the Ministry of Education, the National Committee of Development and Reform, and the Ministry of Finance worked together and launched two experimental programs in distance education. Based on the successful results of the two pilot programs, the State Council approved the general scheme of constructing a nationwide rural distance education network, known as DEPRS, in 2004. The DEPRS proposed to develop and install three delivery models to suit various levels of instruction in rural schools within five years.

The first of the three distance delivery models targeted the 110,000 low level rural elementary schools located in sparsely populated natural villages or administrative villages. This type of small school normally serves grades one through three, with between 10 and 20 students in each grade. The school hires up to four teachers, who are likely to teach different grades in rotation. This model uses Digital Video Disc (DVD) technology to facilitate learning. Each school is equipped with a set of DVDs, a DVD player, and a television (TV) set. The DVDs contain lessons given by nationally recognized teachers who specialize in language, mathematics, and other subjects. The discs function as teaching and training tools for teachers and students alike. The cost of a complete setup, including equipment, is estimated at 3,000 RMB Yuan. To support this delivery model, the Ministry of Education solicited the public for contributions. The Ministry also viewed a large body of teaching materials for use in the production of the DVD programs (Zibo, 2005; Miao, 2005; Wang, 2005; Yu, 2005; Lee and Wang, 2005).

The second distance delivery model has been designed to meet the needs of the 384,000 intermediate schools (grades one through six) located in townships or large administrative villages. This model contains the same material and equipment as the first model but also provides for advanced satellite technology for televised broadcasts. The DVDs contain teaching materials for grades one through six. The satellite dish receives education programs produced by central and local television stations. The estimated budget for this model is about 16,000 RMB Yuan.

The third model is aimed at serving some 37,500 rural junior high schools. The most advanced and costly of the DEPRS models, the third model contains provisions for computer rooms equipped with high-speed Internet and multimedia classrooms. It also provides a satellite television, a DVD player, and a set of DVDs. In addition to playing DVDs and showing television education programs, the third model allows teachers and students to download online and Web-based materials. The cost for setting up this model is as high as 150,000 RMB Yuan (J. Zhao, 2005, p. 7; Guo & Guo, 2006, p. 62). To support the second and third models, the education channel of Chinese Central Television airs an eleven hour long program titled *Air Classroom* on a daily basis. Several Web-based educational programs are provided by the Ministry of Education, including *Classroom for Primary & Secondary Students* and *Teacher's*

Training. The Central Bureau of Audio-Visual Education supplies teaching resources for rural schools through radio broadcasts. Regional education administration authorities have been engaged in research and development to produce teaching materials that address the specific needs of rural students. Regional officials regulate the delivery models but they also offer comprehensive guidance (J. Zhao, 2005, p. 2).

Application of Delivery Models to Primary & Secondary Education: Initial Accomplishments

By early 2007, official reports were declaring that in most provinces the bulk of the installation work on the three models had been completed or nearly completed. At the DEPRS Work Report Conference called in 2007, Li Tianshun, head of the Basic Education Bureau of the Chinese Education Ministry, claimed that "enormous progress has been made." According to Li, "a total of 8 billion [RMB Yuan] have been spent on the project; the three models have been implemented in over 80% of the primary and secondary rural schools in central and western China, which allows more than 100 million rural school children access to high quality educational resources" (T. Li, 2007). By the time all three delivery models have been fully implemented, some 118 million rural primary and secondary students will have benefited from the program (Liu & Sun, 2006, p. 38).

At times government officials and media in China appeared to be obsessed with the success of the delivery models themselves. It is critical for policy makers and administrators to realize that building the physical infrastructure is only the first step of DEPRS. The next serious challenge is how to make full use of modern distance learning technologies, integrating high quality teaching materials with local classroom instruction and updating rural teachers' pedagogy (Baggaley & Belawati, 2007, p. 44; Yu & Wang, 2006, pp. 277-279). The urgent task is to assess the beneficial results and analyze the cost effectiveness of DEPRS in order to ensure the sustainable development of the project.

According to experts in distance education, when distance learning methods are applied to basic primary and secondary education "where educational technology has been used to enhance education rather than to provide an alternative, its costs are additional to those of regular schools. If these technologies are to be used, they need to demonstrate an educational value that justifies the extra cost." (Perraton, 2000, pp.127-8) In line with such thinking, national counsellor Chen Zhili has contended that the added benefits must be the critical criterion for assessing the project, which can be demonstrated by teaching and learning improvements in rural basic education (Yang & Han, 2007, p. 20).

This discussion of the beneficial results of the DEPRS program is based on two categories of investigation – overall regional evaluations based on statistic data and case studies that examine the effectiveness of the different delivery models, supported by concrete examples.

The Impact of DEPRS on Rural School Performance

Although the evaluations under discussion looked at the three categories of schools, teachers, and students, this paper specifically focuses on student development. Teachers' quality admittedly plays a key role in rural education, but the eventual goal of distance education projects are improvements in student performance. In addition, one of the case studies in the next section pays special attention to teachers.

Two evaluations were conducted by university and school educators to assess the project's impact on various aspects of rural education in 2006. One covered thirteen provinces, with an emphasis on five provinces and one municipal city (Gansu, Ningxia, Qinghai, Shaanxi, Sichuan and Chongqing City). The other focused specifically on Gansu province. In addition to questionnaires and classroom observation, in-depth face-to-face interviews were conducted. Thirteen directors of the Bureau for Education with Electrical Audio/Visual Aids, 346 school principals, 2,876 teachers, and 465 equipment maintenance technicians were involved in the thirteen province survey. In the Gansu survey, one director of the Bureau for Education with Electrical Audio/Visual Aids, 86 school principals, 159 equipment maintenance technicians, and 567 teachers were interviewed (Yang, Sun and Ding, 2007, pp. 97-98; Yang & Han, 2007, pp. 20-21).

Although the two research teams conducted the evaluations using identical methods, concentrating on the same areas, and asking similar questions, the results were quite different.

Table 1
Fostering Student Development: Gansu Province

Targets	**% of Agreed Participants**
Inspiring interests in study	94.4%
Improving understanding of subject matters	75.8%
Promoting independent thinking	72.4%
Stimulating imagination	67.1%
Cultivating creativity	72.6%
Cultivating hands-on ability	64.9%
Improving ability in information collection	63.4%
Broadening intellectual horizon	89.3%
Enhancing overall study ability	70.7%

(Yang, Sun & Ding, 2007, p. 98)

Table 2

Fostering Student Development: 13 Provinces

Targets	% of Agreed Participants
Stimulating interests in study	53.08%
Increase effectiveness of study	11.54%
Promoting critical thinking	18.68%
Cultivating creativity	12.20%
Cultivating hands-on ability	8.21%
Improving ability in information collection	14.09%
Broadening intellectual horizon	59.45%
Inspiring imagination	28.24%
Promoting ideology and morality	6.26%

(Yang & Han, 2007, p. 21)

As the two tables show, in almost every aspect the thirteen provinces consistently scored much lower than Gansu. The more positive results displayed in the Gansu survey were likely due to the fact that Gansu is one of the least developed provinces in western China and a number of projects in addition to DEPRS have been implemented in the past decade to help improve rural education.[iv]

Regardless of the differences, both surveys displayed a similar pattern with respect to the effectiveness of the project, that is, the highest effectiveness remains at the superficial level. Achievements are most pronounced in areas that are readily affected by the audio/visual technology in the three DEPRS delivery models because they provided students with access to a large variety of learning materials via DVDs, satellite television and Web/Internet supported ICT. For example, when asked if DEPRS had stimulated student interest in studying and widening their intellectual horizons, a very large number of informants responded positively (90% in the Gansu survey and about 55% in the thirteen provinces survey); but when asked if the project had improved students' creativity, enhanced their critical thinking skills, and promoted their hands-on ability, a much smaller number of respondents reacted positively (72.6%, 72.4% and 65% in the Gansu survey; 12.2%,18.7%, and 8.2% in the thirteen province survey).

This discrepancy demonstrates that the full potential of distance education technologies has not been realized. Teachers and scholars in China are engaged in discussions on how to transfer conventional classrooms based on chalk and talk to a new learning environment that is reliant on distance learning materials. They emphasize the promotion of student self-motivation for learning and the transformation of students from passive learners driven by exam scores into active and well-disciplined learners, who take the initiative in creative learning and critical thinking. In addition, responding to a common weakness of Chinese basic education, that of neglecting the development of practical skills in students, they call for appropriate teaching methods to enhance students' hands-on ability (Ou, 2008, 191; Liu & Zhang, 2008, pp, 7-8). The two investigations show that the new pedagogy has not prevailed in the vast western rural

regions. There is, unfortunately, no statistical data available on student examination pass rates to make a solid and objective evaluation of the academic performance of rural students.

Promotion of Rural Education through Three Delivery Models: Case Studies

This section will focus on two case studies. The first, undertaken in Hubei Province, involved the implementation of the first and second DEPRS models in rural primary schools to provide instruction in English language skills. The second case study entailed the use of the third DEPRS model in a junior high school in Gansu Province to improve the professional development of teachers.

Hubei Case.

Hubei Province is located in central China. In 2002, the Provincial Education Bureau, following a resolution issued by the central government, decided to offer English language courses to all primary school pupils starting in the third grade. The target date for the commencement of the project was 2005. The decision presented rural schools with a serious challenge because qualified English teachers and teaching resources were scarce.

There are 16,000 primary and intermediate schools in the rural regions of Hubei but just one thousand formally trained English teachers. The overwhelming majority of rural schools could not offer English language instruction because they simply had no teaching staff. In addition to that problem, most rural primary English teachers only have a modicum of training, the result of which is poor pronunciation and a limited grasp of grammar and vocabulary. Most rural teachers tend to teach more than one subject, which further works against attaining proficiency in English. In addition, tight budgets do not allow most schools to purchase necessary teaching resources and equipment. Teachers therefore have had to rely on textbooks and a handful of audio tapes. There were no language labs or library materials that would help students to improve proficiency in English through listening, speaking, and reading. Rural schools faced the almost impossible task of finding enough qualified teachers and teaching and learning resources within three years to meet the deadline of 2005. (Fang & Shao, 2007, pp. 34-35).

Two options were proposed. The first was to recruit a massive number of English teachers from college graduating classes and to assign one to every rural primary school. The second was to utilize the distance education infrastructure in DEPRS and to develop English instruction through the provincial TV education channel and DVD broadcast stations. These distance learning sources could then be used to either supplement English instruction in those schools where English teachers were not particularly well trained or as an instructional substitute in the schools where no English teachers were available. The first option was quickly rejected because Hubei Province lacked the financial resources to hire English language graduates, and without salary incentives few qualified English teachers would move to a rural setting. Even those who chose to work in rural areas for personal reasons tended to return to urban life after a short period of time.[v]

The second option proved to be more attractive because it was cost effective and flexible. The first and second DEPRS delivery models were scheduled for completion in 2005, thereby providing the necessary ICT equipment for distance education in English (Fang & Shao, 2007, p. 35).[vi]

A course development group, composed of one British expert and four highly experienced Chinese educators in early English education, was formed to produce a distance education course for grades three through six. The course, *Elementary School Air Classroom in English*, was produced as a TV program and a set of 160 DVDs, each of which contained two English lessons. Every rural elementary school received one set of the DVDs at the beginning of the fall semester in 2005. In the meantime the Provincial Bureau for Education with Electrical Audio/Visual Aids organized training sessions for rural English teachers, helping them to implement the distance teaching materials into their classroom instruction. About 1,400 trainees became part of a core group who promoted distance English education in their school districts. The Provincial Bureau for Education with Electrical Visual/Audio Aids also sent trainers to each county to offer training classes. Some 13,200 rural teachers underwent training and almost every elementary school now has a teacher who attended the training sessions (China Education Paper, August 17, 2008).

Between 2005 and 2007, all rural elementary schools offered English language instruction with the aid of TV and DVD broadcasting. At the remote elementary schools (grades one through three), an effective teaching model was designed to help teachers who know little English to undertake instruction. Part of the training involved teachers repeatedly viewing the DVD programs before the class. During class instruction the teacher would play a given DVD program, stopping and repeating sections of a given lesson whenever students could not follow. Students who developed proficiency participated in class instruction, helping to demonstrate the proper pronunciation of various English words and phrases. In the intermediate schools where English teachers underwent training but did not have a sure grasp of the subject material, the TV courses helped them to improve their teaching methods and to keep abreast of new teaching innovations.

A comprehensive evaluation of *Elementary School Air Classroom in English* undertaken in 2007 by a team of experts from the Provincial Bureau of Education, the Provincial Bureau for Education with Electrical Audio/Visual Aids, and the Education Research Center of Hubei Province revealed that it was quite effective as a teaching model. The team was convinced that the use of TV and DVD technology was successful at transferring advanced teaching resources from urban centers to remote rural regions, allowing teachers with little formal language training to fulfill their task. Four million rural children were subsequently able to enrol in English classes, which otherwise would not have been available to them. There is also clear evidence of student improvement in pronunciation and conversational ability. A Provincial Speech Contest of Rural School Pupils was held in Wuhan, the capital city of Hubei Province, in August, 2008. The audience and the judges were deeply impressed by the English fluency of the village children. After watching the video tape of the speech contest and inspecting several schools, government officials and experts, including the Minister and Vice Minister of Education in China, spoke

highly of the TV course as "the best solution to the teacher shortage in rural areas." (Fang & Shao, 2007, p. 37; China Education Paper, August 17, 2008; Hubei Bureau, 2007).

Dangzhai middle school case.

Dangzhai Middle School is a rural junior high school under the jurisdiction of Zhangye Prefecture in Gansu Province. Zhangye became one of the pilot counties for the implementation of DEPRS in 2004 with 626 primary and secondary schools in the prefecture receiving one or more of the three distance delivery models. Despite the cost of the installation of the ICT equipment, especially for the third model, by 2007 many teachers were complaining about the amount of time they had to spend on class preparation for the new multimedia technology. Owing to an already heavy workload, many teachers continued to use conventional teaching methods. Only occasionally did they integrate multimedia material with classroom instruction and then it was usually when school inspectors stopped by for classroom observation (Peng, 2007, p. 3; Zhang & Shi, 2008, p. 78).

Nonetheless, unlike many other middle schools, Dangzhai, an ordinary rural school with 1,300 students and teachers, made significant progress in incorporating the third DEPRS model into classroom instruction, in pedagogical innovation, and in community service. A multimedia classroom equipped with thirty computers and broadband Internet was set up as well as a classroom equipped with an overhead projector. The school was also supplied with satellite televisions and DVD players.

The school administration was fully cognizant of the fact that training would be the key to the successful application of the distance delivery models. So once the hardware was installed, the school offered general training sessions to help teachers become computer literate and more effective at researching and utilizing Internet sources; this included the ability to use general software, such as Word, PowerPoint, Excel, Flash, and programs specifically designed for certain subjects, such as www.GspInChina.com for math, Simulated Physics Lab for physics, Golden Mountain Graphic King for fine arts, and other applications. Specific training sessions were held to help teachers develop a basic knowledge in designing and utilizing multimedia material in the classroom. To ensure that every teacher obtained the necessary computer skills, they were divided into a number of small groups in which the more advanced teachers would act as tutors. The groups would also solve various problems that others had encountered. Part of this process was aided by the fact that during the initial stages of the implementation of DEPRS the principle of sharing teaching material was heavily promoted in the belief that it would help reduce workloads. Capable teachers who had strong ICT skills were encouraged to play a key role in course development by helping to design multimedia classes in certain subject areas and by drafting courses that were peer reviewed. The final product was remarkable due to the extensive collaboration and sharing that occurred. School administrations have vowed to continue this sharing process until most teachers have become proficient in utilizing multimedia tools in the classroom (Peng, 2007, pp.14-16, 22-23).

A survey conducted by Peng Su, a graduate student majoring in Education Management at Dangzhai Middle School, indicated positive attitudes towards the new technology. The survey covered six categories, ranging from overall knowledge, online resources, and teacher training and course development to professional development and community service. The majority of respondents supported the program, and 95% of the teachers surveyed believe that the project is necessary. The majority of teachers and students indicated that rich learning resources were available at the school and that they were able to conveniently access those resources. A database storing distance leaning resources has been set up at the school under the care of a professional manager. Regulations on downloading, saving, and borrowing resources have been introduced to insure that teachers and students have easy access to resources.

Many teachers, however, still have only basic ICT computer skills (Word and PowerPoint). Although they were able to research, download, categorize, save, and display online sources relevant to their teaching, 38.2% of teachers lacked the ability to operate sophisticated software such as Authorware or Photoshop or to produce a workable multimedia course. Despite this, most teachers have improved their classroom performance through the use of enriched learning resources and they have begun to promote students' self-learning, active inquiry, and collaborative research. Some, though, lack the motive and the incentive to learn new educational theories and pedagogic innovations because mastering the newer approaches requires strong critical analytical skills and a substantial investment of time for results that will appear only gradually over time (Peng, 2007, pp. 32-33).

In comparison to the three other DEPRS model schools, where the expensive equipment has often become obsolete, Dangzhai has made remarkable progress in applying Internet-facilitated distance learning techniques to the classroom. Admitting that the key to educational reform is the teachers, school authorities issued policies, provided training sessions, and initiated strategies to encourage cooperation and sharing of teaching materials. Thus, the school has successfully promoted the development of computer technology amongst its teachers to the point where 96% of the Dangzhai teaching staff obtained a certificate of computer literacy from Zhangye Prefecture. The policy of sharing teaching materials has reduced the time spent on class preparation and hence the workload to the point where all teachers are now eager to employ multimedia materials in their classroom instruction. Furthermore, about 65% of teachers have the ability to use the distance learning technology to design and produce multimedia classes. In the spring of 2006, five Dangzhai school teachers attended a teaching contest hosted by Zhangye City, and all five teachers won an award. The news earned Dangzhai national fame and inspired other rural schools (Peng, 2007, pp. 38, 41). In July of the same year, National Counsellor Cheng Zhili and Minister of Education Zhou Ji inspected Dangzhai Middle School (Peng, 2007, p.4).

Challenges and Tentative Solutions

The DEPRS project faces many problems and challenges, some of which are described below. As well, tentative solutions are offered.

Shortage of Funding

Now that DEPRS is moving into the full implementation stage, funding will become a critical factor. The 12 billion RMB Yuan allocated for infrastructure accounted for less than 1/3 of the total cost of the project, and as international experiences demonstrate, more funds will be needed in order to insure that DEPRS remains sustainable. The central government, however, has stated that it will not accept responsibility for any more costs, so various levels of local government must explore and establish an effective mechanism to guarantee that the project operates properly. One further complication is that the governments are not allowed to levy additional taxes on peasants (Ding, 2005).

Of the rural schools that have the three delivery models installed, 84% are located in the economically underdeveloped west. If local governments are forced to shoulder the financial burden single-handedly, a fairly large number of the western counties will be unable to cover personnel, equipment maintenance, teaching materials, and operation costs. The thirteen provinces investigation indicates that in some schools, models two and three are not in use owing to high maintenance, Internet connection, and electricity costs. As well, many schools lament that they cannot pay for course materials and training sessions (Yang & W. Jia, 2007, pp.48-49).

Facing the funding shortage, Chinese distance educators argue that the central government should share the cost for the implementation stage together with the local authorities. They contend that because DEPRS is designed to promote compulsory education, it is different from the corporate-oriented, profit-driven distance education programs that prevail in urban centers. Compensation for DEPRS should reflect the mandate to promote compulsory education. The state, after all, is the biggest beneficiary of the project, though businesses, social organizations, and individuals benefited from it as well. All parties, therefore, should share the cost (Yang & Sun, 2007, 57; Ding, 2005). Finally, a number of suggestions have been made to increase the cost effectiveness of DEPRS, such as launching inter-provincial collaborative partnerships on the development of course materials and offering in-school training sessions to reduce teachers' travel costs (Yang, Sun & Ding, 2007, 97).

Insufficient Learning Materials

At this stage, the distance learning materials primarily consist of video recordings and TV programs of exemplary lectures delivered by experienced teachers, learning activities taking place in urban schools, and sample examination questions. These tools are invaluable considering the dearth of instructional materials and teachers in rural areas, but they may not be completely suited to the needs of village students, especially those of minority ethnic groups. Living conditions and lifestyles in urban and rural China are drastically different; minority groups have their own history, literature, culture, music and customs. An investigation conducted in fifteen schools scattered across three counties of Shaanxi Province revealed that 79% of teachers interviewed did not like the "canned" course materials they had to use. Instead they preferred flexible teaching resources that could be utilized in their teaching plans with minor revisions (Liu & Zhang, 2008, p. 8; Yu & Wang, 2006, pp.277, 280; F. Li, 2007, p.3). In Tibetan Autonomous Region, most materials used for the Tibetan language course in middle schools have been translated from the

national textbook, which is comprised of literary works by well-known Han writers. The oft-quoted and widely circulated Tibetan novels, lyric, rhymed verses, and love songs are barely mentioned (Liu, 2006, p.79).

Chinese scholars argue that the key for developing appropriate course materials for DEPRS lies in changes to the way courses are produced. Course content should be drawn from the experience and setting of the countryside, and experts and teachers from rural regions should be involved in designing courses. "The 'top down' approach must give way to a 'grassroots' approach in which people in the rural areas are active participants rather than passive receivers of materials that were conceived for learners in other populations and contexts." (Yu & Wang, 2006, pp. 280-281; F. Li, 2007, p.3)

Conclusion

DEPRS, the distance learning project designed to transfer high quality education resources from urban centers to remote rural regions, was employed during the reform years as a crucial measure to counteract the rapidly growing class and regional disparity in basic education.

Although a full evaluation of the project is not yet available, partial but persuasive evidence points to several tentative conclusions about the effectiveness of DEPRS at the early stages of its implementation. First, this paper has argued that the project has had a visible impact on raising the quality of rural education by enriching learning resources and alleviating teacher shortages. Courses that were not offered in the past are now available to village children, something that is clearly demonstrated by the Hubei English Teaching Case. About 83% of rural school teachers in the western provinces have attended training programs. Almost all of them have agreed that "the training is very helpful or somewhat helpful to them" (Yang & Han, 2007, p.20). Students have become more interested in learning and their intellectual horizon has been widened thanks to a variety of learning resources conveyed to them through the three delivery models.

Second, the results of the two surveys conducted in Gansu province and in the thirteen provinces demonstrate that when DEPRS has been used in conjunction with other programs it has been more effective in less prosperous regions, such as Gansu. Third, the two surveys also show that the impact of DEPRS remains superficial, and, except for a minority of rural schools, it has not substantially changed pedagogical approaches. It will take a longer period of time and further efforts for the project to produce the desired results. Moreover, the DEPRS delivery technology may have some inherent limitations. Model one and model two are the most extensively used distance learning tools. As one-way learning tools, they are less likely to stimulate vigorous interaction between teachers and students in comparison with the ICT-facilitated distance education technology.

In conclusion, Chinese distance educators and teachers largely support Shalni Gulati's observation, preferring the first and second DEPRS models as the most suitable distance learning technology in poor and remote western rural regions owing to their low cost and ease of operation (Ma & Liang, 2008, p.9; Yang & C. Jia, 2007, p.58; Zhang & Shi, 2008, p.78; F. Li, 2007, p.3;

Xie, 2007, p.50; Lee & Wang, 2005, p.259). The more expensive third DEPRS model, with its sophisticated technology, is more likely to be neglected by teachers in underdeveloped rural areas. To increase the effectiveness and efficiency of the third model, the rural schools need to initiate innovative policies and invent viable strategies to encourage cooperation, mutual accommodation, and the sharing of teaching materials, as the experience of Dangzhai Middle School indicates.

The findings of this paper, together with the example of successful experiences in India and Mexico, have shown that in populous developing countries, low cost and conventional learning technologies continue to play a crucial role in distance education programs aimed at learners from socially and economically disadvantaged groups who have limited access to the Internet. Furthermore, when Internet-facilitated learning technology is introduced to rural areas in developing countries, authorities must formulate appropriate policies and offer financial subsidies to ensure the full application of the new technology. If not, the costly infrastructure may become obsolete in remote and poverty-stricken regions and the digital divide between the haves and the have-nots will grow. This is not to say that developing countries like China should concentrate on conventional learning tools. In order to be successful, rural education in China will have to rely on new technologies. However, as Shalni Gulati argues, the governments of developing countries need to respond to the serious challenges involved in implementing advanced ICT learning tools, and they must increase investment in underdeveloped regions as well as issue policies to enhance the cost effectiveness of such education technologies.

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Endnotes

[i] According to the China Internet Information Center, the number of Internet users in China reached 137 million in 2007. However, the Centre did not provide a breakdown of the percentage of rural users. See J. Baggaley & T. Belawati, (Eds.) (2007) *Distance Education in Asia: I. Past and Present* (Lahore: VUP) p. 45.

[ii] Between 1997 and 2005, several educational projects were carried on in China's underdeveloped areas, including the Project for Thousand Schools of Modern Educational Technology Experiment, Internet Development for Schools, Modern Distance Education Project for Western Primary and Secondary Schools, Internet Classroom and Information Station for Western Primary and Secondary Schools, National Teachers' Education Internet Program, Preparing for Tomorrow's Female Teachers, China-Europe Joint Program for Developing Basic Education in Gansu Province, China-Europe 403 Distance Education Program, Multi-Media Teaching Materials for Teachers' ICT Training, Program for Strengthening the Basic Education in Western China, Program for Study with Mutual Help (Yang & Yuan, 2006, 24; Zhao, H. 2005, pp. 2-11).

[iii] The investment ratio between the central government and local governments varies according to the uneven development of different regions. In the rapidly developing east China, local governments take full responsibility for the cost; in Central China, local governments are responsible for two-thirds of the capital investment, while central government contributes one-third of the total cost. In the west, two-thirds of the capital outlay is provided by the central government, and the local governments only take care of the remaining one-third of the total cost (Liu & Sun, 2006), p. 39.

[iv] For the programs implemented in Gansu Province, see Note 2.

[v] The tuition of a number of college students of rural background in China are paid by their home county on the condition of their returning to the countryside after graduation.

[vi] By the end of 2005, when DEPRS would have been completed in Hubei, the first delivery model was to have been installed in 3,937 elemental schools (grade one to three), and the second delivery model was to have been implemented in 12,147 intermediate schools (grade one to six). In 2004 the Education Channel of Hubei TV began to broadcast, providing learning resources for rural schools simultaneously with the Central Television Station (Fang & Shao, 2007), p. 35.

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Book Review – Web-Based Learning through Educational Informatics: Information Science meets Educational Computing

Author: Nigel Ford (2008). *Web-Based Learning through Educational Informatics: Information Science meets Educational Computing*, Hershey: PA IGI Global. (389 pages) ISBN 978-1-59904-741-6

Reviewer: Griff Richards, Technology Enhanced Learning Research Institute, Athabasca University, Alberta, Canada

Pask to the Future

In 1979, I helped welcome the British cyberneticist, Gordon Pask, to Montréal. He stood out from the crowd, sporting a powder blue riding jacket, derby, and the mandatory English brolly. Over lunch, he animatedly expounded on his ideas of educational cybernetics, knocking the wine onto the table and his p-soup into his lap. After clearing the collateral damage, we carried on to the Concordia University TV studio to record his presentation on conversation theory. Whether due to the audience, the lights, or the lunch, the talk quickly disintegrated into a disjointed ramble and was never edited into a final program. Gordon stayed in Montréal for a few years, building prototypes of conversationally linked documents and sharing his philosophy of serialist versus holist learning styles in well-lubricated graduate seminars. Unfortunately, his ability to express his ideas was severely limited by the technology of the day, his confusing notational system, and the spirits of Montréal. So few comprehensive works emerged that Nigel Ford's book might well be valued as the best beginners' guide to Pask's ideas.

Web-Based Learning through Educational Informatics is an eclectic run at making sense of the research activity in applying information science in the educational domain. The primary educational contexts explored are intelligent tutoring systems and the management of educational content. As a librarian, Professor Ford also examines elements of search and retrieval of information across multiple systems that were never designed to work together. Much of the book is devoted to brief overviews of systems that propose to present the right content in the right way at the right time.

The first part of the book starts with an overview of learning theory, machine learning, and neural networks (but sparing us the math) and is followed up with a discussion of Pask's conversational entities and the way connections form between ideas to create new knowledge. Along the way

there is fleeting mention of several other learning theorists, but they are not sufficiently detailed to have anyone but Pask listed in the index. At one point the text is a bit confusing; for example, metacognitive learning is attributed as originating with Anderson and Krathwohl (2001) on one page then to another researcher with an earlier date on another page. However, this is inconsequential if the main goal of the reader is to learn about Pask.

The next section, comprised of chapter 4, Library and Information Science, and chapters 5 and 6, ICT Developments, diverts to a discussion of informatics: library indexing systems, metadata and semantic tags, and resource discovery. Here, Professor Ford makes a good effort to render comprehensible the logic underlying metadata, the evolution of intelligent tutoring systems, and the mechanisms of the semantic web.

The third logical section, Educational Informatics, is covered in chapters 7 and 8. It provides an overview of current research in educational informatics, which is the use of computing systems for instruction. Here, Ford follows the last 10 years of research in individual and social approaches to learning object interoperability, ontologies, and the many layers of ideas to bring the right information in the right form to the learner at the right time. I cannot think of any other source that would bring so many of these ideas together.

In the concluding section, chapter 9, Real World Learning, and chapter 10, Going Forward, Ford describes the difficulties of actually implementing these systems and proposes a road map of emerging research issues. Ford acknowledges that one of the difficulties in implementation is simply that the computer scientists are not versed in a critical understanding of the educational theory (and vice versa). I would tend to agree with him on this point particularly when it comes to deciding what "types" of factors should be chosen for personalization. When Pask was talking about serial and holist learners, learning styles were very popular, enough that Entwistle (1988) observed that there seemed to be as many dimensions of learning styles as there were researchers studying them. Sometimes, promising common sense paradigms for understanding the world just don't have the construct validity nor the statistical reliability to be retained over time. While most educators moved on from learning styles because diagnoses made about soft preferences were not reliable indicators of the hardwiring (Cromley, 2000, p. 197), many computer scientists continue to refine their measures of cognitive styles and to search inductively for ways to optimize best-fit matches between latent aptitude and media treatment. Meanwhile, the educators were looking for ways to make the learners smarter, either collectively through collaborative learning or individually through enhanced metacognitive strategies. Thus, educators are growing more interested in the emerging research around social networking and the potential intelligence that can be data-mined out of the patterns of learners interacting with online resources, intelligent agents, and each other. I think Ford captures the essence of these trends and emerging issues quite well.

I once asked my daughter why she never asked me for help with her homework. "I don't want to know that much," she replied, "I just want to understand." Thus is the frustration of every expert become teacher – you can't pass along all your detailed knowledge. In this regard, I think Professor Ford has done a good job of trying to cover the basics of a wide range of computer

approaches to managing information in an educational context. For the educator unfamiliar with informatics, there is possibly too much detail and not enough conceptual explanation. For the computer scientist, there is probably insufficient detail to move to implementation. But for a graduate student encountering informatics in library science or educational technology, the porridge is just right.

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Griff Richards confesses to being a holist in the morning but a serialist as the day progresses.

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A Programmatic Approach to Planning, Design, Instruction, Evaluation, and Accreditation

Authors: Alfred Rovai, Michael Ponton, & Jason Baker (2008). *Distance Learning in Higher Education: A Programmatic Approach to Planning, Design, Instruction, Evaluation, and Accreditation*. Teachers College Press: New York. ISBN 978-0-8077-4878-7

Reviewer: Terry Anderson, IRRODL

I was quite delighted to bump into the 2008 text *Distance Learning in Higher Education* by well-known distance educators Alfred Rovai, Michael Ponton, and Jason Baker. The book is quite aptly subtitled *A Programmatic Approach to Planning, Design, Instruction, Evaluation, and Accreditation*. The book could have as easily been subtitled a **practical** approach because it speaks directly to those in the trenches of online learning, development, and delivery. Since the publication of Moore and Kearsley's two editions of *Distance Education: A Systems View*, I've thought that we needed a new and up-to-date introductory text that can serve both as a textbook for undergraduate and graduate courses on distance education as well as a practical guide to developing and teaching online. This book fits both needs very well.

I especially like the approach that moves from the big theoretical ideas, such as access, adult education, constructivism, presence, community, to the practical applications, i.e., how and why to assess students, evaluate programs, and achieve program accreditation. The book also does a commendable job of reflecting and interpreting results from the growing body of DE research literature. OK, I did check to make sure they covered some of my own work!! The authors provide an encyclopedic view that nicely focuses the major issues that have challenged and enticed distance education researchers for at least the past two decades.

I must confess to being surprised that the whole second chapter is devoted to gender issues – this from a text authored by three men – but they are no doubt very sensitive new age guys! The chapter overviews much of the research documenting the differences of approach, style, attitude to machines, and other variables found to differentiate males and females, but some of the data seems dated. For example, are the reports that spamming and bullying are a male prerogative still accurate? I would suspect that amongst today's Facebook and Myspace users, gender differences are becoming less stereotypical as both sexes gain mastery and learn to appropriate the technology to their social needs.

Given the predominate role of online discussion in much online higher education, I was pleased to see an extensive coverage of online discussions, from an overview of discussion development

models to the means to stimulate and moderate discussions. This chapter, like the others, is full of helpful hints, most derived from the research literature. For instance, the authors quote studies showing an increase in participation when online discussions are assessed by the teacher, but only for 10 to 20% of the course grade. Increasing this weighting does not result in a higher quality or quantity of postings.

There are however a few things that I don't like about this book. The first is the Americanization of the ideas and context, especially where legal or accreditation issues are involved. Distance learning is now, and always has been, an international phenomenon, so why do American authors write as if American copyright law and American systems of accreditation are both universal and understood (or even of particular interest) to everyone? It may be that the authors are writing only to an American audience; if so, this is a shame as they have much of value to impart to all of us. De-Americanizing and internationalizing the examples and discussion would add a useful global perspective to the text.

As well, I would love to see a chapter on the scholarship of teaching, action research, and design-based research. Although some of the chapter on course and program evaluation meets these needs, I think we must stimulate and develop a culture of practitioner research. Our field is growing in numbers, variety, and strategic importance, but this is growth that is not matched by the number of professional researchers who are focused on extracting and developing knowledge from our practice. I hope future editions of the book will encourage and assist distance education teachers, administrators, and academics to engage more productively in research of their practice.

In summary this $49.00 (US$ of course!) book will be a fine addition to the bookcase of any student or practitioner in the ever-developing world of distance and online education.

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