

# DISADVANTAGING THE DISADVANTAGED?

## A DIALOGUE

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### Abstract

*Student diversity at institutions with large international and equity student populations presents a challenge to traditional educational practices. Teaching with CIT magnifies the educational problems faced by such students. Solutions require us to think holistically about student needs, learning styles and the educational opportunities we put online. The effective use of networked computing in education requires institutions to think of the electronic classroom in the context of the institution as a whole with student support services taking their place as part of the flexible learning environment.*

### Keywords

Access, CIT, equity, student diversity, flexible delivery, learning styles, disabilities, ESL

### Introductory

A recent Boolean search on AltaVista for web pages with the terms *access*, *online education*, and *equity* resulted in 789 hits. Adding the term *disadvantaged* reduces the number to 27 hits. In these results we see a problem: discussions of access and equity rarely include the needs of students who learn differently. Granted, access and equity are important issues in themselves. However, the way in which this discussion is framed often reveals a bias. The educators often assume that learning online is a uniform, homogeneous act, performed by idealized students, who have ready access to the technology, savvy enough to cope with its glut of information, and similar or identical learning styles. “Virtuality” may be a mirror of reality, but learning online is often a distorted or magnifying microcosm of the issues educators face in the traditional classroom

This paper began, and remains, as a dialogue between its authors on the subject of equity and access to online education. One author, at The Learning Centre at the University of Western Sydney, Nepean, directs programs that address the challenges of student diversity and equity daily. Experience shows that teaching with CIT (Communications and Information Technology) can magnify the educational problems faced by international and equity students. The second author, a teacher who has developed and delivered online English language and composition instruction since 1993, who now works as a coordinator of staff development for

distance education at College of DuPage, has experienced first-hand the problems faced by international and equity students and begun to address them in concretely.

We find that too often discussions of equity ignore a fundamental problem faced by all educators: how does the teacher respond to the needs of a diverse student body? For example, the defining statement:

<<http://www.aln.org/alnweb/aln.htm>> by one of the foremost professional organizations in the field of flexible learning delivered at a distance — the Asynchronous Learning Network <<http://www.aln.org/>> — never once mentions *diversity* or *equity*. And that's a shame.

## **1. Teaching and learning online — a dialogue begins**

*Subject: ascilite 99*

*Date: Wed, 21 Jul 1999 12:05:53 +1000*  
*From: sandra gollin <s.gollin@uws.edu.au>*  
*To: kies@wi.net*

Dear Daniel,

Your visits to UWS Nepean in 1998 and 1999, and the discussions that arose out of the seminars you gave, have provoked a whole round of new questions for me and my staff in The Learning Centre. As you know, our role is to support all students on campus in their learning, broadly speaking in the areas of language, literacy and mathematics/numeracy. Now, with the push to deliver courses and information more flexibly via CIT, whilst cutting costs, we are having to add computer literacies support to our bag of goodies.

I was inspired by the interactive writing courses you have set up in the College of DuPage, and at the same time daunted by the prospect of running similar kinds of courses from our own support unit, given that our clientele is largely made up of students who are often financially and educationally disadvantaged, of language backgrounds other than English or from minority groups. Are we further disadvantaging the disadvantaged?

I was wondering if we could begin a dialogue about these and other issues in the hope that we could learn from each other. I know you have an idea of the learning environment at our campuses from your visits, but please look at our website <[http://www.nepean.uws.edu.au/sserv/learn\\_cent/](http://www.nepean.uws.edu.au/sserv/learn_cent/)> if you need further information.

Hoping for an interesting and practical dialogue.

Sandra.

*Subject: Thinking of access in all the old ways*

*Date: Sat, 24 Jul 1999 02:58:48 -0500*  
*From: Daniel Kies <Kies@wi.net>*  
*To: sandra gollin <s.gollin@uws.edu.au>*

Thank you for the opportunity to continue this conversation. I have been thinking a lot lately about not only with you and your staff at The Learning Centre, but also with academic staff in the schools in UWS, Nepean.

In some ways, our student populations are similar. Many students at DuPage have few financial resources, and they find the institution a valuable place to begin their tertiary education at reasonable tuition. Furthermore, since DuPage has an open door admissions policy, it is one of the few institutions of higher education at which students with an educational disadvantage would even have a chance to further their education. Finally, our foreign student population is growing steadily. The 1998 demographic report <<http://www.cod.edu/dept/plan/Student/1998/student.htm>> listed our non-native English speaking student population at approximately 20% of the total. That population is growing, and has been growing at exactly the same time I have been trying to create flexible, online writing course to be delivered at a distance. (In our system, first year students must take a compulsory year of composition instruction as part of their general education requirements.)

How do these figures compare with yours?

***Subject: Our equity profiles***

*Date: Mon, 26 Jul 1999 11:00:54 +1000*  
*From: Sandra Gollin <s.gollin@nepean.uws.edu.au>*  
*To: Kies@wi.net*

Your comments make a lot of sense to me and resonate strongly with our situation at Nepean. Although UWS has a similar range of student backgrounds as other Australian universities, it is unusual in that it services a geographic region which has historically been socio-economically disadvantaged. Our commitment to the community of Western Sydney means that like DuPage, we must open our doors as widely as possible to those who have had educational disadvantage. The Australian Department of Employment, Education, Training and Youth Affairs. equity categories are Low Socioeconomic Status – LSES (determined by postcode of place of residence), Students with disabilities, Rural and Isolated, Women in non-traditional areas, Aboriginal and Torres Strait Islanders – ATSI, Non-English Speaking Background – NESB (also called LBOTE).

Here are some relevant statistics from the 1998 Student Intake Survey  
<http://www.nepean.uws.edu.au/dimps/surveys/intake/1998/summary1.rtf>

In 1998 there were 13,238 enrolments. The number of Australian students living in Greater Western Sydney (GWS) at the time of application to study at the University was 69.1% compared with 19.3% living in the rest of Sydney. The highest proportions of students living in GWS came from Blacktown, Penrith and Baulkham Hills.

60.1% of respondents indicated that they were combining their studies with employment. 69.5% of these received time off to attend classes. Of financially independent students, 24.9% had incomes less than \$6000.

In 1998 858 students (7.2%) reported having a disability- the largest identified category of disability is 'hearing impairments' (6.5%), followed by 'chronic medical conditions' (6.3%), 'visual impairments' (4.9%), 'learning disability' (4.2%) 'psychiatric condition' (3.6). There has been continued growth in the proportion of students citing a disability, in 1996 the figure was only 3.4%

Only 61.2% of students are Australian born. Of those born overseas 24.8% have lived in Australia 4 years or less. English is the main language spoken at home for only 58.4% of students (just over half).

0.8% stated that they are Aboriginal or Islander descent. A proportion of these are also of LBOTE.

From these statistics you can see we have substantial equity and access issues in the university in almost all DETYA categories. In our area we are particularly concerned with ESL, and I'll talk about that later. But first, I'd be interested to know how you have approached yours.

***Subject: Responding to access issues***

*Date: Mon, 26 Jul 1999 22:58:48 -0500*

*From: Daniel Kies <Kies@wi.net>*

*To: sandra gollin <s.gollin@uws.edu.au>*

These growing equity populations have had an impact on how I prepared my materials for the online classes I teach. For example, I didn't want to assume that my online students owned their own computers. In the beginning of my teaching online in the early 90s, the majority of my students did not have internet access. Most did not even own a computer. Instead, students would use computer labs or computers at their places of employment during lunch or after work. Consequently I designed my courses so that students could use web-based email or form pages that function to send email since I knew that they probably didn't have access to private accounts on any one machine.

Access was another concern — an ethical concern. I realized that I was in a real way "privileging the privileged." Only those who had money or access to the network would be able to learn from all the information that is available online.

But as I learned from my students themselves, they needed opportunities to learn online just as much as others. First, they realized that CIT was literally transforming their working environments. They realized that CIT was a "learning machine," and they wanted to use it too. Second, because many of my students are working adults, flexibly delivered instruction is often the only way they can continue their educations. Third, they were finding strategies to cope with the fact that they did not have computers themselves. They found steady access at work, at a public library, in the school's computer labs at times convenient to their schedules, or through a friend

This last point though is critical: when I did a study looking for statistically significant correlations between student outcomes in my online classes and several student

variables, one factor emerged as the strongest predictor of student success — time on the network. The more time a student spent on the network, the greater the chances of that student finishing the course with a high mark. Fortunately for my students, they did have regular, open access to well equipped computer labs. But this correlation is a warning too — a warning to students who wish to take classes online without having easy access to the network and a warning to institutions who wish to put classes online without supporting the necessary infrastructure, such as building enough capacity on the network and providing adequate computing facilities for students

There is another access issue I was concerned about: the technology itself is in flux, and I could not trust that each student would have the latest software or enough computer savvy to download and install special packages or programs. So I designed my online courses to function in any browser, with any operating system, with any software. That made life harder for me: I had to limit the kinds of things I could do with an online course, which meant websites that relied heavily on the most efficient medium to transfer a large amount of information in small files — text. But that has had the real benefit of making the materials accessible in this second sense.

However, it was only through working with you that I realized that the access issue had yet another dimension, that there was yet another ethical issue facing us as educators. You asked "Could it be that once again we are privileging the privileged and disadvantaging the disadvantaged?" Online instruction as we know it now does seem to privilege one language over all others. And online instruction does seem to favor students with a particular learning style: the independent, self-motivated learner with excellent reading skills. Perhaps I am still framing the whole question poorly.

## **2. The problems (re)considered**

*Subject: (Re)defining access*

*Date: Tues, 27 Jul 1999 13:11:54 +1000*

*From: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

*To: Kies@wi.net*

I would not say that all LBOTE students are necessarily educationally disadvantaged — and computer or technology shy — quite the contrary in many cases, but the point you make about learning styles is very pertinent to LBOTE students, and I would like to explore that in more detail a little later in our discussion.

But first I would like to talk about students in our enabling program, Unistart. Over 100 students are in the program precisely because they have suffered educational disadvantage. Although frequently highly motivated, many are lacking in confidence and definitely not autonomous in their approach to learning. (McInnes and Hobson, 1998). A core component of basic computing skills has been developed to equip students for the demands of online courses. However some of the students, especially mature aged women, still need additional support in this area once enrolled in their degree courses.

We have introduced a series of computing skills workshops to the general Learning Centre student support program, and to the Womens' First Step program at orientation. We have also set up classes targeting equity groups in semester. The evaluations for all are highly positive, but this is still a far cry from addressing all needs.

What information do you have on student learning styles and CIT?

*Subject: Learning styles, disabilities and CIT*

*Date: Sun, 01 Aug 1999 03:40:57 -0500*

*From: Daniel Kies <Kies@wi.net>*

*To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

Both of our institutions are alike in the each has made a commitment to providing educational opportunities for economically and educationally disadvantaged students. And you are right to point out that the disadvantaged are not shy about technology either. In fact, either through the culture itself, or through work, or through earlier educational experiences, many of the disadvantaged students at DuPage see technology as giving them an edge that draws them closer to the mainstream. For example, many of the sight impaired and the physically disabled students at DuPage are taught to use text-reading programs, programs that convert text to audible speech on a multi-media computer.

Such programs "read" the text on screen in a word processor, a web browser, or an email program and convert it to synthesized speech that the user can listen to on a headset or through speakers attached to the computer. These programs have been a real boon to the blind and the disabled communities, since both groups now can access information, search library databases, and correspond with experts around the world and their classmates at home.

Furthermore, though the numbers here are very small, some of the sight impaired and physically disabled students are using speech recognition software to help them interact with the computer via the voice rather than the keyboard. The numbers are small (less than 10 so far actually) since the computers that can run speech recognition software are higher end units and DuPage has fewer of them available to any student. Secondly, the time investment that speech recognition software demands is very high. In order for the programs to "learn" to recognize a voice accurately, the student must be highly motivated and patient.

The hearing impaired too have gravitated to online education. Given the text-based nature of online instruction, the hearing impaired at DuPage find that they feel part of a learning community for the first time when they enroll in an online class. This is an ironic reversal of the usual impression that people have of online education, viewing distance education generally and online course work specifically as more isolating than the experience of a "real" classroom.

Yet it makes sense when we listen to their impressions of their own educational experiences: at DuPage, the hearing impaired student in a traditional classroom is assigned an interpreter who sits at the front of the room. At the front, the hearing impaired student can more easily see both the interpreter and the blackboard. And this system works well for many hearing impaired students. However, the hearing impaired report two impressions about this system that speak to their interest in and preference for online course work. First, the translator is a filter: all information from the instructor must go through the interpreter to the student. The student knows that this filter means some information is lost. Secondly, there is an interpersonal

dimension that is lost as well — sadly, the hearing impaired student's classmates are more likely to know the name of the translator than their classmate's name!

Together, then, both issues point to the reasons why hearing impaired learners demand online courses: sometimes, for the first time in their educational experiences, they feel that they are in direct contact with their instructors and classmates, via text on the instructor's website, asynchronous messaging systems, and synchronous (text-based) "chats." There is no filtering of information. And finally they feel that they are "real" people to their online classmates. An ironic reversal indeed.

But these advantages to certain disadvantaged students does not speak to the question you raised about another, equally important, difference in the serving the educational needs of students based on learning styles. I know of little direct research on this subject (though a colleague — Earl Reed — is starting his dissertation research right now into this issue). This is an important issue. In fact, it is an issue that might actually hold the key to whether online pedagogy really plays a major role in education or if it becomes just another educational fad — just more TV. As I see it, the challenge goes like this: either online pedagogy must be flexible enough to serve the needs of students with diverse learning styles, or flexible learning will suffer rigor mortis.

The danger (and the concern) is that online education favors a select group of learners and disadvantages the (educationally) disadvantaged learners. Frankly, I find the attitudes at DuPage to be rather conflicted on this issue. On the one hand, we have the open door policy and the desire to create online educational opportunities to serve the needs of distance learners. On the other hand, if you read these pages — pages intended to support the distance learner — I think you will see some hidden underlying assumptions that favor access for some learners and disadvantage others:

Succeeding in Internet Courses <<http://www.cod.edu/Online/succeed.htm>> includes a self-assessment survey entitled "Are distance learning courses for Me?" <[http://www.cod.edu/dept/CIL/CIL\\_Surv.htm](http://www.cod.edu/dept/CIL/CIL_Surv.htm)>. There is a short page on "Computer and Internet Experience" <<http://www.cod.edu/Online/exper.htm>> to provide a sense of what computer skills are necessary for distance learning via the web.

The page "Student Support Services for Distance Learning Students" <<http://www.cod.edu/dept/CIL/distance/index.htm>> essentially is an introduction to the sort of help that is available from one counselor at the college, Ron Schiesz, a counselor who has been very supportive of distance education. The links on that page include

1. "Getting Started" <<http://www.cod.edu/dept/CIL/distance/getting.htm>>,
2. "Courses and Programs of Study" <<http://www.cod.edu/dept/CIL/distance/course1.htm>>,
3. "Non-Traditional Course Delivery Formats and Options" <<http://www.cod.edu/dept/CIL/distance/nontrad.htm>>,
4. "Student and Academic Support Services" <<http://www.cod.edu/dept/CIL/distance/student.htm>>,

DuPage has worked very hard to develop student support services for both the traditional student's convenience and for the distance learners. Yet there is a bias, I believe, in favor of one kind of learner, a learner who can read and write well, a learner with access and the requisite hardware.

Now, it may seem at this point that I am rather hostile or cynical about the ability of online education as we know it today to serve the needs of students with learning

disabilities or reading difficulties, for example. I was skeptical at least. But then, my own students taught me differently.

I had assumed that since my own online courses were primarily "plain text" (which seems to me perfectly logical for a reading and writing teacher!), I was favoring students who were proficient readers (and writers) from the outset. But then a comment from a former student noted that for him, a student with limited reading comprehension due to Attention Deficit Disorder, an online course was much more valuable since he could review materials as often as he wished without feeling as if he were holding back the rest of the class and without feeling that he might be bothering the instructors by asking to hear the same points over and over again.

So I started to track the matriculation rates of students who began the composition sequence after completing the developmental education curriculum in reading and writing at DuPage. To my surprise, I discovered that students who had been identified as needing developmental work had much better matriculation rates through the composition sequence (last year, 23/37 [77%] of the developmental students completed the sequence of courses while 259/387 [66.9%] of the non-developmental students matriculated).

I wonder what you make of these figures. Admittedly, these are small numbers. Have you anything to corroborate or counter what I find here?

***Subject: Moving back to the issues of learning styles and LBOTE***

*Date: Wed, 04 Aug 1999 17:14:45 +1000*

*From: sandra gollin <s.gollin@uws.edu.au>*

*To: Daniel Kies <Kies@wi.net>*

Your comments open up a rich set of topics. I had interesting discussions with both Kerri Heavens, the Special Projects and Disabilities officer in Student Affairs, and Anna Mungovan, who has co-written a resource to assist students with learning disabilities in tertiary education (Mungovan, Allan and England 1999) <[http://www.utas.edu.au/docs/student\\_services/alda/options](http://www.utas.edu.au/docs/student_services/alda/options)>.

It contains a summary of recent assistive technologies such as the voice recognition software Dragon Naturally Speaking and TextHelp- which is said to be useful for not only learning disabled but also ESL students

Getting back to students of language backgrounds other than English, A recent UTS report (Cameron 1998:56) finds LBOTE students are the group most likely to rely on the university computer facilities. But this does not mean that as a group they are more computer-savvy — it just reflects the reality that they do not have facilities at home. International students in particular, do not tend to buy computing equipment for home use in Australia; they have to compete with local students for crowded lab spaces. These students were often daunted by asking for technical help via a telephone help desk. They preferred face to face or printed instructions.

Nevertheless, Shirley Alexander and Simon Housego suggest (Cameron 1998:41) that students most likely to benefit from programs like Top Class include LBOTE, those with mobility problems, part-time students who cannot attend classes in normal business hours and mature aged students who do not have time to attend lectures. BUT- the disadvantaged include students who cannot afford hardware and ISP costs, and inarticulate students — those who may be very verbal in class but who are quiet

in text-based communication. Alexander and Housego consider the expertise of the online tutor to be the main factor in getting these to students communicate effectively.

Barlow (1998) cites NESB (LBOTE) students as key beneficiaries of resource-based learning and asynchronous learning methods. He suggests these students, especially those with lower spoken English skills, can understand and communicate better in asynchronous text-based format. However, this may not be true for all LBOTE students. Farrell and Armstrong (1998) cite numerous studies pointing to the need to take into account the social aspects of learning processes which may be downplayed in technologically based educational contexts.

Spoken interaction face to face provides many cues to comprehension. (eg. facial expression, postural and gestural) With asynchronous learning, miscues and misunderstandings may go unnoticed until well into the interaction. Where there is a time delay, these may not be picked up for days or weeks. By then the mistakes may have compounded. Face to face interaction allows for easy recognition of confusion in one or other party and immediate checking of comprehension.

Cameron (1998:57) reports that some LBOTE students preferred the lecture format and rote approaches to learning because that was what they were used to in high school in their country. But others preferred small group interaction. Both however, appear to indicate preference for a face-to-face environment.

Whilst it is a gross exaggeration to say that LBOTE students are passive, and prefer rote learning, cultural preferences do tend to overlie innate behaviours. However this is a complex area and Willing (1993:47) warns against pre-judging learning preferences on the basis of culture or ethnic group. Students, any students, LBOTE or otherwise, who are used to being given oral instruction and immediate feedback may find the need to rely on their own motivation daunting

### **3. Toward solutions**

*Subject: Advances in learning theory*

*Date: Fri, 06 Aug 1999 19:44:07 -0500*

*From: Daniel Kies <Kies@wi.net>*

*To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

This fits in with what we have known for some time now — that individuals learn and process information differently (Dunn et al., 1985; Claxton and Murrell, 1987; Riding, 1991). And slowly, this knowledge is having an increasingly good effect on materials development and curriculum design. That's the good news. The bad news is that computer-based learning has often not taken advantage of advances in learning theory and instead forces all learners into the same "box" (Hedberg et al., 1993).

*Subject: The need for diagnosis*

*Date: Sat, 07 Aug 1999 09:14:27 -0500*

*From: sandra gollin <s.gollin@uws.edu.au>  
To: Daniel Kies <Kies@wi.net>*

This is interesting. One of the suggestions of Farrell and Armstrong (1998) was that lecturers should follow up on the study methods being used by students using electronic forms of instruction. It would seem that we need to diagnose our students' online learning styles rather than assuming that they deal with electronic media in the same way as they do with traditional print and lecture formats.

What do you think?

***Subject: Diagnostic testing and evaluation***

*Date: Sun, 08 Aug 1999 10:18:57 -0500  
From: Daniel Kies <Kies@wi.net>  
To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

I agree, and there is actually quite a lot of research in this area. Abu-Jaber and Qutami (1998), Byrnes (1992), Geisert and Dunn (1991), Sein and Robey (1991), Davidson (1990), and Steinberg (1989) all noted that students with abstract cognitive thinking styles (as opposed to iconic or concrete cognitive thinking styles) acclimate most readily to any computer task, including learning via a computer. A first step toward ensuring that all learners have equal chances to succeed when learning via CIT is to provide diagnostic testing and evaluation so that the learners and the counseling staff alike understand the inherent bias that CIT has in favor of some learners.

***Subject: Access to counselors/counseling***

*Date: Sun, 08 Aug 1999 10:25:57 -0500  
From: Daniel Kies <Kies@wi.net>  
To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

To continue, after students are evaluated, all students, including the distance learner, need regular and sustained access to counselors to help the learner overcome feelings of isolation. Despite the interactive nature of networked computing, despite the availability of synchronous and asynchronous conferencing systems, despite collaborative projects with classmates, distance learners report an increased feeling of isolation (Owen, 1993). Academic staff can help alleviate these feelings by creating a friendly, inviting tone within the course materials, but staff haven't the time to deal with all the affective variables that play a major role in a student's academic success.

Traditionally, institutions have always understood this, and that is why on campuses everywhere we find student support services side-by-side with other academic units. This means of course that student support services need an increased online presence to support all students, especially distance learners, disadvantaged learners and equity students. However, historically, institutions do not seem to understand the importance of an increased online presence for student support. The emphasis has always been to put courses online first and to develop support services later.

***Subject: Diagnosis and consistent follow-up***

*Date: Sun, 08 Aug 1999 22:05:53 +1000*

*From: sandra gollin <s.gollin@uws.edu.au>*

*To: kies@wi.net*

We conducted a research project in The Learning Centre (Farrell and Armstrong, 1998) that surveyed 500 undergraduates in an attempt to ascertain student perceptions of computer based learning with a view to providing more appropriate support programs. 82 students responded. 26% had undertaken courses involving computer-based learning. Comments were generally positive for both male and female students, although access to computer labs on campus was an issue. Interestingly part-time and LBOTE students who had not so far participated in computer-based learning expressed high levels of interest in doing so. However, 24% of the total respondents said they did not want to participate in computer-based learning. The researchers concluded a major reason was the perceived additional cognitive load and extra time involved.

It was concluded that although students may desire computer-based courses, they not only require adequate access and technological support, but just as importantly, training in the use of the technology and critical literacy skills. Lecturers need to investigate how students are approaching the materials and ensure that different learning styles are accommodated. A mix of face-to-face interaction and computer-based learning was seen as desirable.

***Subject: Diagnosis and consistent follow up***

*Date: Mon, 09 Aug 1999 11:18:13 -0500*

*From: Daniel Kies <Kies@wi.net>*

*To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

Counselors and academic advisors for distance learners should understand that the computerized learning environment itself is a different learning space for students with different learning styles. This understanding alters the nature of the advising that students deserve.

For example, Beishuizen and Stoutjesdijk (1999) developed a computer assisted study environment (CASE) as a tool for diagnosing study problems. They used the CASE resource in conjunction with other sources of information about the students' study habits, such as learning style questionnaires and clinical interviews. Their research revealed significant differences in study strategies between "deep" and "surface" learning students in orientation and planning activities (how each group prepared to learn the materials, how each group tied the new materials to existing knowledge of the subject). However, their actual study behavior did not vary according to learning style. Instead, the computerized learning environment itself organized and presented the materials that kept students on task for approximately the same lengths of time, despite differences in learning styles. Beishuizen and Stoutjesdijk found that learning outcomes alone often hid differences in learning strategies by different groups simply

because of the computerized environment. Good advising will follow students' progress carefully, cognizant of the fact that significant differences in learning may be "hidden" since all the students seem to be "doing the same thing," i.e., sitting in front of the computer, clicking the mouse.

***Subject: More on the learning environment***

*Date: Mon 09 Aug 1999 22:15:33 +1000*  
*From: sandra gollin <s.gollin@uws.edu.au>*  
*To: kies@wi.net*

I agree that working online might not only mask differences, but it might also bring out different behaviors in some students. Warschauer and Lepeintre (1997:72-73) contrast optimistic and pessimistic findings from ESL contexts. The optimists suggest freer student participation in computer mediated communications than in teacher-dominated classroom discussions, greater student control over discussion topics and themes, facilitation of collaborative thinking and writing, and better analysis of ideas. The pessimists see greater social inequality through control of discussion by dominant or computer savvy students. Teachers too might 'discipline' their students by taking positive and negative examples of students' online discussions. This might encourage students to communicate on-line only in ways they think the teachers find appropriate Hawisher and Selfe (1991).

Of course these phenomena already exist in traditional classrooms, but we need to be aware that it can also happen in cyberspace. It is not the power-neutral space that some suggest. Perhaps there is as great a need for student to student mentoring online as there is face to face. The Learning Centre at UWS Nepean currently provides mentoring programs to support student learning. Increasingly, such programs could include services for students online as well as face-t-face I wonder what thoughts you have on this?

***Subject: Mentoring***

*Date: Wed, 11 Aug 1999 09:53:12 -0500*  
*From: Daniel Kies <Kies@wi.net>*  
*To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

Professional and peer mentoring schemes have long histories as effective learning supports, and the interactive nature of networked computing means that distance learners too can have access to these kinds of resources. For example, Denise Cote, a resident librarian at the College of DuPage, has established an online presence to mentor and support the online education program

You could take a look at the College of DuPage Distance Education Services website at <http://www.cod.edu/lrc/LibOnline/> or the "Ask a Librarian!" conference at <http://main.cod.edu:8080/~2>.)

I will send something on individualised instruction shortly.

***Subject: Individualized instruction to augment the lecture hall***

*Date: Wed, 11 Aug 1999 11:18:27 -0500*

*From: Daniel Kies <Kies@wi.net>*

*To: Sandra Gollin <s.gollin@nepean.uws.edu.au>*

The hypertextual, easily revisable, readily available nature of electronic medium make it ideal in many ways for individualized instruction as is done by the School of Science at UWS, Nepean as part of its Virtual Resource Centre <<http://edtech.nepean.uws.edu.au/science/vrc>>. Locally developed resources, managed by academic staff, provide a rich learning resource that can easily be tailored to individual needs when tied to database driven servers, conferencing systems, simulations, and online tutorials.

Simple conferencing systems alone, in my experience, offer a powerful instructional advantage for the individual, especially the LBOTE students.

Very often the first course, the introductory course, in any discipline is as much about learning the intellectual culture (including the language) of that discipline as much as it is about learning anything else. Conferencing systems offer LBOTE students a place to practice languaging the ideas of their subject, without the peer pressure or the time constraints of the lecture hall. Alone at the keyboard, the LBOTE student can express his/her ideas, ask questions of classmates or the tutor, and become more proficient in the use of English for academic purposes. The benefits are immediately appreciated not only by the student but by the lecturer as well. As the LBOTE students' command of the language generally and the vocabulary of the subject specifically improves, the less time the lecturer spends marking exams.

***Subject: LBOTE learning styles***

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This may be so, but not all LBOTE students prefer to learn in this way. Willing (1993) in a survey of over 500 adult migrant ESL learners found that all four dimensions of Kolb's (1976) learning styles<sup>1</sup> were represented, and that there were no significant differences for biographical group, age, gender or education. Interestingly the extreme poles, 'concrete' and 'analytical' together made up only 20% of the sample. The rest were what Willing called 'crossed types' 40% were communicative in orientation, and 30% were authority oriented. The remaining 10% were mixed. The communicative types were characterized as having field independent tendencies but also enjoying a social learning approach. Communicative ESL learners need personal feedback and interaction, and learn through discussion and enjoy decision making in a

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<sup>1</sup> Kolb identified perception and processing as two separate learning activities: Each of these are divided into opposing groups. Those who perceive information in concrete ways and those who do it abstractly. Following perception, some process information best by active experimentation while others prefer reflective observation.

democratic learning environment. Authority oriented ESL learners were more field dependent, but tended to be passive, relying on structure via the teacher or authoritative texts.

What do I think this means for our LBOTE students? I think it means that our online curriculum design has to cater to this mix, providing alternative ways of accessing information and working with it online. A highly interactive approach in itself will not satisfy all learners; some will prefer to 'lurk' at least some of the time, and we should accept that, in the same way that we need to accept some learners' preference to be quiet and solitary in a classroom, at least part of the time.

## **Conclusions and recommendations**

After working on these issues from two different perspectives, contexts and experiences, we find that the best hope to alleviate the problems and to implement the solutions described here rests with a fundamentally new way of thinking about online education: not as an extension of the classroom, not as a substitute for the classroom, but as a new learning environment altogether, requiring a new approaches to the curriculum.

### *Strategic planning in curriculum design (beyond materials development)*

McDaniel et al. (1993) and Liu and Reed (1994) argue that hypermedia has the potential to accommodate learners with different needs through its rich environment and argue that CIT should be viewed as an "information processing tools rather than machines for delivering educational programmes ... observing and documenting shifts in the ways students select, organise and make meaning of information" (McDaniel et al., 1993, p. 77). Although there is growing interest and increasing research in adapting CIT to individuals' needs, few have investigated the effect of accommodating differing learning styles to instruction with CIT systems (Pillay, 1998; Salisbury, 1990).

Yet the existing research points to some important and non-obvious difference between students with different learning styles when they study online. Pillay (1998), for example, investigated the effect of individual cognitive styles on learning through computer-based instruction. The study adopted a quasi-experimental design involving four groups. Pillay presented each group with instructional material that either matched or mismatched with their preferred cognitive styles. (Cognitive styles were measured by cognitive style assessment software developed by Riding (1991).) Pillay measured 134 undergraduate students' learning outcomes by observing the time taken to perform test tasks and the number of marks scored. Interestingly, the results indicate no significant difference between the matched and mismatched groups on both time taken and their scores on test tasks. However, Pillay did find a significant difference between the four cognitive styles on test score. The Wholist | Verbaliser group performed better than all other groups. (Pillay found no significant difference between the other groups at all.) Pillay's analysis of the performance on test task by each cognitive style showed significant difference between the groups on recall, labelling, and explanation. These findings indicate a potential for cognitive style to influence learning outcomes measured by performance on test tasks in a computer mediated learning environment.

It is reasonable to conclude, therefore, that since the computer mediated learning environment is significantly different from other learning environments, educators need to rethink the curricular process that puts educational materials online. The computer mediated environment is not simply a “classroom without walls” or “a virtual extension of the classroom.” The computer mediated environment is a new learning space that itself can influence outcomes for students, particularly the disadvantaged students. Therefore, the curriculum that goes online requires us ethically to rethink how we structure materials (information architecture) and deliver materials — it is more than “repurposing” old material, more than “class handouts or lecture notes on the web.”

### *Recommendations for further research*

Following Hedberg et al. (1993), we suggest that educational designers and staff interested in using CIT actively engage in “classroom” research to measure the effects that CIT has on different learners employing different media. For example, we still need to know:

1. if different electronic media favor one group of learners over others,
2. if different navigation schemes in online, electronic courseware favor one type of learner, and
3. if we can establish student oriented approaches to information, approaches that have multiple tacts available for students with different learning styles.

This last point speaks directly to the points made earlier about curriculum design: most computer-based courses are built from the perspective of the knowledge-based expert systems, systems that mimic the associated networks of knowledge by subject area experts. The novice and the disadvantaged student have fundamentally different ways of knowing.

In sum, in order for an institution to teach online, it is not sufficient merely to make courses available electronically. Rather, institutions must rise to the challenge of meeting their missions in a new learning environment and remember that the students’ success depends upon making student services available to all learners — the distance learners, the disadvantaged learners, too.

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