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THE DIGITAL DIVIDE: AN URBAN MISS?

Leslie Burr and Liz Smith

Student Services

Charles Sturt University, AUSTRALIA

lburr@csu.edu.au, elsmith@csu.edu.au

Abstract

Online delivery has the possibility to provide an enriched learning experience for students. Online delivery also allows universities to become more flexible in their practices and to offer higher levels of service to students. However, with the benefits of online delivery come some challenging policy issues. Should internet access be mandatory for students or does this disadvantage the already disadvantaged? How can the online teaching and learning environment be progressed when staff are uncertain that their students can access their resources?

Charles Sturt University has developed an extensive online environment and although as a regional university with 50% of its students represented in DEST equity categories, user participation rates have challenged some of the long held assumptions regarding access, equity and user characteristics.

This paper explores the development of the online environment at Charles Sturt University, the subsequent student take-up rate and characteristics of the 'active user'. The paper also discusses reasons for the 'atypical' trends that have been discovered and suggests a way forward for those considering online development and access issues.

Keywords

University, online access, mandatory, policy, equity, usage, user characteristics

Introduction

A recent survey of online education and services in Australia found that "all universities are employing the web to some extent for teaching and learning purposes" (Bell, Bush, Nicholson, O'Brien & Tran, 2002; p. x). Many universities are also offering online support and administrative services, such as access to the university library and other administrative facilities related to enrolment.

Charles Sturt University (CSU) has long been recognised as one of the largest providers of distance education in Australia. The advent of the internet allowed the University to establish itself as an international leader in the delivery of online support and services. Since 1998 all distance education subjects have been offered as a hybrid delivery model using online to 'wrap' services (e.g. online forums, email, electronic assignment submission and tracking, online resource links, library) around the well established print delivery model. Over the past 6 years the University has focussed on the development of enhancing online support services to students, including in house development of a student portal, online enrolment and an online communications system for students - the eBox.

While CSU has been an 'early adopter' of online technologies, the use of the online environment has remained voluntary for students. Although students are able to access their subject outlines via the web, these are also sent to them in print. All students have access to subject forums, which provide opportunities for rich and deep learning exchanges with fellow students and teaching staff, but these are

also generally optional. Since the development of the eBox, official communications are delivered online, but a distance education student may also have these sent by post if they cannot access the internet.

More than 50% of CSU students are represented in DEST equity categories. From a national perspective, it is these students who have been identified in the literature as the group most at risk of experiencing difficulty in accessing the internet (Oliver & Towers, 2000; Bell et al, 2002; Barakeet, Payne, Scott & Cameron, 2000; NOIE, 2001). With a strong commitment to meeting the needs of all its students, and these demographic groups in mind, the university has deliberately maintained the online services and teaching environment as something which will certainly enhance the student experience, but which remains optional.

However, this decision has certainly not hindered nor constrained the developments of online services or facilities within the University.

Development of CSU Online

Student web forums, one of the first large-scale online resources made available at CSU, have been taken up at unexpectedly high rates. In spite of the expected low usage trends based on student demographic data, participation has grown to 18,000 users in this application alone since their initial pilot in 1996 (Burr 2001). This reception encouraged strategic planners to continue developing the online environment.

Since the introduction of forums, students have been progressively offered the opportunity to utilise many other online services and facilities. Students can now access a web portal which is customisable to their individual study needs and draws together information relating to their administrative, financial and academic details, an eBox which is the delivery point for all official communications, online enrolment and fee paying, access to library and student support services, assignment submission and online testing.

As the demand by students and staff for online environments and services grows, many universities, including CSU are considering formalising the introduction of mandatory online access. While much research has been presented on the general trends of online access across Australia (ABS 2000), the student usage data gathered at CSU did not appear to align with the expected results and seemed to suggest that students, given the appropriate incentives will overcome difficulties in order to gain online access.

In order to inform further policy decisions, a comprehensive study was undertaken to discover the actual online participation rates and demographic profiles of CSU users. This study focused on a particular online application, web forums.

Challenging assumptions

The very large scale online environment developed at Charles Sturt University provides a unique opportunity to analyse user profiles and demographics together with patterns of user behaviour. The large user population of the forums application (n = 18,000) allows this analysis to take Buxton's (2001) direction into the "human centric" domain and away from technology. Thus a detailed analysis of the user base is undertaken under conditions where user populations can be compared to a total population including non users.

In undertaking the population analysis some of the assumptions of online users were challenged. For example it is widely assumed that younger age groups are more "connected" than their older counterparts (ABS 2000). This study not only shows this to be questionable within the University context, but demonstrates that older age groups "bat above their average" when compared to the total population of the University. That is, a higher percentage of older students participate in the online environment than the total percentage of the University student body would seem to indicate. Assumptions about location and gender were also challenged and found to be false.

Percentage Participation of “Active Learners” as a Key Performance Indicator.

Historical reporting of “distinct users” or “unique users” of applications has suffered from an underlying assumption that the total user population was in some way static, definable and quantifiable. By comparing the number of users of applications against a new profile of active users, a more useful “seasonally adjusted” figure has been produced. A key performance indicator of 100% active learner participation would indicate that all students actively studying a subject within a current session were making use of the online environment.

In order to provide a realistic measurement of the number of students making use of CSU’s online environment (excluding email), a profile of those students who are currently enrolled in a subject and are actively undertaking study was established. This active learner group consisted of those students enrolled in any “current” session and did not include students on any form of leave, students studying via third party providers, staff, prospective students or graduated students all of whom may be making use of the online environment in their own right.

Because the active learner group is currently enrolled and actively participating, the total number will change almost on a weekly basis, as semesters, trimesters and terms start and stop. For example on the 10th February 2003, the number of students “currently” enrolled within an active semester was approximately 4,500, since only Trimester 2 was active. On the 10th March, 2003, that number was 30,429 based on a combination of Semester 1(24,893 active learners) and Trimester 1 (5,536 active learners).

The trend of active learners making use of the online environment for the first part of 2003 is shown below (Figure 1):

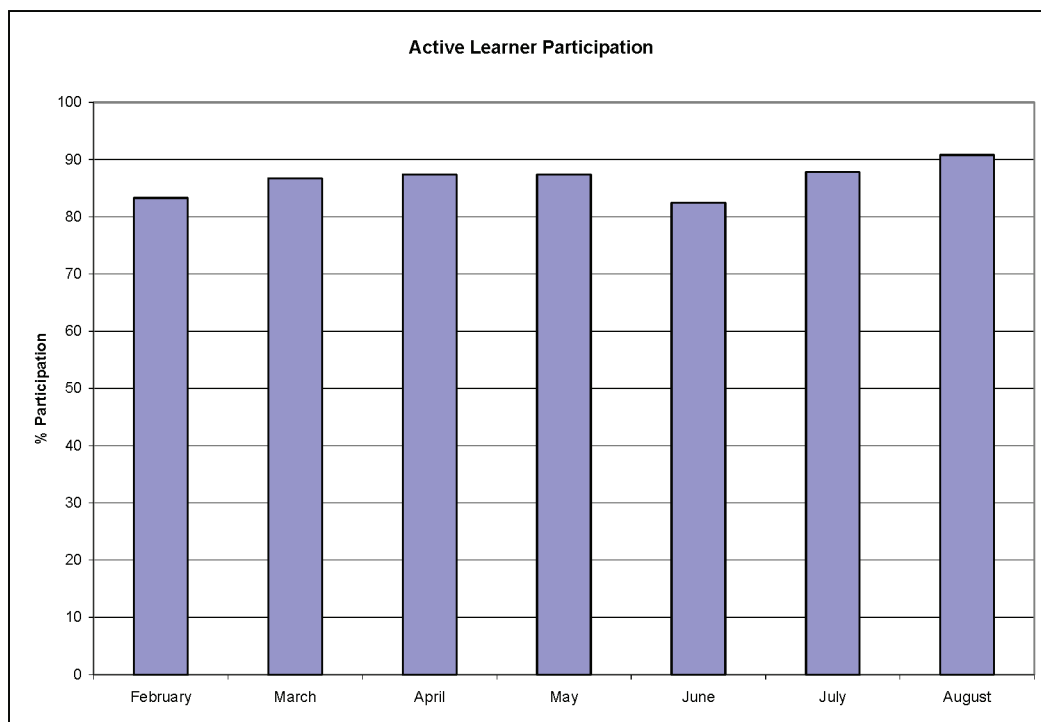


Figure 1: Active learners Feb - August 2003

Remarkably, 80 - 90% of all active learners visit the non-compulsory online environment on a monthly basis. Notably the participation rate increased throughout the first part of the year 2003. The large scale of the CSU online environment provides an opportunity not only to describe which users attend a non-compulsory environment, but also to test some assumptions made in regard to the gender, age and location of users..

Size of the User Population

During the autumn session (i.e. February - June) of 2002, 17,970 unique users participated in forums which were directly related to online subjects. Staff act as managers of online subject forums and in general there is one forum manager for each forum, although there may be multiple managers in some instances.

The forums used in this study had a total potential population of 27,290 users. As discussed previously, the potential population was calculated by subtracting from the total University population students who would be discounted from accessing the University's online environment for organisational reasons. The majority of these discounted students were those enrolled through third party providers whose contractual arrangements precluded them from direct online access to CSU. facilities.

The total potential population included all other students (internal *and* distance modes) *regardless* of any personal or academic barriers or hurdles that may have prevented them from participating in the online environment. Examples of such barriers may include no access to an internet connected computer at home or at work, cost of internet connections from remote locations or the non availability of an online forum for a particular subject (in the case of some internal mode subjects for example).

Thus the total potential population, (later referred to as the Total Population) reflects as close as possible the real life snap shot of all potential users, within a large academic institution, under conditions of radical change to online learning, with no filtering or selectivity of the cohort.

Each subject offered within the distance education mode was supported by at least one forum (a forum may also have several sub forums which for this study, individually also count as a forum). A number of subjects offered by internal mode also were supported by online forums. The total number of forums considered was 1,224.

Online forums do not require compulsory "attendance" and student participation in most instances is voluntary. Assessable material which is posted to a forum by a manager must also be distributed by print. Thus students who do not participate in forums by choice or by other reasons of not having internet access or have other types of accessibility issues, are not disadvantaged by not being able to participate online.

It is surprising therefore that the rate of participation of online forums is so high. In fact 66 % of the number of the total number of students enrolled in subjects took part in the forums. Such a high voluntary participation rate demonstrates the compulsive and captivating nature of online discussion groups.

Gender

Of the 17,970 students participating in forums, 61% were female and 39% were male. This is compared to a total University population of 58% females and 42% males. Given the wide spread assumption that males dominate the use of technology (particularly computers) (Stewart 1999; Spender 1995), this high rate of female participation is surprising.

The assertion that computers (and technology) is a hurdle for females is a widely held view of feminists such as Spender. Spender (1995) argues that computers are a male dominated activity, "the medium is presently formatted (in a way that is) more in tune with the disposition and training of boys" and that computers are a particular "turn off" for women. Spender (1995) declares that any women who are participating in the online environment are not only "expert" but have worked through a "computing and word processing" stage. The experience of forums would indicate that far from being expert, that for many participating females, online communication has been the driver for getting into computers - it is the online start point rather than their end game.

This demonstrates that far from being a hurdle for female participation, online forums are an empowerment tool for females. Further, the dominance of males within face to face tutorial groups and the co-ed classroom (Spender 1995), seems to be counteracted by online forums, where not only do females participate on a representative basis, they actually are over represented.

These results of this study are completely contradictory to research about low female participation rates which strongly indicate a dominance of male postings and dominating online discussion groups (Herring 1994; Cook 2000; Spender 1995; Stewart 1999). However the dominance of males appears to be receding. In a recent study of gender issues in relation to the use of email in particular (Spennemann 2002, p122) states:

With respect to gender, a major difference was observed when comparing the usage of e-mail programs by female students compared to their male counterparts.... women are more frequent users than men.

Although the study refers to email in particular, there is no reason to suspect that the same principles would not apply to online forums especially since entry level to computers has become cheaper and easier since the conclusion of that study.

Age

Students participating in the forums ranged in age from 15 to 80.

When compared with the University population as a whole it can be seen (Figure 2) that students within the Under 20 and Over 60 age bands participated at rates considerably higher than the total population (75% and 74% respectively) and students in the 21 - 30 band participated at the lowest rate (56%) compared to the total population.

Thus the expected dominance of younger students, given their propensity for the use of technology in general and particularly computers is not reflected in participation within online forums. Conversely, the expected decreasing use of technology based on increase in age is also unfounded. In fact as age increases, the participation rate in forums increases.

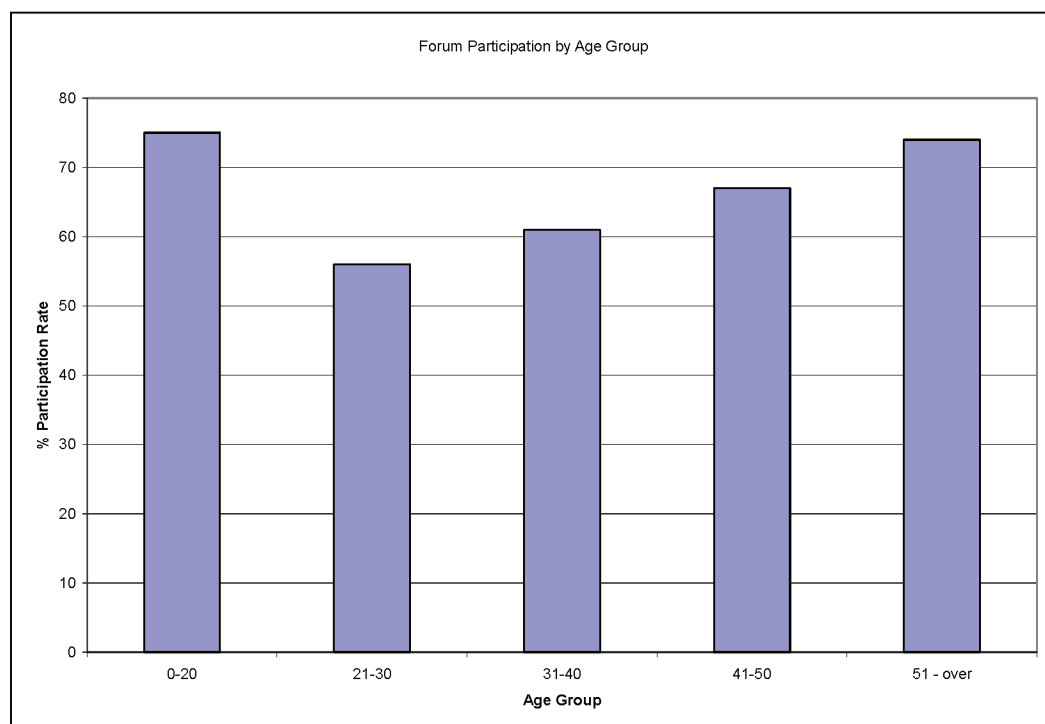


Figure 2: Forum Participation by Age Group (n = 17,970)

If familiarity of computer use is not a determinant, what then accounts for this pattern of use? One suggestion maybe that participation in forums is directly related to the available study time of the student. Since forum participation is not compulsory, it is likely that participation becomes a second order activity for students after any other compulsory life activities. Second order activities are only likely to occur

if time is available for engagement. This would be particularly true where part time study is physically located at home. Students in the age group 20 - 30 are more likely to spend non-work hours away from home and therefore are less likely to access online for study, i.e. they have more competing interests.

As age increases, it is likely that students spend more of their non work time within the home environment and are therefore more likely to access online during those times. "At home" time may also explain why the access time is also so high for under 20s.

Although older age groups are participating at a higher rate than the younger age groups (the on campus undergraduate group aside), it is more likely that those older students who are not participating are unable to so for reasons of access and technological illiteracy than their younger counterparts who are more likely not to participating out of choice. Thus, although the older group participation rates are relatively high this group may still be the most difficult of all to approach a near 100% participation rate. However, the fact that 74% of the group has been able to participate indicates that the hurdles are not insurmountable from an organisational point of view.

Location

One of the advantages of online communication is that they should be geographically neutral. That is participation within online forums should be independent of the location of students. Students have reported this feature as one of the characteristics of online learning environments that empower their learning. Previously students would have had to participate in synchronous teleconferences for example.

Student participation was analysed by postcode of the student primary (i.e. in session) address. If online learning is to be successful then it is important that participation is widespread and geographically independent. However other factors, particularly those of internet access for rural and remote areas, impact on the spread of distribution.

Location	University Population (n = 27,290)	Forum Participation (n = 17,970)
N.S.W. inc A.C.T.	83.6%	79.9%
N.T.	0.7%	0.8%
Qld	4.2%	4.4%
S.A.	2.2%	2.4%
Tas	1.0%	0.9%
Vic	7.1%	10.4%
W.A.	1.2%	1.2%

Table 1 Forum Participation by Location within Australia

By analysis the residential postcode of the University population and comparing it to the forum user profile, it can be seen that forum use is under represented in N.S.W by 3.7% and over represented in Victoria by 3.3% (Table 1). The University population data for N.S.W. includes the Victorian north eastern rural city of Wodonga and surrounds and even though the forum population data has been accordingly adjusted that "cross over" may well account for the 3.3% differential. Taking that differential into account, there is a close correlation between the relative percentage of state population and the relative state forum participation rate. Thus in national terms, it would appear that forum participation is independent of state borders.

In order to examine the influence of the University's campus locations on forum participation, the state of N.S.W. was examined in isolation. The relative University population of a number of areas of N.S.W. were tracked against the relative forum population for each of the areas (see Table 2).

Location N.S.W.	% N.S.W. University Population	% N.S.W. Forum Population
Sydney	36.3 %	27.0 %
Regional N.S.W.	63.7 %	73.0 %

Table 2: Forum Participation by Location within N.S.W.

Clearly the availability and convenience of on campus computer laboratories which gives easy access to the forums is a determining factor. Conversely, it may appear that internet access away from the University campuses is still a hurdle for many distance students. However, other indicators within the University (i.e. the delivery of “Official Communications” via the eBox) show that only 750 students (or 2.7% of the total population) have “deregistered” from the eBox, citing lack of internet access as the reason. Since the eBox is a “compulsory” online application, in the sense that all students must access the eBox on a weekly basis in order to complete the requirements to enrol and re-enrol, this is a far stronger indicator of internet access.

In order to further establish whether rurality is a hurdle to access, one other state (Victoria), without any campus representation, was analysed. From Table 3 it can be seen that there is a close correlation between University population and forum participation across all areas of the state including the capital city Melbourne.

Location Victoria	% Victorian University Population	% Victorian Forum Population
Melbourne	52.5 %	49.1%
Regional Victoria	47.5 %	50.9 %

Table 3 Forum Participation by Location within Victoria

Thus it is unlikely that rurality is a hurdle in itself to access. If this were so, the rural areas would be under represented and Melbourne (with faster and more convenient access) would be over represented.

Formulation, Implementation and Impacts on Institutional Policy

Since 1995, CSU has grappled with policy relating to student online access. The original Teaching and Technology Plan had as an aim, mandatory online access for students by 1999. However, this objective was not formally pursued due to concerns about a consequential drop of student enrolments together with a macro focus on national equity issues. These issues, along with the traditional organisational resistance to change resulted in no formal policy being developed regarding student requirements for online access.

Many, if not all universities are faced with the same set of blockers to organisational change. Fortunately the solution is provided by the very group that it is perceived as being disadvantaged - our students. Not only are students a main driver of change and innovation in the online environment, they are also demonstrating that if worthwhile and efficient online services are made available, they will find a way of accessing them in preference to paper based systems.

The high online participation rates at CSU have dispelled many of the concerns held regarding equity of access. While no formal policy on mandatory access has been implemented, the real value of the online resources made available to students appears to have encouraged student participation to a degree where they have overcome the predictable hurdles of access and in order to enhance their learning experience. In many ways, the debate over policy has become irrelevant. Seemingly, more important is the *quality* of the online environment developed for students. This value will direct and drive any need for implementing a formal policy on online access.

The experience at CSU suggests it is far more important to concentrate on developing a rich, quality and engaging environment as a first step, rather than mandating access for all. Only once the online

environment has been developed, can the issue of access be addressed. How does a student know whether they are willing to devote resources, whether it be a commitment in time, money or learning, before they know what value online access will bring to them?

Thus the question becomes less about the development of a mandatory access policy but rather an implementation plan which addresses how online environments will be best introduced.

While developing the online environment in tandem to delivering via more traditional methods represents significant resource issues (i.e. teaching and administrative staff will need to 'duplicate' what they make available online in other mediums), the CSU experience suggests it to be a worthwhile process. The alternative, that of mandating access prior to developing the online environment risks students being disappointed with what they find, and not participating, regardless of their ability to gain access.

In view of the results of the active user evaluation study it was timely to once again consider the issue of policy in relation to student online access. As part of their terms of reference, a Working Party formulating a university wide online learning strategy was asked to consider the policy issues of online access. Based on the results of the evaluation study and broad consultation with the university community, the working party has recommended that online access become mandatory for all enrolling students from 2005.

While this suggestion was met with nervousness and opposition in 1995, there is no such feeling in 2003. It has become quite clear that students have already made their own decision about mandatory access. The issue of access is more to do with a student's *willingness* to participate in an online environment rather than their *ability* to do so. It is this willingness, of course, that is impossible to measure prior to developing the online environment.

Addressing equity issues

Participation in the online environment can be influenced or indeed hindered by various factors. While gender and geographical barriers to internet connection are often highlighted as problems, issues relating to students' level of computer literacy are also often factors behind non use.

At CSU efforts have been directed into the assistance for students to develop their levels of computer literacy in order that they are both competent and confident in the online environment.

A 13 hour, fully facilitated online enabling subject has been developed for students to undertake prior to commencing their formal studies. The subject introduces students to the CSU online environment in an informal and non threatening way so that they are comfortable in the online environment and is available to students studying on campus or by distance. With over 900 enrolments in this subject since its establishment, evaluations have been extremely positive, with almost all students reporting an increased level of confidence and skills as a result of completing the program.

Summary

The large scale of the Charles Sturt University online environment provides an opportunity not only to describe which users attend a non-compulsory environment, but also to test some assertions that are made in regard to the gender, age and location of users. The user profile of those participating in the forum environment has been quantified and compared to the total University population. In doing so it has been discovered that popular assumptions regarding user characteristics such as age, gender and location are incorrect.

With this information in mind, it follows that policy decisions regarding mandatory internet access cannot be made solely on assumptions based on the demographics of the student population. The intrinsic value of the online environment to students must first be examined. If it is found to be of added value, relevance

and enhanced convenience to students, their willingness to overcome difficulties in order to access the online environment may well add a new and unexpected debate to the issue of mandatory online access.

Perhaps the saying ‘build it and they will come’ needs to be tempered with ‘they will come...if it’s worth it!’ Certainly mandating access which is not student driven, could result in disillusionment leading to low rates of revisitation.

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