Survey report: Student perceptions of Computer Assisted Learning (CAL) Programs

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Abstract

This survey of students was undertaken in response to the many voices at the University of Western Sydney, Nepean from the University President down, calling for greater university participation in flexible delivery of courses and subjects. Flexible delivery aims to address equity of access, economic issues and the individual learning needs of all students (Volet, 1997). Computer Assisted Learning is online programs of study eg internet, CD Rom, and programs such as Top Class, Blackboard and individual discs, in which technology is used to support interactive learning. Thus Computer Assisted Learning (CAL) comes under the umbrella of flexible delivery since it allows students choices about how and when they learn and allows flexibility for students to access their coursework either on or off campus.

The student record system was used to randomly select five hundred undergraduate students for participation in this pilot study. Students were mailed surveys. Eighty two students responded to the survey from 500 invited to do so. This was a 16.4% response rate.

Several significant issues need to be considered if online Computer Assisted Learning / delivery is to be well conducted: maintaining quality learning; meeting student needs; and understanding the learning process required for computer based education (Laurillard, 1987).

While some students expressed dissatisfaction with CAL, it was generally seen by respondents as convenient, flexible and a tool for promoting learning. This survey shows a very high desire on the part of two groups of students to be part of CAL: those who had already participated in such programs and those who had not yet done so.

Background

This survey of students was completed in 1999 response to the many voices at the University of Western Sydney, Nepean from the University President down, calling for greater university participation in flexible delivery of courses and subjects. At the time this research was undertaken the UWS structure differed to its configuration in 2001. Formally the University of Western Sydney consisted of three network members. UWS Nepean was one of the network members. The Learning Centre, as an academic literacy and numeracy based support unit within the Division of Student Affairs, realised that it was important to obtain student views prior to embarking on its own program of flexible delivery and to more knowledgeably contribute to the current debate. At the present time, very limited technological support is offered to students through The Learning Centre.

The student body at UWS Nepean is represented by many cultures and social groups not dissimilar to other universities in its mix of mature age (14.5%); Language background Other Than English (LBOTE) both international (8.6%) and local (37.2%) (Development and Information Management Services [DIMPS], 1997). While our student mix is similar to other universities, UWS Nepean has some unique features. This university is geographically located in an area where historically university education has not been readily available and is located in a lower socio economic region. Most of our students (71.2%) are first generation university students (DIMPS, 1997). These characteristics of our student profile may have implications for the flexible delivery of programs.

Definitions

Flexible delivery is a generic term which covers a broadening of course offerings available in multiple modes of delivery including electronic modes of delivery (Edtech, 1998). But flexible delivery also includes self paced learning, distance learning, accelerated courses and flexible hours of teaching / learning. ‘In its broadest sense, flexible learning means the achievement or encouragement of learning in whatever ways seem most effective; it means being flexible about achieving that result’ (Edtech, 1998). Flexible learning covers all situations where the learner has some choice over the way in which learning occurs (Trigwell, n.d.). It is also claimed that flexible delivery ‘provides greater opportunity for access to higher education and improves learning in challenging circumstances on campus’ (University of Newcastle, 1997). Flexible delivery aims to address equity of access, economic issues and the individual learning needs of all students (Volet, 1997).
Computer Assisted Learning is online programs of study eg internet, CD Rom, and programs such as Top Class, Blackboard and individual discs, in which technology is used to support interactive learning. Thus CAL comes under the umbrella of flexible delivery since it allows students choices about how and when they learn and allows flexibility for students to access their coursework either on or off campus.

Already there are numerous hypermedia and flexible learning packages utilising CAL (CD Roms, Computers, Websites etc) which are an established part of coursework offered at UWS, Nepean. The UWS Nepean’s commitment to these electronic forms of learning is supported by units such as The Educational Technology centre, a unit which assists academic staff to create ‘opportunities for flexible learning’ (Edtech advertising, 1998).

As a relatively new mode of instruction, CAL presents a considerable challenge to academics. This is partly because it offers a radically different way of designing and developing educational material as well as requiring students to perhaps develop new study methods appropriate to these new technologies.

Prior to the development of computer based learning modules for The Learning Centre, it was decided to investigate undergraduate user/ nonuser views of such programs. No broad based investigation of undergraduate student opinions of these programs had been undertaken. The purpose of the survey is to inform our practices and to meet Quality Assurance Policies in place in The Learning Centre by developing high quality resources which will be appropriate to the learning needs of our undergraduate students (Laurillard, 1987; Garton, 1997). A secondary purpose is to contribute computer literacy as a characteristic of the graduating student.

Thus our aims were to:

- Use the students perceptions of computer based learning obtained from the research project to support students as they master new technology skills
- Develop Learning Centre courses which are available in a mode, which assists student learning and which, closely match student preferences.
- Investigate which aspects of computer based learning programs are useful and easily accessed by students.
- Disseminate findings within this university and to discuss findings with learning support providers at other tertiary institutions.

A review of the literature

The context

Information Technology has been a topic of discussion for the last fifteen years or so, but it is only recently that the technology has become more accessible and therefore it has become a possible tool for instruction in tertiary institutions. Several significant issues need to be considered if online Computer Assisted Learning / delivery is to be well conducted: maintaining quality learning; meeting student needs; and understanding the learning process required for computer based education (Laurillard, 1987).

Society’s immersion in electronic media texts is an important part of everyday experience (Luke, 1995; Garton, 1997; Palloff & Pratt, 1999). Deciding on how and when to use Information Technology (IT) programs in education to assist students in their learning should be a collaborative process between the course designers and learners (Kommers, 1994). Overall, students need to feel in control of their learning (Crebbin 1994; Luke, 1995). An important prerequisite to learning is motivation. If course materials are interesting and not burdensome in their demands, then students are more likely to be motivated to learn. The challenge is to develop productive approaches and strategies to accommodate student centred learning as well as flexible learning (Holmes, 1997). Many claim that it is the responsibility of Students Services to create ‘seamless learning’ (Schroeder, 1999) within learning and research environments (Palloff & Pratt, 1999).
Within a university context, flexible learning/delivery needs to fit with the university’s mission and vision statements, key performance indicators and the strategic plan (Taylor, 1997). That is, flexible delivery needs to be consistent with the university’s purpose. Universities generally are concerned to place their graduates in employment and see that part of the educative process is to provide their students with the necessary skills for the workplace. Technology in education is seen as one way of preparing students for the workplace. Since current predictions are for several career changes in the course of one’s working life as a result of technological change, it is important to include a range of generic and transferable skills in programs of study to ensure graduates’ readiness for the workforce (Cornford, Athansou & Pithers, 1996). Thus it may be argued that confidence and experience with computers and other forms of electronic media assist in the general education of students. It is within this context of workplace preparedness that graduates are requiring their university to embrace contemporary approaches to curriculum design - in effect to respond to the changing needs of their stakeholders.

Educational challenges

The advent of a technology based approach to education is challenging for educational providers because ‘they offer a radically different way of designing educational materials and partly because they require a radically different way of developing the material’ (Laurillard 1987, p.11; see also Dadabhoy, 2001). But the challenge extends beyond this to developing new ways of thinking and working for academics and students (Kommers, 1994). Also academic staff development is needed so that academics gain appropriate skills in presentation of CAL classes or courses.

It is generally agreed that writers of CAL courses need to take into account three principles: accessibility for all students; the social nature of learning (Pascarella & Terenzini, 1991) and that learning should be as active as possible (Volet, 1997). Several writers have commented that unless course delivery has an associated ‘culture /attitudinal change’ then technology in education is nothing more than ‘rearranging the deck chairs’ (Taylor, 1997; Kommers et al, 1994).

Success of flexible learning is somewhat dependent firstly on the level of sophistication of the students’ English language skills (especially for international students) and secondly on previous exposure to and expertise in the use of electronic media (Armstrong & Farrell, 1999). Brus and Kommers (1990) make the point that learners need meaningful transactions to negotiate with peers and teachers before understanding a new topic and that it is their view that electronic based education ‘is much too imprecise for the foundation of new insights and problem solving’ (p.192). Similarly Burns, Gollin and Joyce (1997) argue that all learners in a new discipline need to be exposed to ‘authentic discourse’ of their field so that they can effectively participate in the social interactions with their colleagues. Students need to be supported in their development of spoken language skills as their basis of their membership into the academic community.

Yet for some students especially part time and distance education students, learning requires flexibility ie self paced, and delivered at a convenient time and in a convenient place (Volet, 1997). For these students, flexibility addresses equity of access, economic and individual needs. For some students, a technology approach to education is embraced with great enthusiasm, for others it is a source of anxiety.

Methodology

The development of a sample survey was judged to be the most appropriate way of gathering data (Wilson, 1985) from the undergraduate students at Nepean and their attitudes to computer based assisted learning materials. While The Learning Centre offers programs to both undergraduate and postgraduate students, a major focus is to promote the learning of undergraduate students. The student record system was used to randomly select five hundred undergraduate students for participation in this pilot study. The participants were selected by choosing every twentieth student on DEAN (the student record system) starting at a random position until our sample number was reached. The students were contacted by mail and were requested to complete a short survey. Participants were sent a reply paid addressed envelope for the return of the completed survey.
Students were provided with an information sheet informing them of an overview of the project, closing date, availability of survey results and assuring them of the confidentiality of their responses.

Findings and discussion

Eighty two students responded to the survey from 500 invited to do so. This was a 16.4% response rate and represents 0.65% of the student population (12,587 total student enrolment DIMPS, 1997). Comparisons between the students who responded and the university enrolment were made. For most categories the proportions reflected the university mix. However, the survey group had a higher proportion of full time students but a smaller number of International students (see figure 1). On the basis of faculty, most groups were proportionally represented except for Science and Technology who were under represented, while Engineering students were slightly over represented.

![Comparison of survey responses to University enrolments](image)

*Figure 1*

From the survey group, twenty six percent indicated that they had undertaken courses which used CAL as part of their degree at UWS Nepean. These respondents reported a range of positive comments about online learning similar to the findings of other studies (Goldman, 1997, Jasenski & Mitchell, 1997 cited in ANTA, 1998). CAL was generally seen as convenient, flexible and a tool for promoting learning. CAL provided for them ‘round the clock’ access to materials, which allowed them to self pace and self assess their learning from either home, work or on campus. Generally, academic staff were reported to be easily contactable and provided fast feedback.

However some dissatisfaction was also expressed. This dissatisfaction with CAL programs centred on issues related to limited accessibility and reliability of programs; availability of computers; technical support and problems with accessing the university network both on and off campus. A regular complaint was that there were not enough computers available at peak demand times in the computer labs and that some students ‘hogged’ computers even using them to play games while other students waited to process assignments. There were complaints that there was not enough technical support available for students. Respondents claimed that sometimes the computer lab
support staff gave wrong information or gave explanations which were not helpful. Often students found programs had inexplicably crashed.

There were several calls for the university network to be upgraded to reduce inordinate amounts of time spent trying to access CAL programs. Students reported that in order to get on top of their courses they had to be ‘quick’ in gaining mastery of programs otherwise their semester was spent acquiring technological skills rather than content skills. Within a ‘pressure cooker’ learning environment in the world of intensive semesters or summer or winter schools there is little time to become au fait with the technological aspect of learning as well as course content.

A reflection of the opinions of the survey group concerning CAL can be seen from their responses to the survey question when they were asked to select up to five responses from a list of nine options (see figure 2). The most popular opinions of CAL courses were that they

- allow you to work at your own pace
- are suitable for some subjects only
- allow more flexibility to fit studying around other commitments

Students who had not participated in CAL courses as part of their degree were then asked whether they would like to participate in CAL programs. The overall response to this question was that the majority 76% indicated that they would like to participate (figure 3). Comparison of this response...
on the basis of gender, full/part time participation, language background age, and faculty of enrolment were made. Some interesting observations can be made from these. Equal proportions of males and females expressed a desire to participate in such programs. This is contrary to the popular belief that females do not embrace technology to the same degree as males. Part time students and students with a language background other than English had a much greater desire to be part of CAL. Engineering and Humanities had a higher proportion of respondents who did not want to participate. This response from Engineering is a little surprising given its involvement in technology.

Figure 3
Twenty four percent of students reported that they do not want to participate in programs such as CAL. Within UWS Nepean there are a number of students who struggle with the theoretical/cognitive components of their courses. The extra burden of CAL added to their study load, may lead to their withdrawal from university study. It is perhaps the role of the Learning Centre to highlight for the academic community our mutual responsibility for the technological preparedness for this group of students (Dadabhoy, 2001). Little additional support is seen to be provided yet obviously learning support is essential for ‘customer satisfaction’.

Conclusion
This survey shows a very high desire on the part of students to be part of CAL. In order to maintain quality learning, when we ask students to take part in CAL packages we must ensure that they know how to use and access the packages; that there is enough easy access to computers on campus and that packages are available in a form that students can use conveniently.

Once students are accessing such programs either as an elective or as a compulsory part of their course then continuing research and evaluation are necessary. Firstly, lecturers need to follow up on the study methods of students using electronic forms of instruction in their degree course.
Further research needs to be undertaken into:

- The processes lecturers use to determine students’ technological capabilities. Is there an assumption made that students have technological literacy or do lecturers assume that students can carry a ‘double load’ ie manage the content of the course together with the technological demands of the course?
- The issue of student evaluation of the quality of web materials. Does this evaluation differ from evaluation of ‘paper’ based texts? How do students select the best electronic texts for their study?
- The presumption that if a student has undertaken a CAL unit of study previously then they no longer need support in the current unit.
- The need for clear guidelines on how students can obtain support if required.

Future role of The Learning Centre.

Within UWS Nepean one of the characteristics of the graduate student is to be computer literate. The attainment of computer literacy requires collaboration of all sectors within the University. Within this framework of cooperation, at an institutional level is would be useful to know what support is available for students having difficulty with computer assisted learning packages. Therefore it is suggested that The Learning Centre survey academic staff members on their use of CAL to ascertain how they cater for students’ initial contact and access to computer based programs of study. The role of The Learning Centre may be to promote already existing programs; and where necessary to create tutorial type modules or conduct workshops which address the current needs of students. In doing this, The Learning Centre could create for students a smooth transition between various modes of learning especially for inexperienced users of online materials. While students are generally eager to embrace technology in their coursework, future developers of CAL programs must continually be aware of the equity and economic situations our students.

References


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