Committee for the Advancement of University Teaching

FINAL REPORT FOR A 1994 NATIONAL TEACHING DEVELOPMENT GRANT

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1 Identification

Name of Project leader

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Project title

Collaborative learning through computer conferencing

2 Project summary

We implemented a listserver, majordomo@cleo.murdoch.edu.au, as an economical basis for computer conferencing via email. In the major part of the project, our primary objective was to use collaborative learning as an avenue to disseminate Internet skills into the student body under conditions of extremely limited resources. The emailing list "eff_one" enables student users of cleo to give user support services for novices and less experienced users. The second part of the project applied computer conferencing to cooperative work in small groups for the Law unit "Legal Practice and Documentation". Key issues in the project include: How can we attract students into acquiring Internet skills? Why provide a listserver and how do you make it work effectively? Will students provide their own equipment or should on campus access be used? Develop generic skills or unit specific use of computer communications? The project's URL is: http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

3 Major objectives of the project

1. Use collaborative learning as an avenue to disseminate Internet skills into the student body under conditions of extremely limited resources, there being no existing provision for student use of Internet communications.

2. Demonstrate a substantial application of Internet skills for teaching and learning purposes in a unit in Law.

3. Develop an infrastructure which can be scaled up, as resources permit, to serve larger numbers of students across a wide range of subject areas.

4. Contribute to the purposes for which cleo was initiated, including among others:

i. attract sustained attention to and use of computer mediated communications for education and information purposes by developing a viable base of modem users and a range of attractive services
ii. provide a communication medium which embraces in a unique way external students and internal students; mature age users and school leaver users; and off campus and on campus activities
iii. develop improved techniques and user friendly interfaces for users of modems
iv. establish innovations and model techniques in the economical use of a low cost Unix host for electronic publishing and computer communications
v. recruit a broader "readership" for Murdoch University's networked information resources
vi. pioneer effective and economical approaches to user training and support by innovative applications of collaborative learning
vii. give the users ownership and participatory roles in the conduct of cleo operations
viii. stimulate University planning and practices in the use of information technology for teaching and learning puposes, for providing "an electronic amenities building", and for electronic publishing activities

Since March 1993 cleo has been the University's only host giving a significant provision of Internet access for undergraduates and graduate coursework students. Thus cleo has been virtually the sole avenue for students to acquire and practise Internet skills. In 1994-95 an estimated 6 - 8% of Murdoch's undergraduate and graduate coursework students obtained some experience of Internet access via cleo, and a further 1 - 2% obtained experience via private providers or employers. The learning outcome from this project and cleo's activities is that cleo's users obtained skills and experiences which otherwise would have been unobtainable, or obtainable only via a private provider of Internet access not related to the University.

4 Major achievements of the project

We implemented a listserver, majordomo@cleo.murdoch.edu.au, as an economical basis for computer conferencing via email. Lists served by cleo's majordomo since June 1994 and initiated by this project include:

- eff_one Cleo users giving technical help to new users
- law-students Students L369 LegalPrac&Doc and L365 PublicIntLaw
- csis-students Computer Science & Information Systems Student Forum
- pset-students Phys Sciences, Engineering and Technology Student Forum
- vet-students For Veterinary students classwork
- telegraph Bush Telegraph: Remote external students discussions
- bushcourt Topical issues discussion list for Murdoch University

With about 150 subscribers, eff_one carries 200 to 400 messages per month, ranging widely over technical problems concerning how to use personal computers, modems and communications software to obtain email, world wide web pages, newsgroups and other Internet services. It does not have an association with a specific formal unit and "teaching and learning" via eff_one is conducted largely as a voluntary activity by users of cleo. Eff_one harnesses collaborative learning to accelerate the dissemination of Internet skills into the student body, in advance of the University's ability to deploy user support via staff resources and traditional on campus laboratories for computer access. I estimate that eff_one saves the University the equivalent of about one full time staff member per 500 student users.

Eff_one was followed by other lists to enable a similar style of informal peer group communications and practising of Internet skills in specific subject areas. These include the law-students list, supporting the Law unit "Legal Practice and Documentation", with some support also for another Law unit, "Public International Law". LP&D applied computer conferencing to cooperative work in small groups, including assignments on drafting of legal documents, whilst PIL encouraged the use of network information sources in international law.

The project enabled collaborative learning of Internet skills under circumstances in which the alternative was no learning at all. The main forms of evaluation were counts of users, counts of traffic volume on lists, and simple estimates of the extent to which users provided user support services for other users. The main difficulties in the project were limitations in University infrastructure for enabling student access to Internet services, coping with rapidly increasing numbers of users and the demand for new lists, raising additional funds, and the work in implementing new services on cleo. Experience gained from the project provides a basis for enhancements in our strategies for developing information technology skills on a large scale, as a prerequisite for applications to teaching and learning in specific units and courses.

Project URL: http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

5 The teaching development

Practical outcomes

The immediate practical outcomes from this project centre upon the use of the listserver majordomo@cleo.murdoch.edu.au (http://cleo.murdoch.edu.au/asu/edtech/caut94/why-lists.html). A listserver is low cost, usually easy to install and maintain, and is amenable to a wide range of applications for group email in teaching and learning, research and administration. Many users find that email is the easiest service to start with, particularly for modem connections, and that frequent arrival of interesting email is an attraction which improves persistence through initial technical hassles.

The major application of majordomo@cleo has been to enable user support services by users. In the absence of staff resources for traditional kinds of user support services, the support list eff_one@cleo offered the only viable strategy for creating a large user base. Samples of eff_one traffic may be viewed via the web page http://cleo.murdoch.edu.au/asu/edtech/caut94/why-lists.html, which gives access to eff_one archives. Similarly, archives for the topical issues list bushcourt@cleo are available.

Bushcourt is for vigorous debate on topical issues and subscribers are warned that it is a "hard hat area". Recent "flames" include user charges for cleo, French nuclear tests, "rape on the Internet", censorship and the "shoplifting article", with each "flame" being accompanied by an influx of new subscribers and contributors. Bushcourt and other lists were created as part of an overall approach to the problem of viability of user base. Attractive services attract users, encourage them to learn how to use the technology, and stimulate them to move beyond the "how to use it" level and into applications which relate directly to their study and future professional careers (http://cleo.murdoch.edu.au/asu/edtech/caut94/attract-students.html).

Improved infrastructure for Internet access and services is another practical outcome from the project (http://cleo.murdoch.edu.au/asu//edtech/cleo_web/infra-internet-access.html). Cleo users introduced graphical interfaces for modem connections, following up on Geoff Rehn's work in initiating the use of host based SLIP emulation on cleo (http://cleo.murdoch.edu.au/asu/edtech/cleo_web/graphical-interface.html). We cannot predict the ultimate extent to which Murdoch students will provide their own home based equipment for low cost Internet access via a University host or hosts, but 40% by the end of 1997 could be a realistic forward estimate.

Users prefer graphical interfaces, for ease of use compared with command line environments. Graphical interfaces are readily provided by Internet public domain software for Windows and Macintosh which in the case of modem users require SLIP or PPP connections. However, technical difficulties with LAN connections from the Law School's computer laboratory prevented a full introduction of graphical interfaces in good time for students participating in the Law units aspect of this project.

Integration into a total learning process

This project prepares the way for a range of avenues we can use for integration of Internet skills into learning processes in all subject areas. With its concentration upon acquisition of Internet skills and infrastructure development, this project gives a basis for developing email, computer conferencing and network information retrieval in teaching and learning, without placing a requirement upon unit coordinators and tutors to set aside time from their subject specialisations in order to teach basic Internet skills. In this case, integration is viewed as a pragmatic division of effort between students' own learning, and additional acquisition of Internet skills in the context of a specific unit. For example, a third year unit such as Public International law should be able to proceed on the basis that most or all students know how to use Netscape (the popular web reader, in

the public domain for Windows and Macintosh), thus permitting PIL to concentrate its specialised interest, that is network sources for international law and the legal significance of the information so obtained.

The project's specific examples of of integration into teaching are provided by Legal Practice and Documentation (http://cleo.murdoch.edu.au/asu/edtech/caut94/lpd-rept.html), and Public International Law (http://cleo.murdoch.edu.au/asu/edtech/caut94/publ-int-law.html).

Monitoring, evaluation and trial implementation

The main forms of evaluation were counts of users, counts of traffic volume on lists, and simple estimates of the extent to which users provided user support services for other users. I estimate that the user support list eff_one saves the University the equivalent of about one full time staff member per 500 student users. However, such estimates are subjective, for there is no readily agreed definition of how much should be done to provide "user support". For example, should students ask their computer hardware dealer for help with modem initialisation strings, or should they expect the University as their Internet access provider to give assistance? Questions of that kind have a big impact on the concept of user support services.

Evaluation presents particular difficulties under conditions of rapid expansion of activities and fast changing technological foundations. The scope of this project did not provide for a research input into developing new evaluation instruments, which could provide a deeper analysis than counts of users, counts of traffic volume on lists, and similar measures, which show the usual 100% or greater growth per annum at this stage of development.

This project is now well past its "trial implementation". Student access to the Internet has become firmly established at Murdoch through cleo's conduct of a major pilot and continuing services such as the majordomo listserver and web server. The ongoing concerns are about details in the scale up towards the goal of Internet skills for all students.

Dissemination of information about the project

The primary avenues are the project's world wide web URL:

http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

and the project's lists on cleo. Information about these is obtainable from the URL above, or by emailing the command "lists" to majordomo@cleo.murdoch.edu.au.

"Word of mouth" dissemination appears to have become especially important in the the student body, although the staff time required to investigate that in detail has not been available. Currently (Sept 95) there are about 100 students with their own personal computer and modem on a waiting list for cleo accounts.

University support and implementation

The University is exploring a number of avenues for a substantial effort in providing Internet access for all students. There are major concerns about the funds required for on campus laboratories to house equipment, personal computers for student access, equipment security, user training, maintenance and traffic volume charges. There are concerns also about network security, observance of codes of conduct and conditions of use, and the risk that activities by some students as Internet users may bring public disrepute upon the University.

The work conducted in this project and in cleo's activities generally constitutes a substantial pilot with much relevance for the scale up towards Internet use by all students. Whilst there can be no

assurance about the extent to which cleo's activities will influence University policy, particular features which may be important include:

1. Providing a wide choice of physical environments and locations for access. These include off campus, home based access using students' own personal computers, modems and telephone line, and on campus laboratories in a variety of environments, including traditional "computer laboratories", workstations in the Library environment, workstations in a "coffee shop" or "cybercafe" environment, and workstations in Student Village (the University's student housing). Experience with international students at Murdoch through the Council for International Educational Exchange, Institute for Study Abroad and other schemes who became users of cleo for their one or two semester visits gives some indications. Small, informal rooms each with a relatively small, socially coherent group of users are likely to be favoured by students, in two variations, "quiet" environments in the Library or within School Buildings, and "social" environments in School Buildings or elsewhere such as Guild of Students offices.

2. Provide full Internet access (http://cleo.murdoch.edu.au/asu/edtech/cleo-web/cleo-internet-access.html), attractive services (http://cleo.murdoch.edu.au/asu/edtech/caut94/attract-students.html), including student oriented lists (http://cleo.murdoch.edu.au/asu/edtech/caut94/why-lists.html) and users own home web pages (http://cleo.murdoch.edu.au/asu/edtech/cleo_web/users-web-pages.html), and user support and induction (http://cleo.murdoch.edu.au/asu/edtech/cleo_web/cleo-induction.html).

Evolution from the original proposal

The project as implemented and continuing now differs substantially from the original proposal, in specifics though not in overall intent. The original proposal stated that:

> As the student user base for Cleo is broadened progressively during 1994, dissemination to students will be strongly encouraged. Experiences to date and research results from other countries suggest that one of the most powerful change agents we can deploy is a significant number of student users who seek to enhance their study by using computer tools for communications and information retrieval.

By early 1994 it was evident that dissemination to students had acquired a powerful momentum of its own. It was unrealistic to confine the project entirely to specific applications in just two units, given the substantial number of requests arriving for Internet access. It was also appropriate to harness the collaborative learning energies available from the student users who approached us during late 1993 and early 1994 (http://cleo.murdoch.edu.au/asu/edtech/caut94/how-collab.html). These users had their own personal computers and modems, which meant that we could initiate a large scale pilot in Internet access and skills acquisition, without being limited by our inability to supply modems and personal computer access to all students enrolled in a particular unit. Some of these users had much greater previous experience and knowledge of Unix than I had, and by early 1994 a productive dependence upon a small core of student advisers had become established. This supplemented considerably the consultant help available from the Computing and Network Services Unit for host managers.

Thus by early 1994 the project had adopted a major emphasis upon creating a large base of student users as a change agent for promoting the use of computer mediated communications in teaching, learning and as the University's "electronic amenities building". The number of student users escalated rapidly:

Feb94	Jun94	Mar95	Sep95

45 308 461 667

By mid 1994 the need to adopt alternative approaches to user support had become urgent. With poor support and lack of attractive and relevant services, about one third of the new users did not sustain their use of Internet access. After the introduction of lists in mid 1994, and graphical interfaces in the second half of 1994, the persistence with Internet use is at a much improved level, now estimated at about 80%.

In facing the issue of "Generic skills or unit specific use of computer communications?", this project adopted the view that we do not need to consider exclusive options, "generic skills" (used generally across all units, as an optional extra, not compulsory), and "unit specific use" (required activity in a specific unit, all must use it). The advice for this project is "Adopt both approaches, as appropriate in your context, to attract the most sustained attention to the use of computer communications" (http://cleo.murdoch.edu.au/asu/edtech/caut94/gen-or-spec.html).

Reference Group

Although a project reference group was nominated in our original proposal, it was not used in any significant way. The reason for this is that cleo's rapidly expanding user base pre-empted the functions of a reference group, becoming the source of a voluminous flow of suggestions, requests, ideas, demands, contributions of public domain and shareware software, postings to cleo's lists, solutions to technical problems, and sometimes the organisers of extras such as the eff_one barbecue. Information and software relating to all aspects of the project came from a wide variety of lists, newsgroups, ftp sites, gopher sites and web sites.

6 Output

Presentations, papers and web pages

Atkinson, R. (1995). Collaborative learning through computer conferencing. Presentation, Combined Universities Teaching and Learning Forum, Edith Cowan University, 7-9 February.

Atkinson, R. (1995). Internet access for schools via cleo.murdoch.edu.au. In R. Oliver and M. Wild (eds), Learning without limits. Proceedings of the Australian Computers in Education Conference 1995, Perth, 10-13 July, Vol.1, 99-109. Perth: ECAWA.
URL: http://cleo.murdoch.edu.au/asu/edtech/caut94/caut94-pubs.html

Atkinson, R. (1995). CAUT 1994 Project: Collaborative learning through computer conferencing.
URL: http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

Atkinson, R. (1995). About cleo - cleo's home page, help pages, services pages and project pages. URL: http://cleo.murdoch.edu.au/asu/edtech/about_cleo.html

Products

Cleo's listserver, web server, ftp server, slip servers and other services are described under
URL: http://cleo.murdoch.edu.au/asu/edtech/about_cleo.html

7 Personnel outcomes

Contributors to the project are listed in Acknowledgements, in URL: http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

The partners were Geoff Rehn, Scott Smith and Archie Zariski. A partner listed in the original application, Ms Carolyn Wilson, left the project in mid 1994 upon obtaining a tenurable position in the Murdoch University Library.

A reference group for this project was not constituted, as a high level of commentary, feedback, offers of help and requests for enhancements were received continuously from cleo's lists.

In 1994-95 an estimated 6 - 8% of Murdoch's undergraduate and graduate coursework students (500 to 600) obtained some experience of Internet access via cleo using modem connections, and a further 1 - 2% (about 100 students) obtained experience via private providers or employers. About 130 law students obtained Internet communications experience via the Law School computer laboratory and cleo. About 30 of these used modem access to cleo from home in addition to on campus access. Plans for 50 Veterinary students to use Internet communications have been delayed owing to delays in provision of School based access. A few have become users of modem access via cleo.

Extract from URL: http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html

<H4>Acknowledgements</H4>
To the Committee for Avancement of University Teaching and its Chair, thank you! Visit <A HREF="http://uniserve.edu.au/uniserve/caut/Welcome.html">CAUT's web site.</A> I appreciate very much the contributions from several hundred student and community users of cleo, Geoff Rehn's work in developing cleo's web server and tia slip server, Scott Smith's work with student lists, Archie Zariski's work with Law School classes and IT promotion, and the support from staff collaborators in CNS, Neil Huck, John Horgan, Khoi Ngo, and CNS Director Peter Sumner, from the Library, Jean Kotai, Anne Greenshields and De Stanton, from ASU, Betty Walsh, with international students, Simon Avenell, and Fernand de Varennes with Public International Law. Thanks also to the IT Policy Committee, supporting innovative approaches to our tasks, and to many persons here at Murdoch University and elsewhere on the Internet.

8 Networks

The approach concerning "expressions of interest" is cautious, in view of current heavy workloads since the Project's budget input into cleo operations ended. The development work done on cleo has been assisted by many staff within the University, and by the efforts of many student and community users. The CAUT Project made a most highly valued input. However, after its formal completion, the core staffing for "project cleo" is now just myself, with small fractional time inputs from several contract staff now funded from other external grants. Additional staff resources with skills in host management and user base promotion are not available until beginning 1996. Thus the main avenue for responses to external expressions of interest is documentation provided by http://cleo.murdoch.edu.au/asu/edtech/caut94/collab-learn.html. At this point in time requests for creation of new lists, for assistance with installations of majordomo, and requests not directly related to cleo operations are referred to existing documentation contained in cleo's ftp server, web server and list archives and faqs.

9 CAUT activities

My personal view is that CAUT is a model of first class practice in the conduct of its mission. It may be important to persuade DEET, as CAUT's employer, to consider how the CAUT example could be applied with benefit in at least some other areas of DEET funded special programs, for example in the Open Net and EdNA initiatives. CAUT has created great "leverage" with a broad ranging, coherent and synergistic program of small grants. Emulation of CAUT's example in other areas may be highly appropriate.

This file: http://cleo.murdoch.edu.au/asu/edtech/caut94/atkinson-caut94-rept.rtf
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