Computers in the Faculty of Health Science--Five Years On

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Keywords

Summary

In 1989 the Faculty of Health Science at Central Queensland University committed itself to a major instructional development project for its nursing education program. Partially supported by a National Priority (Reserve) Fund (NPRF) grant, the Faculty undertook a multi-year project to develop computer-based learning materials.

The success of that project was mixed. However by 1993 staff and students within the Faculty were using computers regularly, many of the staff were involved in developing computer-based instructional materials, and some staff were using available computer-based tools to extend the scope of the standard Health Science materials developed under the project. As well, the Faculty was committed to using Faculty funds for technical support staff to maintain its computer infrastructure and to assist both staff and students in using that infrastructure.

The authors review the original NPRF project, then explore the Faculty's continued development and use of computer-based learning materials through an examination of student and staff evaluations, personal recollections, and subsequent projects. The paper demonstrates that the NPRF project spawned a number of other computer-based developments, including the offering of health informatics degree programs at the undergraduate and postgraduate levels, the development of the Faculty's current Internet site and a CD-ROM based interactive multimedia project for diabetes education, and that moderate levels of funding can maintain a computer-literate Faculty which views computers as essential tools for learning.

Introduction

Central Queensland University (CQU) provides undergraduate and postgraduate education to over 10,000 students studying on campus and at a distance through its five regional Queensland campuses and six international centres. Lectures for campus-based students may be delivered via videoconferencing or audiographics facilities; teleconferencing and electronic mail discussion groups provide regular contact for many students; and individual lecturers are experimenting with flexible learning technologies including web-based resource materials, Internet CHAT and the electronic submission of assignments.

In 1989 the fledgling Faculty of Health Science, CQU, committed itself to a major instructional development project for its nursing education program. While the project, funded both by a National Priority (Reserve) Fund (NPRF) grant and the University, led to the development of some computer-based learning materials, it was more instrumental in the Faculty's widespread adoption of information technology (IT).

The funded project, completed in 1992, was examined by one of the authors from the perspective of the project participants [1]. He identified some of the deficiencies of the project and its management, how they were resolved, and their consequences. As the CAL/CML (Computer Assisted/Managed Learning) Academic Coordinator (1993, personal communication, 23 February) indicated:

> In hindsight, we've done at least two-thirds of what we started out to do--and the base is there--staff are committed to CAL. Some of them will never do any CAL development themselves, but they are all committed... The real benefit is to the students. They are getting the benefit of the materials developed and in the pipeline.

The other author was employed for several years in the Faculty support role, providing hands-on formal computer training for staff and students as well as informal hands-on support to individuals, developing and testing new computer-based learning materials, and developing both multimedia and web-based materials. This paper reviews the original project and reports on subsequent developments.

CAL/CML in the Faculty of Health Science 1989-1992

The establishment of the Faculty of Health Science and the Diploma/Bachelor of Nursing program resulted from the 1990 shift of pre-registration nursing education in Queensland from hospitals to the university sector and the demand for post-RN degree completion programs. The foundation Dean of the Faculty was an 'early adopter' [2, 150] of the use of computers, specifically microcomputers, in both education and university administration, and had a vision of how they could be used to enhance learning. However, the lack of adequate resources for a conventional clinical teaching program was a major contributor to the decision to computerise.

One of the authors [3] had found that the staff of the Faculty were very willing to use CAL/CML, but that commercial sources of appropriate materials were very limited (lacked Australian terminology, particularly in pharmacology, weights and measures, and procedures). The Faculty, wishing to keep its CAL development at a level that would be manageable within the Faculty itself, decided to utilise the resources of students (computing students in particular) and staff within the Faculty and University to develop materials locally. The Faculty also decided to use entry-level Macintosh computers for staff and students, recognising that good access to basic, easy-to-use, computing facilities by all staff and students was essential to the success of any CAL activity.

The Faculty subsequently received $300,000 over two years from the National Priority (Reserve) Fund for the development of the CAL/CML materials. This funding accelerated the development of courseware and the acquisition of computing resources, but did not change the Faculty's basic development philosophy [4 , 5]. The facilities developed over the period 1990-1992 included individual desktop computers for staff productivity, communications, research and administrative activities and a dedicated teaching laboratory.

One of the staff members originally involved in the project was relatively experienced at preparing learning materials and was soon writing materials which could be adapted to CAL. Others found it more difficult, and some months after participating in the decision to use computers, but prior to the first effects of the NPRF funding being felt, it was already obvious that 'coal-face' teaching duties would compete with the preparation of CAL/CML materials. For these staff, their CAL development effort had "petered out

towards the end of the year—because we were planning for the diploma course at that stage" (Academic, 1990, taped interview, 2 March).

It was not surprising, therefore, that a full range of CAL materials did not eventuate during the project. However, other benefits were recognised:

> The students particularly are appreciative …the lack of facilities on campus for the other students in the other Schools do make them realise just how damn lucky they are. They've got a lab that is devoted to them, and them alone… (Student Support Staff, 1992, taped interview, 31 January).

Computer-Based Learning in the Faculty of Health Science 1993-1997

The Faculty of Health Science now has 1100 plus students undertaking professional studies and research degrees in Health Science, Primary Health Care, Health Promotion and Health Education, Health Informatics and Management, Human Movement Science, Nursing, Occupational Health and Safety, Midwifery, and Indigenous Therapies. Every undergraduate student has an electronic mail address, uses computers for word processing and other productivity tasks, and receives at least a basic orientation to information technology through a core health informatics unit.

Staff are actively encouraged [6] to use presentation software for the production of class presentations and notes. The Faculty has moved from a HyperCard-based authoring tool to the use of Director and other professional presentation tools. Training sessions are regularly held for both staff and students in the use of the technology, and two computer support staff are employed by the Faculty--one with a focus on student support, the other on staff support.

Since 1990 the support staff have freed academics from having to understand the intricacies of network and operating systems and, as the academics did more of their own word processing, scheduling, etc., reduced the need for secretarial support. Unfortunately, the downside of a dependence on technology is that many staff are neither fully aware of the functionality of the technology they are using nor the applications of the technology in healthcare. As well, staff and students indicate that their facilities are too slow and out-dated.

A number of activities have attempted to expand the knowledge base. A joint Health Science and Business Faculty project, for example investigated the potential for computers

in an aged care setting [7]. Health Science staff and students worked on a funded project which developed a CD-ROM based interactive multimedia project for diabetes education[8] and the Centre for the History of Remote Area Nursing has developed a CD-ROM based collection of historical materials. A number of smaller research projects have investigated the use of technology for learning (eg [9] describing e-mail use between CQU and NTU) and Health Science had one of the first Faculty-based net presences at CQU. Health Informatics is also a component of the common first year for all Health Science students and is currently the strongest of the Faculty's postgraduate programs.

Since the Faculty's original intention was to replace at least some labour-intensive tutorials with computer-based materials, any materials developed had to be fully integrated into the curriculum. While development was undertaken in-house by the technology staff for delivery on the student lab server, it was anticipated that at some stage development would be at a standard for commercial marketability. The first multimedia, rather than CAL, development began in 1995 following a 1994 hardware upgrade for the support staff and the purchase of Macromedia Director. The first program developed was 'Asepsis', followed by 'Health and the Community' in 1996 and 'Fluid Balance Documentation' in 1997. More extensive development was proposed but not implemented due to resource constraints.

PharmaCAL [10], a tutorial to assist in understanding medications, made the transition from HyperCard to Director in 1997 and is still one of the most popular and successful locally developed products. The materials for a teaching unit in the human movement program are currently being produced in a jointly funded CD-ROM project with the University's Interactive Multimedia Unit and many units have courseware available on the server in the student lab.

The computer-based materials for the core first year unit Health and the Community, for example, underwent a number of changes before a 1997 university grant funded the use of Internet CHAT, videoconferencing, e-mail, and web delivery of the study guide. Students in most units regularly search the web or use the Library's electronic resources for their assignments. As one of the authors recently reflected:

I find the shift intriguing. In 1993 students were saying "I just want to be a nurse". Now they are health professionals first... but they want computers for IRC, web access, their CAL, typing assignments, etc.

Change and the legacy...

The challenges of using the technology have not changed; staff and students alike insist that the computers are too slow and are always busy, "[I] couldn't get on a computer because everyone was doing assignments on them, doing e-mail and CHAT lines." (Student, personal comment, 1997) However, they continue to be enthusiastic about the computer-based learning materials, "It [CAL] was one of those different teaching methods, not rote learning. It's more learning in a different context so that it is interesting." (Student, personal comment, 1997), and are aware of the possibilities of newer technology:

A CD would be good... all CALs from Health Science available on CD for either purchase or loan for download onto home machines... Instead of carrying half a dozen textbooks, I [could] carry two CDs. (Student, personal comment, 1997)

In less than a decade the Faculty of Health Science developed from a nursing program with a few dozen students to a full range of professional studies for over 1100 students on several campuses and at a distance. The CAL/CML funding in 1990-92 kick-started the development of a computer-based productivity and learning infrastructure plus an attitudinal change towards the use of IT. While the Faculty has, to a large extent, forgotten the source of its IT inspiration every undergraduate student now takes at least one health informatics unit and two support staff with a modest budget of less than $100,000 annually (hardware, software, maintenance and materials development) maintain and expand the vision.

Acknowledgment

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