

Using C&IT for learning and teaching



introducing a set of primers for lecturers on communications and information technology

Why C&IT?

Higher education, like other sectors of society, has undergone a technological revolution. Today's students often arrive at college with considerable experience of computer use. As well as the university library they want access to the resources of the Internet and World Wide Web. They probably communicate using email, electronic chat rooms and personal Web pages. They are expected to wordprocess their assignments and may well be familiar with spreadsheets, databases, desk top publishing and presentation software, either from school or from work experience. Rising participation in higher education, especially among non-traditional students, has placed a new emphasis on individual needs and learning styles at a time when classes are actually growing larger. Increasing numbers of students do not even attend a 'real' campus but study at home, with electronic access to their tutors and peers, and with electronic materials forming an important element of their curriculum. When they graduate, these same students join a workforce which will require 90 per cent of them to have skills in communications and information technology (C&IT).

For all these reasons, C&IT is becoming an important component of teaching and learning at tertiary level. These primers have been written to help academics understand the new technologies available and integrate them effectively into their courses, with the emphasis on active and student-centred learning.

How can C&IT enhance student learning?

Like other teaching tools, the computer is effective only when it is used to meet specific learning needs and when it enhances the learning experience for the student. Computer assisted learning (CAL) does not mean replacing lecturers with computers. It can mean any of the following (and much more)...

- lecture notes and other resource material posted on the Web to help students prepare for tutorials
- information retrieval exercises using online reports, journals and databases, electronic archives, hypertext and hypermedia documents
- interactive courseware – developed in-house, bought off the peg, or tailored to the requirements of a course
- email noticeboards to encourage student discussion
- reinforcement of important ideas with drill and practice packages or self-assessment exercises
- open access materials on a departmental server to enable students to follow up class work in their own time
- collaborative projects using email, videoconferencing, a shared Web site or a local network
- a question library giving constructive feedback during exam preparation
- an archive of student assignments for other (and future) course members
- students acquiring a range of IT skills – email, word processing, presentations, spreadsheets, databases, and different types of CAL – as part of their course
- establishing a newsletter, noticeboard or conference page for a course or module
- simulation software to model real-world problems or run experiments which would be impractical in the lab
- introducing new concepts via a micro-environment, which allows students to structure their own learning

- simultaneous real/virtual seminars, allowing distant students to work alongside campus-based students

It is clear that people use the term 'CAL' to mean very different things. It can be helpful to distinguish between:

- **courseware** (software designed specifically to teach content or skills as part of a course of study) and **worldware** (software and systems which may be used in the learning environment but are not specially designed for it)
- **information** applications (including digital libraries, courseware resources and other kinds of media which provide knowledge content to students) and **communications** systems and applications (which provide students with new ways of collaborating, keeping in touch with each other and their tutors, and reaching out to the wider world).

So why use C&IT?

The advantages of computer-assisted over other forms of teaching remain controversial. There is a clear need for research and development in this area so that questions can be answered more clearly. However, case study evidence suggests a number of possible benefits:

- learning at a time and place to suit the student helps overcome traditional barriers to access
- appropriate use of C&IT can release staff time for small group teaching
- interactive and multimedia delivery can enhance motivation and reinforce learning
- CAL provides a student-centred environment to suit the pace and learning style of the individual
- students receive immediate feedback and teachers can carry out continuous assessment
- electronic communication aids collaboration among student groups and helps staff and students keep in touch
- access to the Internet and WWW provides vast resources for assignments and research
- familiarity with C&IT gives students useful transferable skills for the job market

Some tips for using C&IT

It is very difficult to apply general rules to such a wide range of technologies and techniques. The experience of the CTI has been that different disciplines make very different uses of C&IT, and what is appropriate to the teaching and learning of one subject will not be appropriate to another. The best advice is to consult a subject expert such as you will find at the relevant CTI Centre.

However, a few general hints apply to all forms of teaching with new technologies.

- **Define your learning goals.** New technology works – for some learning purposes, for some learners, and for some of the time. Make sure you know why you are using it.
- **Integrate the new learning environment.** Technology-assisted learning can be motivational, but only if students can clearly see its value in relation to the rest of their course, including their final assessment.
- **Adapt the CAL to your needs.** If you are using courseware which cannot be adapted, make sure it is directly relevant to the learning goals of your course or consider asking *why* it has been designed that way. Development is very costly and time consuming, so it is important that materials are flexible enough to be used widely.
- **Don't try to do too much too soon.** New technology requires at the very least the learning of new skills. It can mean incorporating new materials, redefining outcomes, even reconceptualising an entire course programme. Gradual steps are more likely to win acceptance and lead to lasting change.

- **Consider communications as well as information technology.** Computer mediated communication provides exciting opportunities for collaborative learning, whether this means working in new ways with students on campus or drawing in students from sites all over the world.
- **Consider worldware as well as courseware.** Many applications not specifically developed for education have been used to enhance learning in creative ways. Remember that the use of worldware gives students transferable skills for the world of work.
- **Make sure the technology works** and is properly supported. Great teaching ideas are useless if the system crashes whenever a full class of students is logged on. This means involving IT support staff from the outset.
- **Make sure students and staff are happy with using the technology.** Even Web browsers require basic IT skills, so be aware that time may need to be invested here and look to your institution or department for support.
- **Ensure good access to computers.** Used well, C&IT allows greater access and flexibility. Make sure that limited access to equipment does not introduce new restrictions on learning or new inequalities among students.

Resources

Implementing Learning Technology, a handbook from the Learning Technology Dissemination Initiative (<http://www.icbl.hw.ac.uk/ltidi/>)

Other useful resources at the same Web site include a Beginner's Guide to Teaching with Technology <http://www.icbl.hw.ac.uk/cause/> and Brite Ideas online: <http://www.icbl.hw.ac.uk/ltidi/briteideas/>

Technology in Teaching and Learning: an introductory guide by Warren, Brunner, Maier and Barnett (1998), published by Kogan Page ISBN 0 7494 2515 6.

You can find details of this publication and a wide range of other resources online at the Interactive Learning Centre, the University of Southampton: http://152.78.148.18:80/ilc/ilc_resources.htm

Active Learning journal (see <http://www.cti.ac.uk/publ/actlea/>) and the CTI Handbook (see <http://www.cti.ac.uk/publ/handbok.html>), both available free to academic members of UK institutions of higher education.

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Primers in this series

Finding appropriate CAL materials
Embedding CAL into courses
Computer based assessment
Presentations and lectures
Searching for materials on the Web
Teaching and learning with the Web
Authoring for the Web
CMC: email
CMC: Web conferencing
Simulation
Modelling

Primers in the second series

Authoring CAL materials
Evaluating the use of CAL
Multimedia: sound
Multimedia: graphics
Multimedia: animation
Multimedia: equations
IMS/metadata
CMC: videoconferencing
C&IT for diverse student groups