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### **Computer Managed Teaching and Learning in Law**

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**Abstract:** The availability of cheap computers and the developments in networks and communication technology mean that technology can be used to manage learners. Computer Managed Communication developed primarily out of the need to reach distance learning students can also be used for in-house students. The basic research on CMC is abstracted and its use on an LL.B program is discussed, with problem issues highlighted and future developments explained.

**Keywords:** Computer, Information Technology, CAL, CMC (Computer Mediated Communication).

#### **Introduction**

Technology has affected the ways in which law faculties operate. Three distinct areas of impact have been recognised. Firstly, Information Technology Law, that is the substantive legal rules which affect the manufacture and use of information technology. Secondly, Information Technology and the Law, this is how the work of lawyers and the legal process are affected by the use of technology. Finally, how Information Technology can, and is, used to enhance the teaching and learning process. This paper will consider how information technology is used to assist in the teaching of information technology and the law to students on an LL.B course.

#### **New Teaching and Learning Strategies**

Traditionally using information technology in the teaching and learning process has focused upon the developments of Computer Based Learning (CBL) - that is, inter-active Systems providing teaching and learning environments for students. Work still continues in this area, particularly in a number of projects that are developing Courseware materials. Courseware includes Windows based systems providing some interactive elements, coupled with hypertext Systems allowing access to legal data bases of relevant materials (Law Courseware Consortium, 1993).

The pressure to continue the development of these Systems has in part come from the rise in student numbers without a parallel rise in staffing levels. Academic staff have been faced with the options of either considering innovative teaching and learning methodologies (including information technology) or being swamped by a mass of students taught in the traditional way. However, there are those who have always argued that the innovative teaching systems do in themselves provide distinct advantages over traditional teaching Systems so that their development should be encouraged irrespective of any rise in numbers. Computer based training systems provide, it has been argued, the potential for self-pacing, adaptive and individual tuition and instant feedback and correction. Program development where tutors carefully articulate questions, answers and responses enhances the tutors' understanding of the subject area. Systems provide a means for equalising levels of achievement and provide links with other technological developments: video, data bases and

expert systems. Sophisticated branching, impossible with workbooks, enables systems to mould themselves to individual student needs. Systems can then offer data collection for the tutor showing the varying needs of students (Jones, 1991).

But CBL does not provide the full picture. Technology is also being used in the development of other innovative teaching techniques particularly within the context of distance and open learning. Although open and distance learning systems often provide a poor substitute for tutor contact, they do for many provide their only means of access to higher education.

## CMC

The lack of tutor and peer contact leads providers of distance learning to consider if the difficulty of communication could be partially met through the increased use of technology to enable what is referred to as 'Computer Mediated Communication' (CMC). It is claimed that Computer Mediated Communication provides

".... unprecedented opportunities for educational interactivity" (Harasim, 1990)

Research and developments in this area are often attributed to the pioneering work of the New Jersey Institute of Technology (Hiltz 1990). Developments have continued at Pluto - Manchester Metropolitan University, Cosy - UK Open University Institute of Educational Technology (Mason), Danish Technological Institute. (Sorensen and Kaye, 1992). A thorough review of methodologies is contained in Mindweave (Mason and Kaye, 1989).

These CMC projects traditionally invoke the use of a number of techniques referred to as the Virtual Classroom (Hutchinson and Murray, 1992). The virtual classroom allows the development of interpersonal contact and interaction to be developed through the medium of electronic communications. This environment should be providing different support from that found in the traditional classroom. As Hiltz suggests one should aim

"to create learning and teaching environments that are more effective for at least some kinds of materials, rather than merely trying to replicate the traditional classroom electronically" (Hiltz, 1984).

Individual techniques within the virtual classroom include:

- electronic communication/conversations between tutor and students, and between student and student
- electronic distribution of course materials
- electronic conferencing
- electronic bulletin boards
- access to local and remote data bases
- use of some form of interactive materials

The limited reviews of these techniques show a number of advantages in using CMC. Computer mediated communications may help overcome the shyness of students who, for a host of reasons, do not feel able to contribute in a normal class environment, but can contribute using CMC without the same fears. CMC provides a non-judgmental environment in that, unlike a traditional classroom where tutors feel the need to respond to an incorrect point made by a student, in an electronic conference, incorrect, inaccurate or irrelevant comments can be ignored. Minority students are not identified, nor indeed are tutors, allowing all comments to be treated on an equal footing. These systems allow students to participate at a time to suit themselves. Tutors also are able to take this advantage in time management and be able to deal with a large number of students in a fraction of the time it would take if students were requesting individual interviews with a tutor.

CMC does have certain problems. Primarily, most students interviewed felt that there are technical barriers to be overcome. Students need to become competent in both the communications and conferencing systems being used. Although systems may aid one form of communication, they do encourage social isolation from other colleagues. Some students report that discussions seem to be at an inappropriate level, thereby deterring them from participating. Finally all the systems require a discipline to login at regular intervals. Too infrequent logging in will lead to a large build up of material and provide little opportunity to participate in discussions. These findings point to a need for close moderation of material by tutors, that sifting and considerable prompting is required. Simply throwing in opening comments is often not sufficient.

## **Information Technology and Law Courses**

Many Information technology courses owe their origins to the Council of Europe. The Council of Europe encompasses a number of Directorates, each directorate having a number of specialist committees to advise it. In 1980 the Committee of Ministers of the Council of Europe adopted Recommendation No. R (80), a recommendation prepared by the Committee of Experts on Legal Data Processing under the authority of the European Committee on Legal Cooperation. The recommendation draws the attention of the competent authorities to the growing importance of the subject of computers and law. It encourages and supports research, encourages the organisation of training courses and seeks to promote the international exchange of students. Attached to the recommendation is a suggested syllabus for training courses for law students. The syllabus is subdivided into three main topic areas: computer systems, the application of computers to the legal system and professional and normative problems raised by the manufacture and use of computers.

At its 12th meeting in 1987, the Committee of Experts on Legal Data Processing agreed to establish a working party to consider a revision of Recommendation No. R (80) 3. Although the original recommendation had lasted through the fast moving decade remarkably well, it was agreed that a number of change agents had ensured that a thorough revision of the recommendation was needed. These agents were isolated as being: the development of the PC environment; the new ways in which information technology has percolated society; the new working environment for lawyers and courts and, the rapidly changing legal issues being raised through the increased use of information technology.

## **Context Implementation of a course on Information Technology and Law at Liverpool John Moores University**

At the Liverpool John Moores University the Information Technology strategy is based around the provision of a centrally provided computer backbone around groups of mini computers to which academic staff are connected through a workstation situated in their office. Student access is through networked computing laboratories on all sites. Each laboratory is supported by its own group of file servers which are capable of accessing the facilities at all other sites and the mini computers. The Law School may therefore specify particular software for its own site, safe in the knowledge that alternative software may still be accessed at other sites. The system provides a consistent environment for all students and the possibility of a student being able to use any university laboratory. VAX computers provide electronic mail facilities, electronic conferencing systems, wordprocessing and database software. The fileservers contain the main standard application programs in wordprocessing, databases and spreadsheet, as well as specialist CBT programs in law and access to LEXIS.

The School of Law, Social Work and Social Policy has built its own IT strategy within the institutions' strategy. The School aims to provide skills courses for ALL school based students in IT and Law, to use IT in delivery of material through Computer based training, train in the use of data bases, expert systems and practice systems and to have complementary staff development activities in computer based training production, desk top publishing for work book preparation and electronic

presentation aids. It also encourages the use of Information Technology in course administration and management and legal research.

The School's law teaching is primarily centred around its LL.B course which has amongst its stated aims the development of analytical, research and problem solving skills by its students. The LL.B course is based on, and adopts, the University's Integrated Credit Accumulation and Transfer Scheme (ICS). This is a modular scheme operating within a system of levels. To obtain an award students are required to achieve the requisite number of credits at the appropriate level. Credits are grouped into Modules. A Module is a finite and coherent set of learning outcomes. Module size is variable with the minimum being 1 credit and the maximum 8 credits. A Credit for undergraduate courses is one hour of structured directed learning activity undertaken by a student per week for a 30 week learning year, i.e. 30 hours of learning. The essential aims of the ICS scheme are to provide opportunities for students to adopt varying learning programmes through the selection of modules and to facilitate inter-institutional transfer amongst Higher Education institutions. On a course such as the LL.B, students will take a selection of core modules, option modules (which are a prescribed cluster of modules) and elective modules, which are modules not named in the LL.B course but are available generally within the institution. For example, a student on the LL.B, having taken their core modules, may select a number of options for their final year of study along with elective modules in, perhaps, languages. Optional modules on the LL.B may be electives on other courses.

After operating for two years under the ICS scheme, in 1992 the School considered some restructuring of the LL.B course. Part of this restructuring involved the development of a core module on Information Technology and the Law to replace the previous optional technology elements within the LL.B. The course team took the revised Council of Europe syllabus as a basis for their course. In addition, the structure and content of the course has been informed by a number of additional sources, (Jackson, 1991) The resultant 'course' on Information Technology and Law would be a series of core and optional modules for the LL.B course, which would run over the three years of the LL.B degree and would be part of the development of lawyering skills. This course would be supplemented by the use of information technology in the teaching, learning and assessment processes throughout the whole LL.B course. The modules would begin by offering a basic introduction to information technology and the institutional facilities. This would introduce word processing, data retrieval, spreadsheets, and electronic communication. The main Information Technology and Law module would follow this introduction.

The module would consider the needs for new legal concepts, standards, procedures and law making strategies brought about by developments in Information Technology and examine the computer as a personal working tool for the law student and for the legal professional, comprising matters such as personal computing, telecommunications, expert systems and databases. Finally, the course would consider the legally related applications of information technology comprising matters such as legal information storage and retrieval, administrative systems decision support systems in public administration and law making, electronic data interchange (EDI) in trade, administration and transport and electronic funds transfer (EFT) for banking and financial transactions. The module would be 'core' to the LL.B course but could be offered as an elective to any other course. Such a course would have an appeal to a number of other disciplines and courses. The Information Technology and Law module would follow two three-credit modules on legal process and legal skills. Wherever appropriate information technology would be used in the development and use of skills within these earlier modules. Therefore, computer aided information retrieval would be twinned with legal research, text and document preparation systems with drafting, electronic communication and decision support systems with negotiation and interviewing, and so on. Whilst the three modules would relate to each other, the Information Technology and Law module would be capable of standing alone and therefore, as has already been stated, be available as an elective for other courses. What is imperative from the perspective of the LL.B course would be the invisible join of the technology module with the study of law and the development of researching and lawyering skills.

The course aims to:

- provide an introduction to Information Technology and to the institutions facilities
- illustrate the increasing number of ways in which information technology affects society.
- show how is it necessary for the law to adopt new strategies and perspectives to meet the legal implications thereof and to provide an indication of these implications and strategies.
- illustrate how the development of information technology provides a new working environment for the lawyer, and contributes towards changes in business practices and public administration, including a more efficient administration of justice.
- introduce the substantive law issues raised by the manufacture and use of Information Technology.

Briefly, the course content includes:

- Introduction to information technology and the institutional facilities, including introductions to word processing, data retrieval, spreadsheets and electronic communication.
- Introduction of new legal concepts, standards, procedures and law making strategies brought about by developments in Information Technology.
- Examination of the computer as a personal working tool for the law student and for the legal professional comprising matters such as personal computing, telecommunications, expert systems and data bases.
- Consideration of legally related applications of information technology comprising matters such as legal information storage and retrieval, administrative systems, decision support systems in public administration and law making, electronic data interchange (EDI) in trade, administration and transport and electronic funds transfer (EFT) for banking and financial transactions.
- An introduction to the legal issues related to the above applications and in other uses of information technology, such as vulnerability and security, computer crime. Data protection, contracts, licenses and intellectual property rights.

Formal assessment is through the production of a student project illustrating the use of technology in the legal process and in the preparation of an essay.

In the second and final year of the LL.B course a specific optional module could be offered to deal with the legal issues related to applications of technology including vulnerability and security, computer crime, data protection, regulation of telecommunications and the information market, automation of public administration, freedom of information, contracts, licenses, intellectual property rights.

But how then could the advanced topics recommended by the Council of Europe be incorporated into the course? These advanced topics are either topics already introduced and to be considered in greater depth or topics such as the theoretical issues of artificial intelligence (AI) involving representation and reasoning strategies for law (legal materials) or applied projects on technological developments within networking, personalised and integrated work stations, programs or interdisciplinary issues relating to system design, system analysis and organisational analysis. Within the CATS scheme are the ideas of practicum modules and independent study modules. The practicum module enables a student to have a practice placement for which credits are awarded. Students wishing to consider the application of technology within the profession could consider a practicum module in the information technology department of a local firm or local authority. For students wishing to develop topics already considered at a basic level, or those wishing to consider the new advanced topics, say of AI, the independent study module allows students, with the cooperation of a tutor, to develop their own module which could, for example, be the development of a legal expert system or the development of a clients record system for a student legal advice clinic.

The provision of these specific modules would be underscored by other individual substantive law modules in all years making use of; interactive teaching programs, standard application programs such as spreadsheets, electronic conferencing, computerised assessment techniques and specific academic data bases. These would be in line with School and institutional policy on the use of technology in the learning process and embodying the Council of Europe's recommendation of encouraging the use of technology in the learning process.

## **Course delivery**

The new course on Information Technology and Law was introduced after three years experience of the ICS system. This experience had allowed academics and others to clearly identify both advantages and disadvantages. The main disadvantages have centred around the significant increase in assessment loading for both staff and students and the consequent preoccupation of all with assessment. The short terms (9 teaching weeks) leave little time for reflection and reading as students are naturally concerned with assessments that occur every nine weeks. The advantages have been the increase in options for students and the innovative assessment methods introduced by staff to overcome the assessment loading.

Within this context the course was planned to be delivered in the third term of the first year, with 9 teaching weeks available. At the outset it was the intention of the course to use a number of CBL packages to introduce technology and technology issues as affecting lawyers. Placing the use of these programs in term three however would give an isolated and disjointed feel to the foundation modules and fail to reflect the commitment to the use of technology in the total learning experience. It was therefore decided to consider supplementing the CBL programs with an element of CMC. Before this could be done the course team developed a set of principles within which to operate CMC.

CMC requires that those parts of the course that use it should be dependent upon it; the Systems should be central to its delivery. These parts should be core, have limited learning objectives so as to allow for proper evaluation of students, and not be so specialist as to favour technical students and distort results. Any assessment should be capable of distinguishing between success and failure of objectives and differentiate failure of the model. Tutors need to support technology and, students should not see it as marginal. Finally, there should be a highly structured timetable for that part of the course.

## **Course planning and design**

The course team accepted that the course could at least in part be delivered electronically. By applying the above principles it was decided as a first stage to deliver those parts of the course concerned with the introduction to information technology and the institutional facilities, including introductions to word processing, data retrieval, spreadsheets and electronic communication and the examination of the computer as a personal working tool for the law student and for the legal professional comprising matters such as personal computing, telecommunications, expert systems and data bases.

Once taken, the decision meant that the team was no longer constrained to delivering this part of the course in the third term, indeed, there were good reasons for beginning delivery on day one of term one.

The topics within these areas were then divided into a set of staged tasks related to the existing hardware and software facilities available. After an introductory lecture of 30 minutes, students were given task 1, which was simply to register on the university's computer systems and send an email message to the appropriate tutor. Students were directed to the university computer laboratories and to a number of university publications giving introductions to computer based systems and networks.

Students were told that their tutor, on receipt of the email message, would send task 2. This next task would require the student to use another package and produce a stated outcome. On receipt of these outcomes the next task would be sent and so on. The series of tasks took the students through electronic mail, accessing both Vax and fileserver systems, running and using CBT programs, introduction to wordprocessing and retrieving files from email systems. Task completion would be evidenced by the student showing completion of the learning outcome, which could be either sending answers to a series of questions, or by the production of a requested document i.e. wordprocessed curriculum vitae, amended trust document. Tutors kept records of individual student progress and were responsible for answering questions. Students were encouraged to ask questions by email and they were given one term to work through all the tasks. A conference was established, to which students could contribute general course issues.

## **Evaluation**

The course has now run for two years and a number of conclusions can be drawn from the experience. The first group of comments relate to the inadequacies of the various systems used. These failings are not surprising given that the systems were, during this course, being used for purposes for which they were not originally designed. The electronic mail system provided no simple way of managing large numbers of students; student progress was kept manually and it was impossible to communicate to all students who had reached a particular stage. As students were able to manage the course themselves over a full term, students were all at different stages. It was sometimes desirable to contact all students who had completed, say, task 4. There was no easy way of doing this other than by creating manually a mailing list of all students at this point. Nor did the system provide easily accessible information of who was logging in, when the system allows a user to query who is logged in at a particular time but does not allow access to logins throughout the day. Tutors were therefore unable to see if any student was merely lurking, that is logging in and viewing the discussion but not participating. This lack of control over the student body meant that some students fell through the system and only surfaced at the end of the term requesting help. Little or no use was made of the supporting conference system (NOTES), which may have been due in part to the lack of prompting from tutors and, in part, to the very unfriendly interface of the conferencing system. Later tasks required students to interface their PC with the VAX system. ACCESS, the system used, although relatively efficient, again has a poor interface and many students struggled at this point. Finally, neither the school nor the academic staff were networked. Tutors were required to go to computer laboratories across campus to reply to student email. Delays in replying and in prompting were therefore inevitable. Students were in competition with other students in the faculty for access to computer terminals. This, coupled with severe network failures, led to a good deal of anxiety amongst students and to extensions being given into term 2.

The second group of conclusions relate to the course and its management. A number of decisions taken by the course team were seen, in the light of experience, to be mistakes. Allowing students to work through all tasks at anytime during the term, although attractive in self-management terms, failed to provide the necessary discipline for students. There was an inevitable rush towards the end of term to complete, and management of the student body became impossible. The decision not to release a task until a tutor was satisfied that the students had completed a previous task, again, was an error. Any delay in checking mail by a tutor could leave the student waiting for the next task; feedback should be more immediate. Students should also be able to move on as and when they wish. Most students felt there was too little in the way of introduction; a slightly longer introduction would have saved them a considerable amount of time early on. This view was most clearly articulated by the mature students who generally had the least experience of technology. Finally, too much reliance was placed on the concept of CMC to the detriment of any personal contact. Full-time students felt reluctant to approach tutors other than through email!

Some of these issue are now being rectified. Tutors are now networked and consideration is being given to allowing students to obtain the next task automatically rather than wait for it to be sent by

the tutor. Students will also be kept on a tighter timetable of one task per week, rather than allowing students the freedom to complete the tasks at their own pace.

Overall, the majority of students completed all tasks and quickly showed a good grasp of the technology. Student feedback was generally favourable.

## **Future developments**

A number of internal and external factors, in addition to student feedback, will affect the way in which the course and its use of technology develops. Internally, the university is to move to a semester system. This should reduce the assessment loading on students but will have little impact on the time available for teaching. The School is now fully networked and all staff and students have access to the computer network. Externally the extension by the Law Society 'core' subjects, without including information technology, will increase the pressure to reduce non-core options. The pressure will be for courses such as Information Technology and the Law to become optional rather than compulsory.

A number of changes are being considered by the course team. The most fundamental is the extension of CMC into the third term, teaching topics which at present are taught more traditionally. It is intended to provide facilities for students to email their final project assessments rather than, as at present, by handing disks to tutors. This will be supplemented by previous years projects and all handouts being available for downloading on the network. Students will be encouraged to share their projects electronically with others before seminars. New conferencing systems will be introduced with three conferences being established, one as a bulletin board, one for small group discussion on specific issues and one for the whole group. Tasks will be available automatically from a central database, so that students are not delayed by tutors not responding. Finally, electronic databases of materials will be established to supplement the existing library provision.

More controversially, consideration is being given to modifying the course assessment. There was some evidence that some student projects were not the students' own work. At present students are merely required to demonstrate their project and are not required to show the ability to fully use the package in which the project is authored. Consideration is being given to setting the students a more limited project assessment that is to be undertaken in a computer laboratory under examination conditions. During this two hour session students would be required to use a package to produce a small prototype. This form of assessment would require the students to be familiar with the package, but the limited time available would limit the scope of projects made possible. Alternatively, students could be required to amend or develop existing packages.

## **Conclusion**

The first tentative steps into CMC with a traditionally hostile group seems to have been, at first sight, a success. LL.B students were receptive to the idea and took to the systems well. The above structural changes will significantly tighten the feel of the course. In the future, the course team are looking to have a more automated management system for the course, backed up by some form of expert system to provide guidance on key issues. The present email and e-conferencing systems are seen to be too limited on the management functions. Any new systems should hopefully have a more uniform interface, so that students using email and e-conferencing systems can move seamlessly from one system to the other (Derycke, 1992). There would also seem to be no good reason why a number of the above techniques could not be used on other non-technology courses. Many facilities and techniques would appear to transfer favourably to other areas of the LLB curriculum, access to course materials, conferences and development of databases would appear to be useful editions to any course management system.

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