

en route. Finally, employers are delighted to hear that students have the opportunity to develop themselves in this innovative way.

## TECHNOLOGY

### Implications of electronic developments for distance and face to face learning

J Reijntjes & M Valcke

32 *Law Teacher* 3, 1998, pp 245–259

The introduction of information and communications technology (ICT) in law teaching should aim at improving quality, not at lowering costs. Through the development of interactive teaching programs, ICT has the potential to revolutionise legal education. In times when a rising student/staff ratio is threatening the quality of education, the well-planned integration of ICT into law teaching can at least ensure that the quality of courses is maintained, despite lower budgets.

The authors describe the experience in the Netherlands as an example of the extent to which these economic arguments and the educational, structural and functional organisation of universities are interconnected. There student complaints about the quality of the education they received made in response to the economic argument raised by the government that they should pay higher tuition fees induced a new policy aimed at delivering higher quality education in exchange for increased fees. Higher quality was pursued by creating a special fund to stimulate innovation and by ordering the Open University of the Netherlands (OUNL) to use at least 20% of its budget for innovative projects.

However, the new approach has some major shortcomings in its implementation, such as *how* quality is to be improved by using ICT. The authors draw on their experiences at OUNL to offer a number of statements about the implementation and use of ICT in legal education:

The use of ICT in law teaching is unavoidable, but what kind of ICT should be used, and how should it be used? The introduction of electronics is not without difficulties and requires some prior reflection. First there is the problem of logistics. A significant percentage of students still do not have a personal computer or access to the Internet. This is a vital consideration, particularly for distance teaching universities envisaging the possibility of substituting written materials with electronic.

Simply creating databases and expert systems for educational purposes is not in itself useful, but integrating them into law teaching is. Teaching how to integrate the use of databases and modern means of communication into daily legal practice demands more than simply offering entrance to databases; such means will have to be integrated into teaching programs as well. In any case ICT has more to offer than the creation of educational databases. More than just connecting campuses, if well implemented, ICT may offer students some of the advantages of distance teaching, like some freedom to choose when and where to study, without turning universities into distance education institutions.

For all universities electronics offers a more effective option for teaching general skills (for example, by means of court and client interview simulations) and specialised skills (exercises in applying rules of law in concrete cases). Especially in distance teaching, it will make it possible to supply course materials to students faster and cheaper. It can also potentially make tutoring cheaper, especially for courses which do not attract large numbers of students. Furthermore, ICT offers conventional universities the opportunity to share expertise. It opens up the possibility of offering courses on subjects about which the university itself does not possess the necessary expertise and may in this way lead to greater diversity within the curriculum.

The use of ICT can save money and at the same time improve the quality and

diversity of programs but only real integration of the use of ICT into courses will lead to quality improvement. The use of ICT in teaching will have to affect the whole curriculum.

Changing the form of a course without adapting its contents will seriously affect its quality. Efficiency and university budgets are likely to enforce some degree of integration between distance and conventional courses in the case of institutions which offer both modes. If teachers succumb to pressures to put courses onto the Internet or CD-Rom by simply feeding traditional course materials into a computer, the quality of learning will be endangered. The contents of a course needs to be changed when its form is adapted, and this will take time and cost money.

Using ICT may save money, but deciding to use ICT in order to save money endangers the quality of teaching. Most students do not like to learn from the screen, and research indicates that reading from a screen is tiring; so students are likely to print out longer text blocks. In addition many students dislike doing exercises on screen. Students need to be offered something *more*, something *better*, by the use of ICT — an improvement in the quality of teaching.

Electronics will not replace books. In the future some kinds of texts, especially those that must be up-to-the-second, will disappear from bookshelves and move to screens; but many will stay. Research indicates that users of 'electronic books' have a problem in obtaining a clear overview when larger knowledge domains are covered. A good electronic course will at least partly consist of printed materials with the electronic component being highly interactive and problem-centred. The real advantage afforded by ICT is its potential to offer highly interactive exercises, coupled with multi-media databases. Maybe it will be possible to combine these domains with exercises in general skills. In any case only interactive study materials really belong on the net. This may mean that at

least part of law teaching will become problem centred.

Conventional and distance teaching will grow more alike, but there will still be a separate place for distance teaching universities. It is clear that the differences between distance and conventional teaching will decrease, but conventional universities will never stop lecturing; they will use ICT, but never use *only* ICT. Distance teaching universities and conventional universities have their own groups of customers, and this will not change. The potential gains offered by ICT are in providing higher quality, or at least maintaining the quality, of law teaching for the same amount of money, not in lowering costs.

**Information technology in the legal curriculum — reactions and realities**  
S Migdal & M Cartwright

32 *Law Teacher* 3, 1998, pp 260-273

In what sense, if at all, does computer aided learning (CAL) lead to more effective learning? Cynics may look at the government objective of increasing participation in higher education and answer, more effective at delivering education to ever increasing numbers. But this says nothing about the quality of the learning experience.

The authors sought to test four hypotheses about CAL based both on their own empirical research and an examination of the literature: (1) CAL can effectively replace face to face tuition; (2) it is ideal for non-campus based students; (3) it is equally effective at all levels and stages of legal education; and (4) it facilitates deep as well as surface learning.

The authors produced two independent multimedia learning programs (Medical Law and Negligence on CD-Rom and Employment Law on the Internet) intended as complete substitutes for face to face tuition. As well as developing these computer based learning programs, they also explored ways in which electronic material could be used as a complement to the traditional face to face lecture.

Information was collected about student reaction by way of unsolicited observations contained in module evaluation questionnaires given to all students and a specific information technology questionnaire survey of students on the modules using CAL, of which 100 or 42% were returned.

The results revealed that, for the majority of the students, the use of computer based techniques both in the classroom as a lecturing aid and as an aid to learning is a positive experience. They found the use of computer based delivery techniques in lectures to be better in providing structure, understanding and knowledge than traditional approaches and that computer aided instruction (CAI) made the lectures more enjoyable. A majority of students exposed to these techniques declared that they would opt in the future to take modules in which CAI/CAL methods were employed.

However, the module evaluation also revealed a significant minority of students who had difficulty in coming to terms with CAI. Some of these difficulties clearly resulted from unfamiliarity with computers and the software used. But the finding that a large number expected to be provided with a complete set of the lecture notes by the lecturer may also have something to do with this. Some of the students are resistant to any move away from the traditional approach. This resistance needs to be overcome before CAL and CAI can be fully integrated into the curriculum.

The authors are not yet in a position to comment on the impact of these techniques on student performance. The next stage in their evaluation process will be to compare results in modules where CAI/CAL techniques are used and those where a more traditional approach is taken.

Does CAL facilitate 'deep' or 'surface' learning? The authors' belief is that these packages enable the student to go as deep as they wish into the subject area because all the relevant study material is provided in a convenient and acces-

sible package. Whether the student in fact engages in deep learning is much more debatable. The software so far developed, in particular the limitations of self-assessment programs, is not sophisticated enough to test the depth of learning of any particular student. The development of artificially intelligent systems, which are capable of adapting to the learning styles of individual students, may well change this.

After reviewing their own study and the empirical studies deriving from other disciplines, the authors conclude that: (1) electronic delivery is the most effective when used as a complement to rather than a replacement for conventional methods of teaching; (2) it may not be appropriate to rely too heavily on electronic delivery in the first year of study because law students need to learn how to study law; (3) computers cannot recreate the teacher-student learning experience of campus based students and electronic media programs should be therefore seen as tools for learning in common with more conventional tools; (4) electronic media appear to be best suited to deliver the surface learning, i.e. the acquisition of basic knowledge, whereas the more conventional methods remain the most appropriate for the acquisition of the higher cognitive skills of analysis, understanding and application; and (5) avoid the temptation to overwhelm the user with information particularly on screen.

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