Barriers to the use of web-based learning in nurse education

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Introduction

Recently there has been a great deal of interest in the possibility of using the Internet and in particular the World Wide Web as a learning resource. The development of web-based learning in higher education has been a recurring theme in the educational literature (Davies & Crowther 1995, Gilliver et al. 1998, Pickering 1995, Ribbons 1998, Whalley 1995). This interest coincides with wider developments at government level in extending the use of this medium and recently the announcement of the setting up of a 'e-university' project by the Higher Education Funding Council.

One claim made for the adoption of web-based learning is a pedagogical one. Its proponents often argue that web-based learning will somehow reduce inequalities in student’s access to education. However, in this paper it will be argued that most of the accounts in the literature of the potential of web-based learning take too little account of the potential problems and limitations of the medium. It could be argued that web-based learning underscores and may in fact increase inequalities rather than eliminate them. The aim of this paper is therefore twofold. First, it will examine the development of web-based learning and the potential ways it can be used. It will however be argued that the adoption of the medium has inherent difficulties, which are often overlooked or played down. Secondly, this paper will focus on those variables that could influence or inhibit student usage of web-based learning materials, in particular the influence of socio-economic factors and gender. © 2001 Harcourt Publishers Ltd
which those non-traditional students have suffered in education. In terms of socio-economic background and gender, using web-based learning is often somehow thought to be a ‘democratising’ force in education. That claim will also be tackled. However, first it will be necessary to sketch out some of the technical possibilities of using the web in higher education.

**Types of web-based learning**

The literature (and indeed the Internet itself) is full of examples of web-based courses, which take a wide variety of approaches. Some Universities have their web-based learning resources freely available on the Internet, with students only having to pay enrolment fees if they wish to do the assessments and thereby gain the qualification offered. The advantage of this is that it acts as publicity for both the university and the course offered. Many universities however, put Internet passwords on their web-based materials and the passwords are then only given to students enrolled on the relevant course.

In terms of the level of provision and support offered with web-based resources, there are similarly a variety of approaches. On one end of the spectrum, some lecturers use the web as a resource to supplement their classroom teaching. In this type of approach, the web pages are collections of lecture notes, organized in a coherent way, with live links to other sources that have been searched for and chosen by the lecturer (An example of a course with on-line lecture notes to supplement taught sessions is the University of Leicester, Department of Microbiology & Immunology, (1999) *Introduction to Microbiology*. Using this approach, the lecturer can act as a ‘gatekeeper’ to the types of information that the student is accessing. If the lecturer is in control of what links are used then unsuitable material and unreliable sources can be filtered out. Links can be limited to the professional organizations, Government web pages around the world, peer reviewed journals, other university pages and so on. Any information the student gets from these secondary sites could be relied on for its accuracy and reliability (The author has published his own lecture notes on the web in this way). In such an approach the web pages are meant to complement the taught sessions and in no way replace them.

Another common approach is for a web-based course to include some face-to-face teaching, but mixed with an open learning approach in which the Internet is used to distribute course material and e-mail or video conferencing is used for the students to communicate with each other and with lecturers remotely. This is sometimes known as Computer Mediated Communication (An example of a course involving some Internet delivered content and some attendance is Northwest Technical College’s [2000] *Distance Practical Nursing*.) The advantage of this approach is that the students have, on the one hand the freedom not to have to travel to college regularly, yet have social support from their peers and their teachers which is often lacking in distance learning courses.

More recently we have seen the emergence of courses that are far more ‘interactive’ than either of the above two approaches. Some courses are based entirely on the internet and have little or no face-to-face contact. This type of course also usually includes facilities to communicate between students and between students and lecturers using e-mail, chat and conferencing (An example of a course delivered entirely online is the University of Wisconsin’s (2000) *Master of Science in Criminal Justice*.) This type of course often also uses the communication potential to set group work tasks and have group discussions asynchronously between students (where students may even be in other countries and time zones, allowing for the possibility of international collaboration). The student undertaking this type of course may need a higher level of motivation although it obviously has advantages for those in work and perhaps is better suited to postgraduate study or continuing professional development.

**The role of socio-economic factors in students’ use of web-based learning**

Much of the literature in this area consists of enthusiastic accounts of the potential of this new medium for higher education. (Gilliver et al. 1998, Pickering 1995, Ribbons 1998, Whalley 1995) These authors argue that the Internet provides an opportunity to radically improve the direction of
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higher education. They argue that it will widen access to education, that teaching will be decentralized and more effective learning will take place, that the Internet provides flexibility and better communication, that it provides access to a wide variety of materials which would not be otherwise available, and so on. In short they make the argument that in many different ways that education will be somehow democratized by the adoption of the internet.

Generally it is assumed in the educational literature that there are certain positive aspects of using the web as a tool for educators (Newman & Johnson 1999). The first of these is that it enables teaching and learning without being tied to a particular site. For example, a few students from all over the country or the world could follow a course from one specialist centre, taking advantage of the expertise that that institution may have without having to travel the often prohibitively long distances to do so. Secondly, using the web is said to empower the student, giving them greater freedom to acquire information. This aspect is in line with other developments in the higher education field where lifelong learning skills involve less being taught the content of a particular subject, and is more to do with learning to learn. A third aspect of web-based learning is that it makes learning packages marketable in a global forum. This ties in with both the globalization of the education market, as with other markets, and the increasing need for educational institutions to pay their way. Finally, using the web is seen to offer a means by which higher education can cope with increasing student numbers, as technology is thought to decrease the labour needs in education as in other industries.

Whilst these accounts are seductive, it could be argued that the realities of the adoption of this new medium may be just as likely simply to reinforce socio-economic divisions. In certain respects, the adoption of web-based learning reflects the difficulties with the wider adoption of other open and distance learning type approaches. Discussions around open learning in general are often focused on technical or pedagogic issues and what is sometimes lacking is a contextualization of the discussion in a broader sociological debate (Field 1996). Field (1996) argues that in an increasingly flexible (uncertain) labour market, the middle classes must intensify their search for new means to maintain their advantages. Open learning provides one means of obtaining both qualifications and qualities, which make continuing employment and re-employment possible. The widening gaps between rich and poor in postindustrial societies such as Britain are reflected in the uptake of open learning. As Field (1996) points out, it is the wealthiest that invest most in their children’s education, both in absolute terms or measured as relative to total income. One of the arguments made for the adoption of open learning, (of which web-based learning is the latest variant) is that it will decrease social exclusion. However, as we move down this path towards using the Internet to provide more flexible learning, we need to be careful at the same time to address other issues, such as the cost of courses and home computer ownership. Otherwise we could find that web-based learning, far from leading to an increased ‘democratization’ of higher education, may in fact intensify social exclusion.

All universities are making large investments in IT, particularly in line with the recommendations of the Dearing Report for increasing use of IT in learning and teaching (DfEE 1998). However, the pressure on these facilities is such that students in all universities complain that there are never enough machines to match the numbers of students wishing to use them. Many students have taken the initiative and bought their own home computer. This issue of restricted access to computers on campus (due to pressure of numbers) and some students having their own personal computers at home raises a real difficulty. If the ability to access web-based learning materials gives students educational advantages, (and it would not be worth providing it if it did not) then given the scarcity of machines on campus, those students unable to afford their own computers are at a clear disadvantage in comparison with those who can. If the use of web-based learning resources becomes an integral part of the courses we offer, (rather than an added resource to what is already provided) then far from being ‘democratic’ and widening access, we might be actually disadvantaging the already most disadvantaged students.

Another related consideration is that there is a relentless pressure throughout the higher
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education sector (and particularly in the ‘new’ universities into which nurse education has often been absorbed) to increase student numbers whilst at the same time keeping static (or decreasing) the amount of resources in terms of books, staff-to-student ratios, tutorial time and so on. The Internet is often seen as a way of bridging these competing demands. However, in order for students to use the Internet as an effective educational medium, they may, in fact, require more resources in terms of both hardware and training and support. This may be particularly true of the types of non-traditional students that make up large numbers of our student nurse cohorts. The more non-traditional our student nurses are, the less able they are likely to be in terms of using the Internet, both because they lack the finances to pay for their own computers as well as unfamiliarity with basic IT skills.

The influence of gender on students’ use of IT

Another difficulty with the introduction of any web-based learning (particularly into nurse education) is the role that gender may or may not play in the students’ use of the medium. The evidence from the literature seems to be that initial access to technology is still limited for women in general in comparison to men (Barrett & Lally 1999, Yates 1997) As access to computer facilities on campuses are available equally for both male and female students, this ‘limited access’ must be explored in terms of cultural or gender related (rather than physical) limitations. For example, MaMahon & Gardner (1995) surveyed 587 students at The Queens University of Belfast to identify the factors which inhibit or facilitate their use of computers. They found that significantly more male (79%) than female (68%) of students used a computer. Nearly 63% of male students surveyed also reported using open access computer centres in contrast to 47% of the female students. Female students were also more likely to agree with the statement ‘I would use the computing facilities more if I had more help’ (71% compared with 54% of the male students). The male students’ concerns were more likely to be related to the software and hardware available (for example complaints about the speed of the computers). This indicates the relative empowerment of the male students whose responses imply that they are sufficiently comfortable with the technology to be able to make those kinds of judgements. Other research that has focused on gender differences in on-line learning environments (Barrett & Lally 1999, Yates 1997) suggests that men are more assertive in their use of e-mail for example, while women students are more self-censoring in their e-mail responses to discussion groups. These authors suggest that gender differences in everyday interactions are reflected in on-line interactions.

In the context of nurse education, women account for the vast majority of student nurses. Although the research evidence is not conclusive on this point (Bauer 1995), it seems that women may be more likely to resist the introduction of new computer-based innovations in general. This has obvious implications for the introduction of web-based learning into nurse education, as the success of web-based learning is contingent on how nursing students respond to technology in the wider context.

Problems of using the web to enhance learning and teaching in nurse education

It is argued that one of the main benefits of the Internet’s use in nurse education is that of increased access to information (Ribbons 1998). In particular, the potential of access to computerized databases via the internet and more specifically, the ability to access these resources remotely. Whilst acknowledging these potential benefits, they should be cautiously placed in the context of what has already been examined above. The Internet is characterized by organizational chaos. We may be able to partly mediate this chaos by careful organization of any web-based learning sites we provide. But to take advantage of the medium, students will also need to be linked to web sites outside the original institution. If the increased information retrieval capabilities of the internet are to be used effectively by students then an even greater teaching input may be required from the teacher in order to make sense of the anarchy and lack of hierarchy that characterises the Internet. Information literacy is not synonymous with information retrieval. (Cheek & Doskatsch 1998). The ability to use the Internet (or indeed a library) has to be complemented with an awareness of the
qualitative aspects of the knowledge retrieved. Even if the student has a greater access to information resources as a result of the Internet, they will not necessarily have ability to evaluate the material accessed (Newman & Johnson 1999). Without the background knowledge and contact with a tutor or classroom teaching, they may come to see gathering information as an end in itself.

Even from a pedagogic perspective, there may be inherent disadvantages to the increasing usage of computers in higher education. The development of computer-aided learning (CAL) in recent years has often been driven by a desire to increase efficiency (Davies & Crowther 1995). Existing teaching methods and materials have been transplanted onto the new technology with the underlying assumption that these methods are at least as effective as the ones they are replacing. But efficient teaching is not necessarily efficient learning. The use of CAL cannot replace the teacher, but rather changes the role of the teacher. This thought needs to be juxtaposed with the general feeling that the Internet will result in more efficient use of teachers’ time (i.e. that less face-to-face teaching will be carried out as more open learning approaches are facilitated by the technology). So again, I would argue that although web-based learning could undoubtedly be innovative, exiting and educationally beneficial for nursing students, it may actually require a greater input in terms of teaching hours for it to be a success.

**Conclusion**

The nursing profession, like all professions, will have to come to terms with the necessity of information literacy to its overall development as a profession, as well as to the continuing professional development of individual nurses. Nursing graduates and diplomats will need to have the skills to use the information technology so as to enable them to adapt to technical and technological change and to implement the ‘evidence-based nursing’ of the future.

In recent writing on the potential of the Internet for supporting student learning, the advantages of the medium are often recounted uncritically. Whilst acknowledging these advantages, there are inherent disadvantages to using web-based learning, which are particularly pertinent to nurse education. The literature seems to show that women may be at a disadvantage to men in using computer technology in general and the Internet in particular. The reasons for this are not related to physical access but to more general cultural issues. Given that the profile of nursing students is still predominantly female, this points to the need for teacher input to instruct (and enthuse) about how useful the internet can be for students. Another issue relates to socio-economic factors such as home computer ownership and the potential for further disadvantaging the most disadvantaged (i.e. the poorest) student nurses.

The Internet provides a golden educational opportunity for increasing information literacy and lifelong learning skills. But these advantages are only possible with an investment in appropriate resources, particularly teaching time. The Internet will never satisfactorily enable cost savings without impacting on the quality of the nurse education we currently provide.

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