

Investigating the Development of Internet-based Teaching and Assessment in Higher Education - a report of work in progress.

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Introduction

This paper reports on one element of an EU-funded collaborative research and development project involving the University of Sussex, UK, Umea University, Sweden and Gent University, Belgium. The project is co-ordinated from Umea University.

The development of the world wide web and the growth in the use of the internet have been rapid and seemingly unrelenting. At the beginning of the 21st century it appears that few areas of our lives are untouched by this technology as it continues to penetrate our homes and our workplaces. As noticeable as the spread of the internet has been the swell of bold predictions about its transformative powers, transformations which are always constructed as being for the better, making resistance to such change, or even questioning of it, appear quite irrational (Woolgar, 2002). The potential of electronic communications as engines of economic growth has not been lost on the business world or on policy makers; as Bennett (2002: 4) explains, business can now combine the *richness* of personalised contact with the *reach* previously only possible through mass advertising, raising the tantalising prospect of unprecedented business opportunities. The internet then is strongly associated with discourses of globalisation, discourses which are all but hegemonic in their power.

What are the implications for education in all of this? First of all, new technologies demand new skills. Governments have therefore attached paramount importance to developing a technologically skilled work force in order to spearhead growth and to enable national economies to compete on a global basis in these new markets. For example, the US Commission on Technology and Adult Learning concludes its vision of e-learning for America in these terms:

The Commission ... encourages governors, CEOs and other leaders to make e-learning the cornerstone of a national effort to develop a skilled workforce for American's digital economy.... By embracing e-learning in our states, our communities and our organizations, we can improve our competitiveness and point the way to a new era of unprecedented growth and opportunity for all Americans.'

(2001: 27).

Education policies of the European Union and its member states reflect a similar headlong rush to embrace the knowledge economy, with the added barb of underlying anxieties about technological advantage of America and Japan accentuating the imperative for change in Europe (Coffield, 1996). Most importantly though, in all such discourse we see the purpose of education itself reinterpreted by policy makers to serve the end of developing the workforce on which the

¹ The project was originally directed by Harry Torrance at the University of Sussex with Barbara Crossouard as graduate assistant. Torrance has subsequently moved to MMU, but continues to co-direct the project with John Pryor, who has taken over as Director at Sussex.

digital economies of the future will depend. Education is now overtly charged with the responsibility of producing the human capital for our post-industrial economies.

This reconceptualisation is a particular challenge to the ethos of higher education, which traditionally held dear the notion of its knowledge as autonomous, free from vested interests. However in a post-modern context the vantage point of academia no longer goes unquestioned. We see the disaggregation of what were once pillars of authority and a keen awareness that knowledge is constructed and reconstructed by social actors, in their particular contexts and historical settings, and that the very idea of independent critical thought is itself problematic. Instead, in our information society, knowledge can be viewed simply as a commodity, with universities just one of many sites of its creation and dissemination. Moreover the internet provides the means for potentially global competition in higher education, in delivering these educational consumables, and the looming threat of losing home-based student populations leave HEIs little option with regard to development of their online presence. In an imperative voice echoing of technological determinism, Collis and Moonen (2001) declare 'You can't not do it!'

The rhetoric around the internet is powerful then, and potentially threatening in different ways. The repurposing of education, the loss of intellectual autonomy and the impact of competition within the sector represent fundamental challenges to older institutional cultures. On the other hand, if used discerningly, the internet appears to offer alluring opportunities for innovation in teaching, learning and assessment. Vast repositories of knowledge are now potentially accessible; new ways of interaction and communication seem possible, and alternative methods of assessment to evaluate and value the skills which traditional testing dismally fails to capture can now be envisaged.

How then are individual institutions negotiating the arrival of the internet within their culture? As Clegg et al (2003) have noted, discourses of technological determinism and globalisation within higher education are dominant, but they argue nevertheless that the shape of new media within higher education is not being technologically determined, but instead is firmly rooted in the social contexts and relations of its use. It is this very relationship that our project was concerned to study. What does internet use look like if we investigate it as an educational innovation. We have therefore sought to develop a picture of the use of the internet for teaching, learning and assessment within our institution, and from this to develop an awareness of the issues which concern the actors within that context.

More particularly the intention of the Sussex partners has been to investigate current use of the Internet for teaching, learning and assessment at Sussex and to develop an interactive website for a particular course in order to explore the problems and possibilities of on-line learning and assessment. Early conversations with key personnel suggested there has been considerable use of the Internet in teaching at Sussex, less use of the Internet for assessment, but with much of the development being ad hoc and dependent on the enthusiasm/interests of individual faculty members. We decided to try to establish an overall picture by analysing documentary sources such as the prospectus and designing a questionnaire for all faculty. Interviews were later conducted with respondents who volunteered for this, as well as with key actors within online learning initiatives at Sussex.

The Investigation - reviewing prospectuses

The Undergraduate prospectus begins with an introduction to the Sussex Campus, where computer and Internet use is mentioned in several contexts. We find most emphasis on the Internet under the rubric *Learning Resources*. There is a description of the electronic resources in the Library, the electronic catalogue systems, and the existence of dedicated web-based

computers within the Library. All students have free Internet and email accounts so that they can have access to the campus network and to the Internet on clusters of PC's that are available in different locations across the campus. The Computing Service also manages registration and delivers email, Internet access, supports PC clusters (some located in the Library) and also offers training at different levels in various applications as well as making dedicated provision for students with special needs.

In the section *How you Learn- new ways of working*, the only mention of computers is in the context of learning support and the availability of advice on computer use; computers and the internet are not mentioned in the descriptions given of typical modes of learning or indeed of assessment. Some such descriptions do occur under subject-specific entries however, with Biology, Contemporary European Studies, Development Studies, Philosophy and Physics a having entries for Internet use under '*How you learn*'.

Forty eight degree programmes are described. The Internet is specifically mentioned in a total of twenty two, these being an interesting mix across the arts, sciences and social sciences, with no obvious bias towards science and/or computer studies. (This initial conclusion derives from analysis of stated policy of course; for details of practice, see below.) Furthermore computers are mentioned in 38 programmes, including 26 with respect to *What you achieve* and 12 with respect to *How you learn*.

Of the descriptions of the 48 postgraduate areas of study, 25 mention computer and/or Internet use. Computers are central to some areas of study and figure as a taught module for Computer Science and Artificial Intelligence. Computers are mentioned most frequently in the context of specialist facilities, and web use is mentioned by 13, mostly for networked access to on-line resources.

Brighton and Sussex Medical School, a partnership between Brighton and Sussex Universities, will enroll its first students in October 2003. Its prospectus describes computer and internet resources which include dedicated suites of on-campus computers, an advanced computer controlled patient simulator, web-based professional studies programmes, an IT based virtual learning system, and access to electronic information resources. IT skills are identified as part of *what you learn*, and virtual learning systems are described in the section *How will I be taught*. It seems that web-based systems are being incorporated at the heart of this new programme.

Sampling of Selection of Web Sites

A selection of departmental web sites was then examined in order to find out what uses were being made of the Internet within different areas. Practice was found to be very variable both between departments and within departments. In one subject area a highly structured set of links was found leading to course handbooks, course notes, lecturers' PowerPoint presentations, gateways of links, and some formative assessment for foundation level students. On the other hand, within the same subject area some of the subject web pages had not been developed for student use, pointing to enthusiastic use by some tutors but not by others. Some web sites seemed to be aimed exclusively at prospective students, and had not been developed for teaching. Administrative information, online course notes, bibliographies, and useful web links appeared to be the most commonly used applications in the other sites visited, although one example was found of a site which also had a secure student access for submission of assignments. It was noticeable at this time that the design of the different departmental web pages also varied substantially, but a web template has since been introduced for use across all University departments to ensure a consistent presentation.

Initial Conclusions

This review of the prospectuses and a selection of web sites suggests that computer and Internet use vary significantly across departments and also within departments. It is noticeable that even within the departments where Internet use appears well developed there are still some courses where the Internet is not being used or where use seems to be limited to course administration rather than teaching. Also, of course, the existence of extensive links gives little indication of whether or not they are used and exactly how the Internet might be used in different pedagogic contexts.

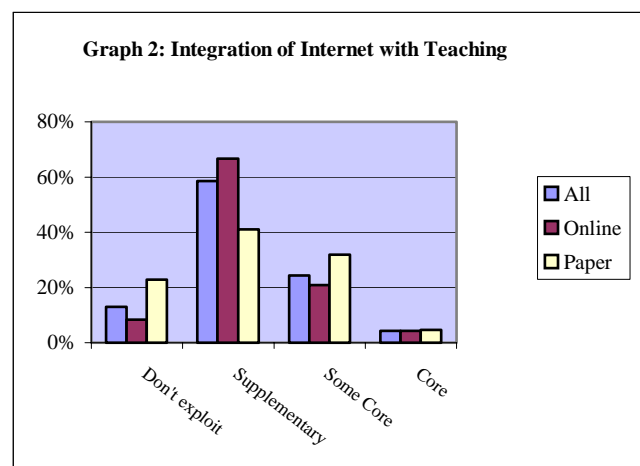
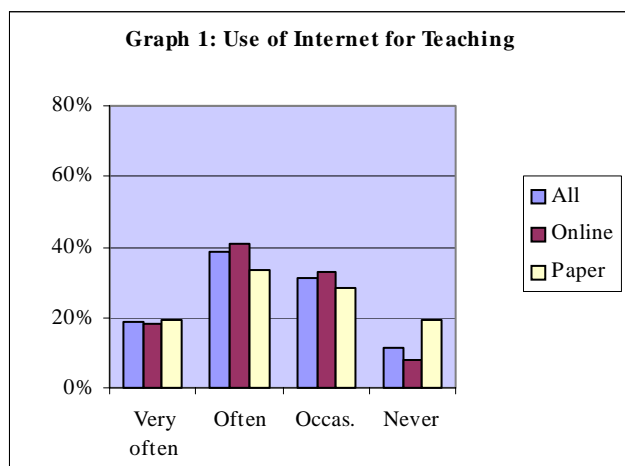
Questionnaire Development and Findings

The next steps in the investigation involved developing a questionnaire for completion by all faculty, to be followed in due course by interviews with key personnel. The questionnaire was developed to be administered on-line, using Questionmark Perception software. The questionnaire was circulated online to faculty via email, with a reminder sent two weeks later. A paper version was also sent out to 20% of faculty in order to improve returns and reach those who might not respond to electronic communication. The response rate from the online questionnaire was 5% (of all faculty), with the rate for the paper version being 12% (of the 20%), (n=72). We should note here that because of licensing and security issues, the online questionnaire was only available on campus, and replies were received from several respondents pointing this out. The exclusion of those who relied on accessing their email from home may have reduced the response rate by a small margin and certainly raises more general issues of access to on-line learning opportunities and assessment processes, if these are to be closely controlled for security purposes.

We can also note that response rates in other email questionnaires have been found to be lower than for paper surveys; Moss et al (2002) quote five studies where this is the case, and Sheenan (2001) has also identified a decline in response rates for email questionnaires over the period 1986 to 1999. Moss et al (2002) suggest that high volumes of email correspondence make users reluctant to spend time on unsolicited messages, and in addition online questionnaires are not easily set aside for users to fill in later, and have to be filled in at one sitting, perhaps leading to some respondents abandoning mid-questionnaire. Of course the low response may also indicate that the issue of online teaching, learning and assessment is not a priority for faculty. Whatever the reasons for the response rate, it makes it clear that the questionnaire alone does not have a strong validity and we have now begun the next stage of our research, involving in-depth interviews with a broad range of respondents.

Turning to the analysis of the questionnaire results, we were aware that the choice of an online questionnaire targeted email users only, so the paper version was always considered essential to reach other sections of faculty. A first analysis of the early responses to the online version also suggested that these respondents were on the whole rather positive about ICT and internet-based learning, so this confirmed the need for a separate analysis of the paper and the online versions, in addition to a combined analysis, so that a check could be made for any bias introduced by the online distribution method.

Thus for example the paper version revealed a distinct group who never used the Internet in teaching, the figures for the latter being 19% for the paper questionnaire versus 8% for the online version (Graph 1). In the question probing the extent to which the Internet was integrated with teaching, again the paper version found 23% of respondents did not exploit it, against 8% for the online version (Graph 2).



A comparison of the different responses in this initial section of the questionnaire reveals a group of respondents in the paper sample who are very low users of ICT and the Internet. The analysis for all questions was therefore continued on this tripartite basis, in order to represent the views of this group better.

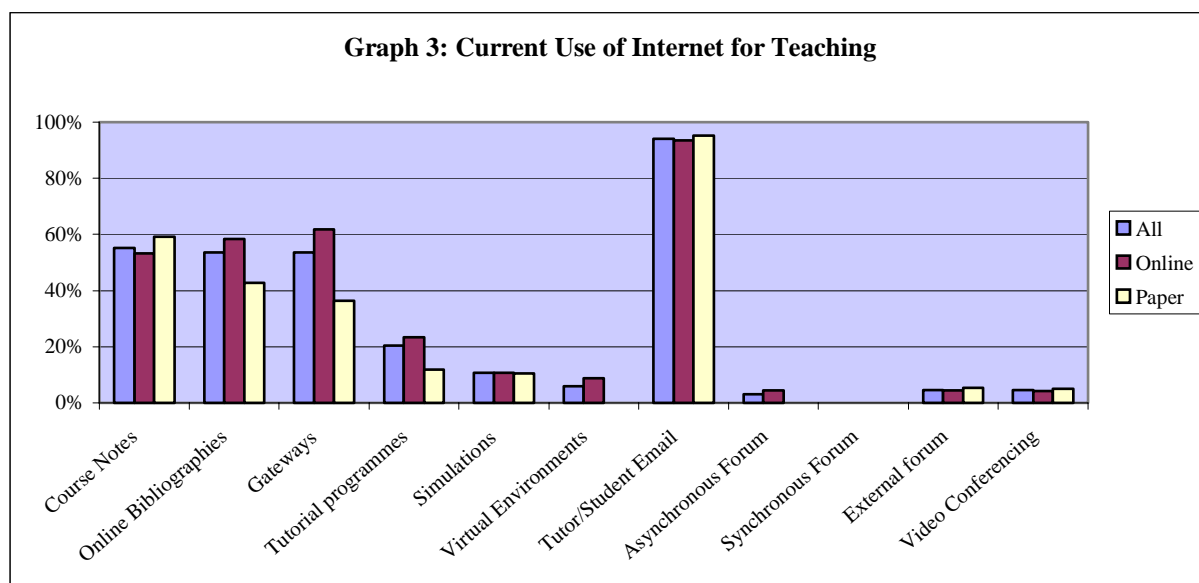
In relation to the issue of who this group might be, the data show that of those who completed the paper version more than half had been teaching for 21 years or over, as opposed to only a third of those in the online version, which also had a larger group who had been teaching less than five years. The analysis by age group also confirms that the paper version reached an older audience, with 45% of those who completed the online version being aged 41 or over, against 76% of the paper respondents. Looking at the question 'To what extent is use of the Internet integrated with your teaching' we find that of the paper respondents who replied that it was not integrated with their teaching, 75% were female, all working in humanities subjects. Examining the combined results to the same question, we find that of the 13% who declare that the Internet is not integrated with their teaching, almost 80% are female, 90% are in humanities subject areas, and two thirds are over 41 years of age. Of the group (7 respondents) who never or occasionally use ICT for general purposes, 6 are female against 1 male.

In terms of gender, it is interesting to note that the percentage of male to female respondents for both online and paper versions was identical, at 57% male against 43% female. Faculty at Sussex are 63% to 37% male to female, so when we look at responses by gender, we find a consistently higher response rate from the female as opposed to male faculty.

Concluding this section of the questionnaire, in response to the question 'To what extent would you wish to use the Internet?', only one respondent replied 'Never', with a further 20% (equally split between male and female) who wished to use it occasionally, leaving just under 80% who wished to use it often or very often. This seems to point then to a good level of willingness to consider greater use in teaching and to reasons for lack of use being other than attitudinal.

Current Use of the Internet

Moving to the current use of the Internet which is indicated, we can see from Graph 3 that the most frequently used features are online bibliographies, gateways of links (both at over 50%) and finally student-tutor email contact, this being almost universally used.



In relation to the particular uses by different subject areas, current use of features such as online bibliographies, online course notes and gateways of links tended to be by science based subjects, although in the arts and humanities there was interest in using these, or in knowing more about them. In relation to the use of the internet to support current activities in areas such as formative and summative assessment, language support, and support of disabled students, very little use was reported, and the majority of respondents declared a need for more information about these options. Use of the Internet for assessment is examined in more detail below.

In general this type of use can be tentatively seen as replicating the findings of an international study by Collis et al (2002) which found that use of ICT in higher education was increasingly part of the instructional blend, but was playing a supportive rather than a transformative role in teaching and learning processes. The functions which are closest to existing practice, such as the online posting of bibliographies and course notes, are among the most commonly used, and the most frequently used feature, tutor-student email contact, has notably not been extended into rather more innovative uses, such as for collaborative discussion work. However, the indications are that there is interest in knowing more and in using such features, while at the same time, there does seem to exist a group who do not wish to use ICT at all, in any form.

Support and Training

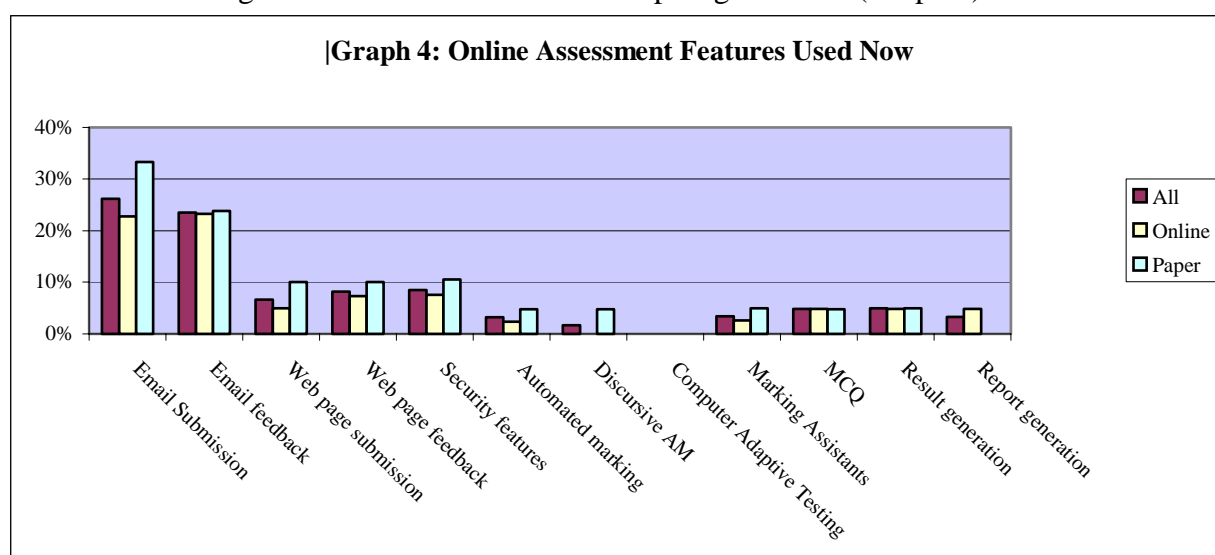
Turning to support issues, two thirds of respondents expressed the need for more support on Internet use, with informal networks of colleagues and local users given as the main support source (44%). In terms of the obstacles to greater use, the most cited were time for developing materials and to learn new skills, followed in descending order by availability of technical support, provision of equipment for teachers, then provision of equipment for students. Only two respondents felt that students would not benefit from online learning. In relation to the problem of time to develop materials and learn new skills, we found that only one tenth of respondents had remission from teaching to develop materials, and this was derived entirely from specific bids for funding from the University's Teaching and Learning Development Unit; i.e. funding of an exceptional rather than routine nature.

Once again these findings replicate those of other studies. A survey of the implementation and management of VLEs in higher education in Great Britain carried out by the University and Colleges Information and Systems Committee (UCISA) also showed support and training to be major concerns (UCISA, 2001). This UCISA survey is incidentally in the process of being

repeated as part of a joint JISC/UCISA study, and will allow a longitudinal perspective of the use of VLEs within UK higher education, covering a two-year period of development nationally. In the meantime, a review of three Scottish universities two years after the UCISA survey has found evidence of support and training needs across all subjects at all three institutions, and concluded that little had changed in the interval between the two studies (Wilson et al, 2003).

Internet-Based Assessment

The questionnaire responses show that the numbers using the Internet for either summative or formative assessment are low. Only 9% of respondents ask their students to use it for assessment very often against 41% who never do so. The assessment types most frequently used online appear to be projects, assignment reports, and group work tasks, but values are low, with the maximum value in the 'very often' category being 5% for use of online assignment reports. Other assessment types used are projects, practical tasks, essays and multiple choice questions, but all at very low levels. In terms of the features of Internet based assessment that respondents use, email submission of assignments and email feed back were the most frequent, and these also featured in the categories which were most desired, along with management functions such as automatic recording of test results and automatic report generation (Graph 4).



Respondents showed some desire for more information about online assessment however, particularly for Marking Assistants (63%), with interest also shown in Computer Adaptive Testing and Security Features, as well as Web Page Feedback and Web Page Submission. On the other hand there was an average of 12% who felt that the different online assessment features were not pedagogically appropriate, and an average of 24% who did not wish to use online assessment features. Overall, a quarter of respondents declared they do not want to use online assessment features, over a tenth feel them pedagogically inappropriate, and one third need more information before being able to use them. It seems fair to conclude that the respondents to the questionnaire are not convinced of the value of online assessment, and this appears to be even truer for the paper responses. However, one might surmise that this may be as much to do with their understandings of assessment as with their attitude to web based learning.

In conclusion, the evidence from the questionnaire suggests that ICT and the Internet is being used on a routine basis by many faculty, both for personal research and for teaching purposes. In particular email contact between teachers and students seems to be almost universally employed. Staff in science-based subjects appear to be making greater current use of ICT than the humanities. In general, the particular uses they are being put to tend to be supportive of existing

practices however, rather than being of an innovative nature. On the other hand there is interest in more use, and in knowing more about different uses, particularly for teaching and learning, although less so for assessment.

Sussex Direct

Before going on to discuss more generally the issues which these findings raise, we should also note that the University centrally has responded positively and proactively to these and previous surveys. An ongoing development within the University is the creation of a system of personalised web sites for students and staff, which will provide online access to the information that people need to study, work and socialise at the University, called Sussex Direct. It will integrate the already well developed management information systems of the University with the personal interface of the University Intranet of staff and students, in what is referred to as a Managed Learning Environment (MLE). For staff, this can provide selective access to information about students enrolled in their courses, either individually or as a group, personalised library resources, their academic profile, and will allow a single sign-on access across the different passworded features on campus. This three-year project was launched with a trial group of staff in November 2002, and will be progressively rolled out to staff and students over the next two years, with the trial launch to a selected group of students now underway.

Issues

This survey of current practice within the University however is but a start to a more development oriented project. As our involvement in the project's activities grows, the issues relating to Internet learning environments are becoming apparent. It is worthwhile noting at this point those issues with which we have already been confronted, as we start to develop our web site with the support and help of other departments and sections of the University, and those issues which are emerging from our ongoing interviews of faculty and support staff.

Use of the Internet for Assessment - emerging qualitative evidence

A variety of issues and objections militating against the use of the internet for assessment have surfaced during our study. Plagiarism was one, felt to be 'making a monkey of the system' by one respondent; the impossibility of verifying student identity and the lack of system robustness were both identified as obstacles to any use for summative assessment, thereby perceived as restricting its use to low stakes formative assessment. Strong objections were also expressed to electronic submission of assignments, both on grounds of workload for tutors and administrative staff, and also for reasons of validity. Another respondent considered assessment to be a 'minefield' and expressed his lack of confidence in the area, making innovation highly problematic. Resistance was also expressed to having to learn a complicated software package if assessment was implemented through web-based mediums, and to the danger that assessment would be focusing on technical skills rather than substantive knowledge.

A further problem is the spontaneous association that several interviewees made between internet-based assessment and multiple-choice questions, particularly as these were simultaneously dismissed as being unable to assess learning beyond foundation level knowledge. This then is the public face of internet-based assessment, but it is a face which does not have acceptance by academic staff. A small number of interviewees were using online formative assessment in this way - i.e. multiple choice formats to test basic knowledge of a topic - but motives here are often related to the need to handle growing numbers of students as higher education undergoes rapid expansion and resources contract. Moreover the conceptualisation of formative assessment this entails is one derived from mastery learning and focuses on drill-based reinforcement of knowledge within a behaviourist learning paradigm. In the theorization

developed by Torrance and Pryor (1998; 2001), this practice is described as *Convergent Assessment*, which sets about establishing *if* the learner knows, understands or can do a predetermined thing. It is characterized by detailed planning, and is generally accomplished by closed or pseudo-open questioning and tasks. This learning paradigm is however in contradiction to much of the literature on online learning (as well as data from our interviews) which points to the necessity for a transition to independent constructivist learning paradigms for online learning to be successful.

However, online environments can also be used for alternative assessment practices within a constructivist framework. In the theorization of Torrance and Pryor (1998; 2001), *Divergent Assessment* emphasises the learner's understanding rather than the agenda of the assessor. This aims to discover *what* the learner knows, understands and can do and is characterised by less detailed planning, where open questioning and tasks are of more relevance. As a result, assessment is seen as accomplished jointly by the tutor and the student, and oriented more to future development rather than measurement of past or current achievement. However, although several interviewees expressed interest in alternative assessment practices, with few exceptions they were not aware of ways in which the internet could facilitate these. One interviewee recognised that formative assessment could take place within a conferencing environment, but also pointed to the time such assessment would take, seeing this as a significant obstacle given that a particular motive for using this medium was to support student interaction in a way which reduced tutor workload. To conclude, it would appear that the potential of developing online alternative assessment practices is not being realised, in part due to funding restraints and the problematic nature of innovation within an environment under duress, but also because of the association of online assessment with convergent, behaviourist assessment paradigms.

Negotiation of the status of online learning

Several interviewees and comments in the questionnaire (in both humanities and sciences) referred to face-to-face teaching as being at the heart of the learning experience, sometimes with great force. As one respondent in the humanities put it:

'as I say, again, I put that in capitals, you know teaching and learning is a relational process, it happens in the context of social relations between teachers and learners, teachers and teachers and learners and learners, they have to be physically in contact with each other'

Certain respondents who were involved in online learning projects at Sussex were notably concerned then to represent its use as an enhancement of existing practices, and not as a replacement of them:

'very much you come to Sussex, because you want to be able to communicate with your peers, communicate...and you wouldn't want to lose what's regarded as a particularly distinct Sussex characteristic so I think it's got to complement and enhance'

'it is more an ancillary support for what happens already, and that hopes to enrich the student experience of any programme without requiring further teaching input.'

Those in favour of online learning saw its introduction as being an enhancement to existing practices, and as promoting constructivist learning paradigms.

I think one of the perceived advantages is... and it's not true it's [a] cost... I think it actually always costs more, both in terms of training, and especially staff training, but an advantage can be that teachers tend to start working in a more student centred and constructivist way, very naturally without even stopping to think about it

They were concerned to represent it in this way and not to associate it with distance learning. Several interviewees did refer to the UK Open University, but in ways which clearly differentiated the learning experience offered there with that of Sussex. In a country where institutional status has distinct demarcations, the positioning of online learning is being carefully negotiated according to local contexts and particular institutional characteristics.

Training and Support

The availability of training and support has been identified in much of the literature and our own experience and our questionnaire results confirm that support issues are real.

The necessity of having support systems in place for students has been identified by many authors; Palloff and Pratt (1999:68) stress the need for prompt intervention particularly at the beginning of any course should students experience technical problems. When problems are left unresolved, students rapidly become frustrated and lose motivation. Evidence from interviews of support personnel at Sussex suggest that increasingly first year students are arriving at university with well-developed skills in Word and email, but less competence in other applications. For many mature students, particularly those who are returning to learning and the workplace, computer skills may be a greater issue. More support can also be offered where an application is central to a discipline, and one respondent spoke of being able to 'ease them [the students] from their discomfort zone into their comfort zone' during lengthy practical sessions with them. This may not be the case in humanities disciplines however, where students work more independently and therefore are unable to benefit from the informal sharing of practice which Eraut (2002) has identified as being central for learning *in situ*.

The issues of training and support for staff are also clear, especially given the pressures on staff time in UK universities, where staff: tutor ratios have dropped from just over 1:10 in 1983 to 1:18 in 2000 (DFES, 2003: 16). When staff time is so pressured, innovation becomes problematic and is only contemplated by the most enthusiastic. At the same time, the Dearing Report (1997) is clear on the need for integration of ICT within the curriculum. The questionnaire results do point to a willingness of faculty to use the Internet in their teaching and to know more about it, so support and training seem to be important in future development

The Need for New Structures and Procedures

This issue became apparent in relation to our intention to make extracts from key texts available to our students on the web site to act as stimuli for discussion; it leads us to the necessity for copyright clearance. However an immediate obstacle here was that the University did not have Copyright Licensing for digitising materials. The Library agreed on a trial basis to set up the different systems necessary for gaining copyright clearance for digitised resources to be used, although they had also intended to investigate this area themselves. This has involved the University signing a national digital copyright clearance agreement, as well as an agreement with HERON (an organisation that expedites digital copyright clearance requests), training of library staff with that organisation, and implementation of the requisite internal procedures by the Library. Our collaboration with the Library to make digitised texts available on our web site continues. Again, this kind of experience is certainly not unique to Sussex; in a 2 year study of the way UK universities are incorporating technology into education, Pollock and Cornford (2000) note that in some cases aspects of the institution that were key to successful

implementation of projects were simply not in place, and had to be created. Laurillard (2002: 233) in her description of the design of an effective organisational framework for online learning also points to the need for 'new systems and mechanisms'.

The need for new structures also surfaces at a national as well as an institutional level. Issues of digital copyright clearance have required attention from national bodies serving the needs of higher education in the UK, such as the Joint Information Systems Committee (JISC). In the UK, HERON, the organisation mentioned above, has been specifically created to expedite copyright clearance (); this intends to offer its services soon to European institutions. Regarding intellectual property rights, the JISC (2000) point to the complexity of the legal issues which must be taken into account, and also to the fact that Internet law in this area is still being negotiated and defined. A recent study of the Internet (Economist, 2003) notes that copyright legislation has tended to become progressively more restrictive, and that important content providers are currently seeking both hardware and software solutions to prevent any unauthorised electronic access to their materials. It is important then to have national bodies such as the JISC to deal with these negotiations, as well as technical issues such as interoperability standards. On the other hand, when the role of such organisations creates new layers of governance and appears to stray from technical to substantive areas, cries of alarm ring out. Rushby's (2003) protests about proposals to create a UK authority to monitor compliance to e-learning standards by higher education are one example here, especially as compliance appears to include not just technical details, but also learning material design. Any perceived threat to academic freedom is bound to raise resistance to online learning within faculty.

Implications for Course Organisation

The issue of obtaining copyright clearance will almost certainly demand that key readings be determined well in advance. When we began investigating copyright clearance issues, lead times were quite unclear, and now that systems are almost in place, the estimated lead time is approximately two months. It seems to be highly variable however, depending on the publisher involved. We have also learned that some publishers systematically refuse clearance, while others have not yet defined their policy on the issue. Only experience will reveal what the lead times are, and how variable they might be. These issues do however militate towards choosing electronic resources which are either freely available on the WWW, with all the consequent doubts about quality control, or which can be accessed via the electronic resources subscribed to by the University Library. This is an area which is benefiting from additional resources however. The students who will be involved in our pilot website are doctoral students, with developing research interests, and tutor responsiveness in the selection of resources is seen as pivotal. Even after copyright clearance procedures have been set in place, materials will have to be identified much in advance and so will diminish responsiveness to student needs, demanding that this must be achieved in other ways.

Reorganisation and Recognition of Tutor's Work

The implementation of online learning seems to require a reorganisation of the tutor's work so that they have time allocated for curriculum and material development and for overseeing the design of the web site used. At the moment this is a resource which is not routinely available. Any remission for development of Internet based teaching or assessment is allocated on the basis of special funding, rather than being an integral part of departmental teaching loads. Even when special funding is in place however, remission from other teaching responsibilities may be difficult to negotiate, and over-commitment of tutors' time can mean that exceptional dedication is required if such developments are to become a reality. Collis et al (2001), Lieblein (2000) and Rumble (2001) comment that learning online takes longer than in traditional face to face contexts and Rumble also notes that there is at present no idea of what an online workload might

be. Several writers comment that online learning is often added to existing course structures without necessarily being integrated with them, effectively creating extra work both for the tutor, but also for the student, and adding additional costs rather than reducing them. It seems clear that some organisational rethinking is required for sustained use of online learning, so that development time and new ways of working are specifically recognised, especially the 'front-loaded' curriculum development time needed for resource identification and organisation.

The development of an asynchronous forum would create a new role for the tutor as discussion moderator (e-moderator), and this would need recognition too. Salmon (2000: 55) stresses the need for training and support of tutors in the e-moderating skills required to nurture a successful online community of learners. Online tutoring has been recognised as being very different from face to face tutoring. Petre et al (1998) analysed models of face-to-face tutorials and found that the attempt to transfer these models directly online was not successful, with tutors subsequently devising new online tutoring techniques and models. They note that 'online tutoring demanded more adaptation from tutors than from students. Practice had to be adjusted for all aspects of teaching: handling student enquiries, diagnosing of student status and difficulties, assignment marking, tutorials' (ibid: 111). The Salmon (2000) 5-step model of e-tutoring has offered one conceptualisation of this new tutoring medium and how it might be implemented in a constructivist pedagogic framework. Much of the literature also insists on the necessity for a transition from a teacher-led to a student-centred pedagogy (e.g. Collis, 2001; Salmon, 2000). However in the case here of doctoral level students (we will be working with an interdisciplinary cohort of senior practitioners/managers on a professional doctorate) the tutor-student relationship is already necessarily student-centred, although tutors and students still have to gain experience of the online environment.

A further implication of online learning which has emerged in the context of other providers of online education is that in contrast to the traditional academic model where an academic both designs and delivers a course, the roles of course designer and course tutor may become disaggregated, and the role of educational technologist can become increasingly important. Other parts of the institution, such as library and computing communities, also have greater roles to play. Bates (1995) points to the level of teamwork which then becomes necessary, possibly requiring some cultural change in the role of the traditional academic. Interview data show that this has been recognised by key figures within VLE initiatives at Sussex, specifically in relation to the need for support and academic communities to work together. Rumble (2001) also expresses concern here for the degradation of the role of the course tutor, with increasing use of non-tenured, part-time staff for the delivery of online learning. In her description of the changing education environment, Salmon (2000: 90) expresses the belief that online teaching in universities will become a specialised and professionalised field, independent of the roles of scholar and researcher, with many e-moderators working part-time and from home.

The growth of online learning can be seen therefore to have much broader consequences for the academic workplace, consequences which Blackmore (2002) has identified as having a gendered bias. She sees the doubling of part-time workers in Australian universities since 1996 as a reflection of a new work order where there is 'a core periphery division of labour, of a casualised, feminised, marginal workforce serving the hard core of tenured, largely male, academic workers and researchers' (Blackmore, 2002: 433). Austin (2002) has pointed to similar trends in faculty staffing in the US, where there is also growing use of non-tenured part-time staff, and expresses concern for the loss of contact with the cultural environment of the university which this entails for this group. However, redistribution of roles of curriculum design, teaching, tutoring, student support and assessment across a team does not have to result in poor working conditions for those involved. Where there is sufficient institutional support and

a good fit between the practices of team members successful learning of students can also be accompanied by the professional satisfaction of staff (Alama et al. 2003).

Costs

While our project benefits from funding from the EU, it is apparent that the costs of online learning are not easy to establish. One small example of this for our project is the costs of the digitisation of the texts which were initially rather unknown, with only guidelines figures being available. Collis et al (2001) note that institutions are often interested in possible financial benefits of online learning, but that often very little firm costing is carried out. Some costs seem very difficult to quantify however, such as the time a tutor devotes to an online discussion forum, and we already noted the uncertainty which exists around this new role. Other costs relate to initial training needs, for example in the use of VLE software.. Certainly the costs of proprietary software are high. In addition hardware and software require almost constant upgrading, given the pace of technological improvements (and the interests of suppliers). Costs can also differ widely depending on the technologies used, with Rumble (2001) quoting figures ranging from \$6,000 to \$1,000,000 for the development of an online course. The cost of developing materials and question databases has brought about the need for institutions to consider collaboration to benefit from economies of scale in the development and delivery of some materials. This has seen the emergence of collaborative ventures such as UCEL (Universities' Collaboration in e-Learning), a consortium of five British universities (Cambridge, East Anglia, Manchester, Nottingham and Wolverhampton) who are pooling their efforts and funding to develop online resources within the health sector.

From our interview data, conflicting attitudes to cost implications of online learning have emerged. Several key figures in the development of online learning at Sussex speak of the costs being higher than for traditional teaching methods, but justifiably so given the rich learning experience thereby created for students. On the other hand, interest was expressed by others in cost benefits arising from a reduction in tutor workload that online learning was perceived to allow. A further group were very suspicious of online learning for that very reason and critical of online learning as a 'technical fix'. Pressures on staff time are also creating tension between the research and teaching roles of academic staff. Online learning was seen then by some as being a benefit in liberating academic staff from teaching duties, and criticised by others who felt that teaching should have greater priority.

Conclusion

It is evident that many issues remain to be resolved, particularly in the implementation of internet-based assessment but also for online learning in general. Acceptance does not seem general and at the heart of the ethos of a university like Sussex lie deep-seated allegiances to traditional methods of teaching. Internet-based assessment is readily associated with learning paradigms which are behaviourist rather than constructivist, and the potential within online learning for divergent assessment practices is largely unexplored. This is an area of particular interest to us as our own interactive web site becomes operational. We look forward to engaging with substantive issues within online teaching, learning and assessment, and in particular the exploration of the potential for formative assessment within online conferencing environments.

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