Academic staff attitudes towards electronic learning in Arts and Sciences

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Abstract

The use of electronic media and tools is central to many higher education teaching and learning strategies, but adoption of new technology is more often negatively received by staff, although enthusiastically embraced by students. Longer term, it has been questioned whether universities will meet the needs of shifting knowledge-based societies and increasingly diverse student populations.

Barriers to the adoption of e-learning by staff have been identified largely from research within scientific and technical subjects. Our aim was to explore the attitudes of staff towards e-learning across both the Arts and Sciences, to understand more fully some of the reasons why educators fail to make the best use of technology-driven opportunities. Staff (n=36) from Schools of Politics, American Studies, Medicine, Nursing and Bioscience at one University were interviewed using a semi-structured questionnaire (see Appendix 1).

The results showed that staff did not have a consensual idea of what e-learning meant, or the breadth of technologies involved. Science staff were more aware of the potential benefits, feeling that their academic subjects suited the use of e-learning. In the Arts, staff felt that their academic subjects required deeper levels of analysis and discussion that e-learning could not provide. This perhaps reflects a lack of understanding of what e-learning tools were available and could potentially offer.

To conclude, the Arts lag behind the Sciences in the provision of e-learning, with staff suggesting that the use of e-learning was perhaps of less benefit to the subject. The lack of clarity and divergent attitudes provides an insight into how e-learning strategies must be adapted in order to improve staff understanding of what e-learning technologies are available, what the benefits are and how best to adopt them.

Keywords

E-learning, staff attitudes, staff perceptions, higher education, engagement.

Themes

Introduction

It is generally accepted that electronic (e)-learning refers to the use of the internet and computer-based technologies to facilitate teaching and learning (Ruiz et al 2006). As technology advances, so the definition and scope of e-learning evolves. The 10 year strategic aim of the Higher Education Funding Council for England (HEFCE) is to develop and embed e-learning within the higher education (HE) sector and provide a more student-focused and flexible educational opportunity (HEFCE 2005). In response, e-learning is increasingly becoming central to HE strategies across universities and colleges in the UK.

Despite the recognition of the important role that e-learning can provide, adopting these new approaches to embed computer-based and internet-based technology in teaching and learning has been sporadic, with many institutional and individual barriers to adoption identified (as outlined in the literature review). The aim of this study was to gain further insight into the barriers and factors preventing adoption of new technology in the classroom in both Arts and Sciences.

Literature Review

The use of e-learning contrasts widely between universities in the UK, and can range from the simple provision of course content on-line (handbooks and lecture slides) to the use of content management systems, or virtual learning environments (VLEs) to provide synchronous or asynchronous learning and

assessment (Ruiz et al 2006). Many institutions have seen a steady uptake in the use of VLEs. Of the 41% of institutions that responded in a 2005 HE survey, over half claimed to use at least 1 VLE, with the numbers of registered staff and student users increasing year on year (Jenkins et al 2005). The survey revealed that e-learning is being used as a supplement to classroom teaching with staff providing course content on-line (lecture notes, web resources). This so called, "blended learning", can encompass a number of approaches – mixed e-learning and traditional teaching, or online learning versus face to face learning (Oliver and Trigwell 2005). At present, there are relatively few fully on-line courses and modules being delivered and assessed solely via a VLE and without any traditional teaching methods.

However, despite the growing recognition by HEFCE of the important role that technology can play in teaching and learning, universities have been slow to bring e-learning into the mainstream and maximise the potential benefits in the classroom. A survey of 19 Higher Education institutions by the Organisation for Economic Co-operation and Development confirmed that student up-take of e-learning is increasing but certain barriers prevent it making an impact in the classroom. These include lack of infrastructure and funding, and staff scepticism of the pedagogic value of e-learning (OECD 2005). O'Neill et al (2004) supported the notion that universities are not fully utilising technological advances, questioning whether they will continue to meet the needs of shifting knowledge-based societies and increasingly diverse student populations.

A number of studies have investigated the institutional and individual factors that are barriers to the adoption of new technology. In an early study (Daugherty and Funke 1998), the barriers most commonly identified by staff included a lack of technical support and adequate equipment, and the increased amounts of preparation time required. Similar themes have been identified by subsequent research (Pajo and Wallace 2001). These issues are still apparent in more recent studies. Scott (2004) revealed that university students were enthusiastic towards the use of a VLE and used it regularly, and the most notable negative issue was the lack of enthusiasm from academic staff. Similarly, e-learning was viewed positively by students studying dentistry, whilst teaching staff expressed negative views. Staff were concerned that the e-learning course available to students did not provide good standards of teaching by not delivering the same curriculum as traditional face-to-face teaching, and placing lecture notes on-line would reduced lecture attendance (Gupta et al 2004). In a review of the literature, Newton (2003) identified over 20 (mainly US) surveys investigating staff attitudes to e-learning and VLEs. Several themes emerged from the survey and included lack of incentives and rewards for staff involved in e-learning, and lack of strategic planning and vision.

Many of these previous studies have focused on scientific and technical academic departments. What is not clear is whether staff attitudes vary across different academic faculties. The aim of this study was therefore to explore whether there were differences in staff attitudes to e-learning between Arts and Science.

Methodology

36 staff from 2 Schools representing the Arts (Politics, American Studies) and 3 Schools representing the Sciences (Medicine, Nursing, Bioscience) at the University of Nottingham (Nottingham, UK) were chosen at random and invited for face-to-face interviews. Staff included naïve users who did not use computers at all and competent users who regularly used email, PowerPoint and other aspects of technology in their work on a daily basis, and included a range of levels of teaching expertise and experience, from new lecturers to more senior members of staff and Heads of School (Table 1).

The qualitative, semi-structured interviews lasted approximately 30 minutes, although this was flexible to accommodate the knowledge and experience of the staff. Interviews were semi-structured allowing for themes of interest to be discussed in more detail. Each interview was recorded digitally or onto audiotape, and transcribed for theme analysis.

Table 1. Profiles of Interviewees: Number (n) of staff interviewed and number of years teaching experience.

School	Lecturer		Senior Lecturer		Reader		Professor		Other		Total
	n	Years	n	Years	N	Years	n	Years	n	Years	
Bioscience	3	1-8	3	13-30	2	15-20	2	5-25			10
American studies	3	2-5	1	7			1	15			5
Politics	2	9-15	1	10	1	8			2	2-4	6
Nursing	5	5-23							2	2-3	7
Medicine	1	15	4	15-25	1	20	2	20			8
Total	14		9		4		5		4		36

Results 1: Usage and definition of e-learning

The staff ranged from those who regularly used computers, that is, the daily use of email or software such as PowerPoint, to those, particularly in American Studies and Politics, who did not use technology at all.

In the School of Nursing some modules were delivered solely on-line via the VLE *"WebCT"*, offering great flexibility to students who were often mature with families, and away from the academic site on practice placement. In the Schools of Medicine and Bioscience, VLEs were used to deliver courses and facilitate on-line assessment. In the Schools of Politics and American Studies, the use of e-learning had permeated to a lesser extent, with no use of a VLE and little use of technology such as PowerPoint for delivering lectures compared to science subjects.

From the interviews it was clear that staff across all Schools did not have a clear definition of e-learning in their mind. There was some agreement that it referred to the use of electronic means to facilitate learning:

> *"What I understand by e-learning I guess is learning that takes place via the Internet on a computer as opposed to via a lecture or a text book or anything else."*

Conversely, others felt that e-learning wasn't just providing a technology solution:

> *"I don't call putting lecture notes on a website e-learning, I call that being lazy."*

Results 2: Attitudes towards e-learning

From the interviews it was clear that staff from different Schools had very different attitudes towards e-learning. Part of this may be due to the subject speciality itself, with the suggestion that some subjects that required the delivery of diagrams and processes rather than in depth subject analysis and discussion lent themselves to e-learning more readily:

> *"Some subjects are based around discussion and do not lend themselves to e-learning...the level of analysis and discussion is not deep enough..."*

In the Arts, staff felt that the relationship between students and teacher needed to be different, and that the use of technology was not appropriate for learning in some subjects:

> *"Art subjects very much have a dialogic relationship between student and teacher. E-Learning discourages a two way discourse to the detriment of the students' educational development."*

> *"In the Arts the academic focus is on reading large volumes of texts. This is not recommended on a computer and hence I am sceptical about moving students away from the library and onto the net."*

As highlighted in the quotes above, there is a lack of awareness of the benefit that technologies such as on-line conferencing software could bring to staff-student discussions. Other examples of differences in familiarity and benefits of e-learning tools and technology were highlighted in the research.

In the School of Bioscience there was a greater awareness of the potential benefits of e-learning. Academics were far more likely to feel that e-learning could replace traditional teaching within certain modules. Conversely, Arts lecturers observed that PowerPoint:

was "often used gratuitously."

> *"...produces showy presentations for the sake of it and doesn't enhance the learning process."*

Results 3: Perceived benefits

From the interviews, several perceived advantages and disadvantages to the use of e-learning emerged. Staff across all Schools did express that e-learning could be advantageous to both teachers and learners in terms of housing resources in one location and enabling students to access resources:

> *"E-learning gives students the ability to go back and do it again if they don't understand things."*

In the Arts, staff felt that e-learning was beneficial for information retrieval and provided students with flexibility in how they prepared texts prior to seminars:

> *"...it frees you from the restrictions of temporality and location."*

> *"E-Learning affords speed and accessibility to databases, articles, papers etc."*

Staff in the Sciences expressed how the use of moving 3D animations and diagrams could be useful to explain complex molecular structures and biological events, and that it helped in the teaching of laboratory practicals to provide information by experimental simulations:

> *"The sort of thing that Horizon television programmes do really well, they explain some very complicated stuff with some very nice diagrams and moving diagrams."*

> *"...the best things I suppose is to actually get your hands dirty and do the experiment or the lab class yourself, but if you can't do that at least we can simulate it in some way."*

Some Science staff felt that e-learning could encourage interaction between student and teacher:

> *"I use keypads and quizzes in classes and the students seem to love it."*

A clear advantage to both staff and students was that e-learning afforded greater possibilities to work from home in a quiet environment:

> *"...through better utilizing e-learning, academics could spend less time on campus and more time at home."*

Results 4: Perceived disadvantages

A number of concerns relating to the use of e-learning were expressed. Staff felt that e-learning could disadvantage the quality of education; that it "*dumbs down*" education and encourages plagiarism:

> *"...the notion of substituting staff with e-learning does not provide 'quality' education."*

> *"E-learning leads to students being 'spoon fed' information. This can discourage independent thought and action."*

> *"Students sometimes access the wrong kind of information on the web. Better material can sometimes be obtained from reading books. E-learning can lead to students not availing themselves of the academic literature."*

Staff suggested that the reduced levels of interaction between tutors and students, and students with each other could be disadvantageous:

> *"The disadvantages are social; you can't go and talk to somebody else."*

> *"E-learning does not allow the tutor to convey enthusiasm for the subject. There can be a loss of spontaneity."*

Staff across all Schools commented that they were apprehensive about the additional workload involved in preparing e-learning materials and in finding time for additional training. Another apprehension was the lack of reliability of technology and facilities in the classroom:

> *"Gaining familiarity with e-learning devices is hugely time consuming. As academics work longer hours, juggling various commitments, training courses become less and less appealing..."*

> *"Equipment often fails, whether hardware or software. This can lead to a frustrating experience for all concerned."*

> *"Not much good in a power cut."*

Results 5: Barriers to using e-learning more

The staff interviewed across all Schools suggested several reasons why they would not be interested in using e-learning in a greater capacity. There was a lack of awareness regarding e-learning, and some staff were more focused on research than learning activities:

> *"I'm not even aware of the packages or resources available."*

> *"At the end of the day I am here to do research not to think about e-learning."*

> *"This may be down to personal bias, but also a "culture of resistance" in my department."*

The phrase *"comfort zone"* was used quite often. People were only willing to work within boundaries in which they felt comfortable. Others mentioned lack of IT (information technology) facilities and that some students would require training on how to use e-learning packages:

> *"The facilities in the lecture theatre/seminar rooms are not always the same."*

> *"Students would need instruction on how to interact with new programmes. E-learning is only effective if the students have the knowledge to use the resources deployed."*

Conclusions

Our study has enabled us to gain an insight into academic staff attitudes and perceptions of e-learning across Arts and Science faculties. The results indicate that those staff interviewed held no firm and consistent definition of e-learning in terms of the types of technologies involved, and had diverse views on the benefits or pitfalls on using e-learning in education. Ruiz et al (2006) defined e-learning as the use of the internet and computer-based technologies to facilitate teaching and learning. Some staff defined e-learning as the use of *"e"* electronic technology in education, and others felt that it was defined pedagogically, with lecture notes placed on a website not being e-learning. The lack of a clear definition of e-learning makes the implementation of an e-learning strategy difficult with staff not sharing a common understanding or a uniform vision. The term e-learning might be creating a subconscious barrier with staff who claim to be less confident and less computer literate. It would be interesting to debate whether *"e"* should be dropped or whether it is useful and still required to maintain a high profile for the adoption of new technologies within universities, and how to most effectively use them in teaching and learning.

Our results identified several institutional and personal barriers to the use of e-learning that have been referred to elsewhere (Newton 2003, Scott 2004, Gupta et al 2004). However, several interesting subject differences have emerged. The staff interviewed ranged from those who regularly used computers to those, particularly in American Studies and Politics, who did not use technology to such a great extent. In the Schools of Nursing, Medicine and Bioscience, it was not uncommon for modules to be delivered and assessed through the use of a VLE. The Arts lagged behind the Sciences with some staff frowning upon the use of PowerPoint as a *"glitzy fad that serves little educational purpose."* The attitudes amongst Arts staff appeared more polarised with the feeling that their subject specialities do not lend themselves to e-learning. As this study indicates, this may partly reflect a lack of awareness of what tools are available and the pedagogical benefits of them. One member of staff admitted that they were not aware of packages or resources available. Staff were worried about e-learning not providing a *"quality"* education and that it "*spoon fed"* information. Therefore, some departments would benefit from a greater understanding of how tools could be used, for example on-line collaborative environments and discussion boards to enhance staff-student dialogue (Yee 2006; Yuan et al 2007), which was one of the concerns from Arts staff that e-learning could not facilitate.

A comment that students may access the wrong kind of information on the web again would depend on the educational context in which they are working. A small study led to the observation that students who used Wikipedia rather than peer-reviewed research papers gained a poorer overall mark when writing a scientific essay. However, engaging student enthusiasm for the online encyclopaedia proved to be a useful tool to develop students' critiquing skills, and to illustrate the importance of a robust literature searches from a variety of reliable sources (Rolfe 2007).

All staff agreed that there were numerous benefits to e-learning and these appeared clearer to staff in the Sciences. Staff felt that some subject areas are ideal for e-learning; for example the use of animations to teach biology, and the use of experimental and laboratory simulations. These beliefs are consistent with studies that have demonstrated that computer simulations enhance student learning (Gibbons et al 2004), and that animations are a valuable tool to support the education of natural science processes (Huk et al 2003). Staff in the Arts were on the whole more sceptical about e-learning than their counterparts in the

Sciences, although they agreed about the advantages of having greater accessibility to databases and papers on-line. Staff in the Arts felt that e-learning does not provide a deep enough level of analysis and discussion, and that it could not provide the required levels of dialogue between staff and students, again reflecting the lack of awareness of tools available and possible educational benefits of them.

All staff expressed a number of concerns relating to the use of e-learning. They felt that e-learning could disadvantage the quality of education, and that it encouraged plagiarism. Again, staff could be made aware of software and on-line tools that enable plagiarism to be more easily detected (McKeever 2006), and that such software can be used to improve academic practice and deter students who maybe tempted to plagiarise or collude (McGowan 2005).

Our research revealed possible subject differences to the awareness and perceptions that have not been identified by previous research. Such differences will have practical implications for university and departmental strategies aiming to promote e-learning among staff. Strategies may be needed to increase staff awareness of what new technology and e-learning tools are available, and what the pedagogical benefits would be to Art and Science subjects. The lack of time and support are continuing problems, and staff felt the need for more incentives to dedicate time to training and for the development of resources. These issues are consistent with Newton's (2003) study where time commitments, lack of staff incentives and lack of support were significant factors likely to detract from the use of new technology in HE. As one member of staff commented, they were here to do research and not to think about e-learning.

The staff interviewed expressed positive views towards increasing collaborations between universities and educational institutions to commission e-learning material. The subject of reusability of on-line resources is presently being explored (Malcolm 2005), as is the development of searchable data repositories. The barrier to sharing resources even at departmental levels requires further exploration.

This research was limited to a single institution but has raised several interesting questions. Does an e-learning activity provide educational value over and above traditional teaching? Which subjects benefit most from e-learning? Do the Sciences need e-learning more than the Arts? Do learning styles and lecturer's own learning experiences influence the uptake of e-learning tools?

In summary, definitions of e-learning are unclear, and the attitudes towards e-learning vary between Schools. This may reflect subject specialities, staff experience and differences in educational methods. For universities to exploit the maximum benefits of e-learning, and for future education to match the expectations of the students as the sector becomes more competitive (Kellner 2004), e-learning strategies need to adapt to raise the awareness of technology and its benefits, and to incorporate more support and incentives for staff.

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Acknowledgements

Thanks to Alison Taylor for transcribing tapes and Peter Davis for his advice and support. The University of Nottingham Learning and Teaching Development Fund provided financial support.

Appendix 1

Questionnaire guide for an exploration of the pedagogical effectiveness of e-learning.

1. How would you define e-learning?
2. Do you use e-learning regularly, sometimes or not at all?
3. What is the role of e-learning for teaching in your subject area?
4. What is the role of e-learning for learning in your subject area?
5. What is your experience of using e-learning as an educator?
6. What is your experience of using e-learning outside of your teaching role?
7. What training have you had for e-learning (internal and external)?
8. What would you suggest to enhance the use of e-learning in your discipline?
9. Do you have any further comments about the educational value of e-learning?