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TEACHING ONLINE

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Abstract: This chapter reports initial findings from a study of the thinking, beliefs and tutorial action of higher education teachers who are working in a 'virtual classroom'. The teachers work on an 'online learning' course at the Masters level. An important means of communication on this course is computer conferencing. The work of the teachers is centred upon reading and constructing electronic texts – contributions to an ongoing 'electronic seminar'. The research setting allows an unusual degree of access to the thinking of teachers during the process of teaching. It also allows access to the thinking of teachers during the whole of the (relatively short) cycle of planning, teaching and reflection that surrounds each moment for intervention in the electronic seminar. The chapter offers two contributions to our understanding of online teaching. First, it begins to locate online teaching in relation to other forms of teaching by providing an analysis of how some common kinds of online teaching are undertaken. Second, through illustrations of the work of one experienced online teacher – supplemented by data taken from their 'think aloud' protocols and from interview transcripts – it highlights some key areas of knowledge and belief that seem to be a critical part of online teaching. The chapter discusses both substantive findings about relationships between teachers' thinking, beliefs and practices, and methodological issues raised by this relatively novel research site. It concludes with some suggestions for further research.

1. INTRODUCTION

Anyone who took at face value the predictions that are being made about growth in educational uses of the Internet might be forgiven for concluding that the days of 'conventional' university teaching are numbered. What use will a campus be in the age of the global student and the virtual university? Who will be bothered with, or

will be able to afford, face-to-face tutorials or seminars when email is quick, timely and cheap? Is the lecture dead, or deserving euthanasia¹?

Actually, I suspect that many of our current learning and teaching practices will survive well into this new century. Those who foresee an easy substitution of teaching methods too frequently misunderstand the function or underestimate the complexity of that which they would see replaced. Yet new forms of interaction, and new ways of improving access to educational opportunities, *are* emerging as clear benefits of the growth of the Internet and of its main technologies - email and the World Wide Web. Email is already embedded in the working practices of most academics in the developed world. It is used extensively for research, administration and social purposes. It is becoming unusual to find an academic who does not also make some use of email in his or her teaching, though such usage is more likely to have developed *ad-hoc* rather than as a deliberate, systematic modification to teaching methods.

This chapter describes some research into teaching in an 'online learning' environment. This kind of teaching has been described in the literature with increasing frequency since about the middle of the 1980s. Some of this literature might be described as evangelistic (urging teachers to consider the value of online learning, presenting guidelines for pedagogy, etc). *Some* of the literature describes empirical research, not uncommonly in the form of a case study carried out by the teacher(s) who were involved in a pilot application of online learning. The papers that report more rigorous or more detached empirical research into students' experiences of online learning, or of learning outcomes, are still quite rare. I have found no such studies of the activities, thinking or beliefs of teachers in an online learning environment.

Since this is such an under-explored area, the chapter begins with an attempt to provide some conceptual clarification of the nature of teaching in an online learning environment. It attempts to identify a number of questions that seem to me to be central to progress in the area. It thereby provides some useful background to the research study that makes up the main part of the chapter.

2. BACKGROUND

2.1 Motivation for the study

This section explains the motivation for the study. There are a number of distinct reasons why researchers study teaching. It is possible, though rare, to find what might be called 'disinterested enquiries' into teaching, that is, studies which simply

¹ Consider for example the views of international management consultant Peter Drucker: "Thirty years from now the big university campuses will be relics. Universities won't survive. It's as large a change as when we first got the printed book. Do you realize that the cost of higher education has risen as fast as the cost of health care? ... Such totally uncontrollable expenditures, without any visible improvement in either the content or the quality of education, means that the system is rapidly becoming untenable. Higher education is in deep crisis... Already we are beginning to deliver more lectures and classes off campus via satellite or two-way video at a fraction of the cost. The college won't survive as a residential institution." (Interview in *Forbes* 10 Mar 1997)

see teaching as a fascinating activity to study, without there being any intention to derive practical benefits from the outcomes of the research. In the majority of cases, there *is* an intention to apply the outcomes of the research and the kind of application that the researchers have in mind carries implications for the kinds of data that are collected, the methods used to collect them, and (sometimes) the theoretical framework within which data are gathered and interpreted. Table 1 provides a schema for five distinct kinds of motivation for carrying out research on teaching.

Table 1. Five kinds of practical motivation for research on teaching

1	Improvement of teaching (one's own or that of others; via reflection and 'local' improvement, rather than via better theoretical accounts of good teaching)
2	Improvement of teaching (that of others, through better theoretical accounts of good teaching)
3	Better divisions of labour (re-engineering 'business' processes; e.g. using teaching assistants vs. expensive professors; see for example Ford et al, 1996)
4	Improvement of the tools/technology available to teachers (user-centered systems design methods depend on a good understanding of the working practices of the intended users of the technology; customised environments for online learning are becoming available; little evidence that these are properly informed by information about what teachers want to achieve)
5	The replacement or automatisisation of aspects of teaching (there has been significant interest in the study of teachers' pedagogic knowledge and decision making among those who are seeking to build intelligent tutoring systems, e.g. Wood, 1991; Goodyear, 1991; Kamsteeg & Bierman, 1991; Cumming et al, 1994; Derry & Potts, 1998; Wasson, 1998. Less ambitious projects are trying to replace parts of the tutor's work through the provision of self-organising databases of 'frequently asked questions', etc)

Moving from the first towards the fifth of these categories involves, *inter alia*, increasing formality and precision in the descriptions created. The construction of an intelligent agent capable of carrying out some of the work of a tutor requires very detailed and precise descriptions of pedagogical knowledge and action, ideally in a programming language. Formal methods of knowledge elicitation are required and the outcomes may be unintelligible to the teachers involved in the study (Goodyear, 1989, 1991; Wood, 1991; Wasson, 1998). In contrast, working with individual teachers to help them come to a better understanding of their practice, and to improve upon it, often obliges the researcher to use language and concepts which are rooted in the teacher-subject's experience, even if this means that the researcher has to live, perhaps temporarily, with a degree of conceptual inexactness and incoherence (e.g. Larsson, 1984; Elbaz, 1990). The study reported in this chapter is probably best aligned with the second of the categories in Table 1. It is intended as a contribution to the improvement of online teaching, taking as a reasonable goal the clarification of some key aspects of what is involved in a common kind of online work.

2.2 The diversity of teaching in higher education

Teaching is not an undifferentiated activity. What is involved in giving a lecture to 500 students is different from what is involved in a one-to-one, face-to-face, tutorial. Also, interactive, face-to-face, or what might be called 'live' teaching is different from (say) planning a course, giving feedback on an essay, designing some learning materials, or reflecting on end-of-course student evaluation reports. (James Calderhead structures his 1996 review of teachers' cognitions in terms of 'pre-active', 'interactive' and 'post-active reflection' phases, to help distinguish the cognitive demands of 'live' teaching from its prior preparation and from reflection after the event.) The pattern and quality of teaching work varies between individual teachers and, most notably, between teachers in different academic departments or disciplines. This patterning also varies between universities in the same country and between different national systems. For example, one-to-one tutorials are now very rare in the UK higher education system, except for the supervision of dissertation work and for counselling students who are experiencing academic or personal difficulties. Small group tutorials and small group seminars are very rare in the teaching of the physical sciences in UK undergraduate programmes (ASTER, 1999). Supervision of lab classes is still a common activity for science teachers, of all ranks, in UK undergraduate teaching – though it tends to be delegated to teaching assistants in US universities. Teaching *other than* through very large lectures is an uncommon experience for academics in humanities disciplines in some countries of continental Europe. The point that needs to be made here, is that we cannot safely characterise teaching in higher education by reference to just one or two kinds of task. Any serious analysis of how teachers do what they do, of what their competence consists of, needs to be sensitised to the variety of that work. Online tutoring is just one kind of task area, though many suspect that it will increase in importance for most university teachers. (A 1998 study by the US Public Broadcasting Service (PBS) reported that 25% of North American higher education institutions were then offering courses on the Internet and that 1 million students were taking higher education courses online, compared with 13 million attending 'bricks and mortar' higher education institutions.)²

2.3 What is online learning?

The terms 'online learning', 'networked learning', and 'e-learning', are used almost interchangeably in much of the current discussion about innovation in education. For the purposes of the research reported in this chapter, the term 'online learning' is used to mean learning which involves interaction between people using Internet communication technologies, such as email or computer conferencing software. The interaction is between learners and learners and between learners and their teachers. Online learning may also involve use of web-based learning materials, but our current focus is on human interaction over the Internet.

² The PBS survey results can be accessed at <http://www.pbs.org/netlearning/stats.html> (accessed 18 July 2000)

In the course which provided the context for the study, this interaction was typically text-based and asynchronous and used group-oriented communications tools (c.f. Mason & Kaye, 1989; Rapaport, 1991; Harasim et al, 1994; Collis, 1996; McConnell, 2000). Asynchronous interaction is interaction which allows participants to take part in the interaction at different times. Electronic mail, fax, voicemail and post are examples of asynchronous communications technologies. They stand in contrast with face-to-face discussions, videoconferencing and the telephone, all of which are essentially synchronous. A distinguishing feature of asynchronous communication is that it does not allow *interruption* - individual contributions to an asynchronous electronic discussion are relatively self-contained and well-formed and cannot depend on linguistic supports such as rapid turn-taking (Goodyear, 1995; Boden & Molotch, 1994). The use of text as a medium of interaction also has some important qualities. Unlike speech, it has persistence. It encourages closer adherence to commonly accepted rules of grammar, and more 'formal' modes of expression, than is usually the case with speech. Its persistence may promote reflection. It may not be the best medium for sharing experiential or tacit knowledge, or describing working practices (Goodyear & Steeples, 1999b). Finally, the interaction in the study context was essentially group-oriented. Although the technology in use did permit private emails to be sent, almost all of the interaction visible to any one learner (or tutor) was in a shared quasi-public online space. Everyone's contributions were meant to be read by all of the learners and tutors in the course group. (They were kept private from the rest of the world, and even from learners and tutors on other courses, by the use of password protection.)

The set of arrangements for online learning described here and prevailing within the study setting is not an unusual example of online learning. It will be recognisable to many practitioners and to those familiar with some of the best-known literature from online learning (e.g. Mason & Kaye, 1989; Harasim et al, 1994; Collis, 1996; Bonk & King, 1998; McConnell, 2000). However, it is important to note that it does not represent the whole space of online learning practices. It may be near the 'centre' of current practices, but there are other forms of online learning that would produce other views of how online teachers do what they do (see e.g. Mason, 1994).

2.4 Teaching in an asynchronous online learning environment

Most of the studies of teaching in the educational research literature are set in familiar contexts: teaching face-to-face in a classroom, managing a seminar, planning a lecture, giving feedback on an essay, etc. Our shared familiarity with these contexts allows researchers to get by with just a brief description of the study context. Since online teaching is relatively novel and takes a variety of forms, it is important that we take the time to get a clearer view of what was involved in the teaching studied for this chapter.

The online teaching took place within an MSc course run by the University of Lancaster in the United Kingdom. The topic of the MSc was itself to do with technology-assisted learning. It was a part-time programme of continuing professional development, aimed at people working in industry or in post-

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