Chapter 4

Technology in the United Kingdom's Higher Education Context

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Frequently, university-wide strategic decisions about technology are made without fully understanding the implications for resources, administration, teaching programmes, teaching practices and learning approaches, often resulting in technology-led course designs. Yet evidence shows that it is not the technology per se that changes learning and teaching but the pedagogical advantage we make of its use. In parallel, professional development programmes have largely focused on how to use the technology, resulting in replication or supplement of existing teaching practices, as opposed to transforming learning. In particular, the lack of specific context and reflection in professional development programmes can lead to a poor understanding of how and why students use technology effectively in learning. This requires a rethink of how we support initiatives that use technology in learning and teaching. Professional development programmes need to focus not only on the individual teacher, but also on support staff, departmental, and senior managers, so that appropriate policies, supporting structures and resources are in place for effective technology use. This chapter critiques these issues in the context of higher education in the United Kingdom and examines the political drivers that have pushed for the use of information communication technology (ICT) in learning and teaching. It considers this in the context of the United Kingdom Open University and how this institution has addressed some of the issues highlighted. Finally, a framework for professional development to support ICT in learning and teaching is presented aimed at holistically improving the student learning experience. This framework incorporates not only individual staff but also faculty and institutional management.

Higher Education in the United Kingdom

Higher education (HE) in western societies is undergoing significant changes, particularly in terms of how education is accessed. The reasons for this are many-fold and complexly intertwined. The student population is diversifying from the more historically-typical school leavers at age 18 years to include a greater proportion of older entrants seeking career development or enhancement. The more traditional view of students being campus-based and in full-time education is also being challenged. In the United Kingdom (UK), due to the introduction of tuition fees, students are finding it increasingly necessary to supplement their student loans with income from part-time employment. This can put pressure on their ability to attend the more traditional lecture and face-to-face tutorials. Similarly, those who enrol in courses for personal or professional development reasons are more likely to be part-time

students who have full-time jobs. They too have limited time available to attend lectures and tutorials.

Increased attention to learning and teaching issues

Several important government-led initiatives for HE learning and teaching were instigated in the 1990s that have had a significant impact on UK university education the early 21st Century. The first was the establishment in 1997 of the Quality Assurance Agency for Higher Education (QAA) building upon work previously undertaken by the Higher Education Quality Council and the HE Funding Councils for England and Wales. 'The Agency' was to provide an integrated quality assurance (QA) service in respect to university teaching and student support across the entire sector. Before the QAA came into being, quality assurance of HE teaching had been fragmented and highly variable. Higher Education institutions that were granted university status in or after 1992 (largely the former Polytechnics, Colleges of Higher Education etc.) had been subject to external appraisal procedures for new courses and student support, or they had developed approved systems of their own that had grown out of external review and assessment procedures. Teaching quality assurance in the pre-1992 universities was almost entirely internal (with the exception of external examiner appointments), lacked consistency, and was primarily concerned with quantitative output standards (for example, examination grades and class of degrees awarded).

The QAA is responsible for safeguarding sound standards of HE qualifications, and for encouraging continuous improvement in the management of the quality of HE (http://www.qaa.ac.uk/). The Agency has brought about 'external' appraisals throughout the HE sector; largely by means of a rolling programme of institutional audits and subject-based academic reviews. The review of teaching in any university's subject or discipline area encompasses consideration of the following aspects:

- Curriculum design, content and organisation;
- Teaching, learning and assessment;
- Student progression and achievement;
- Student support and guidance;
- Learning resources; and
- Quality management and enhancement.

Departments and institutions were required to document their policies and practices in these fields and to demonstrate the QA procedures adopted. Overall, judgment of the teaching quality in a specific university discipline area was made in relation to the department's own statement of aims and objectives, in other words, how well the department was meeting the goals that had been approved within its institutional structures. It was envisaged that quality enhancement would result from departments and institutions undertaking the preparatory processes required for the QAA review and from subsequently instigating actions to rectify any shortcomings identified in the publicly available review report.

Another set of initiatives appeared in proposals published within the Dearing Report (National Committee of Inquiry into Higher Education, 1997). The Committee of Enquiry sought to engender increased discussion of teaching and pedagogical issues in HE institutions through several new mechanisms. The proposals were designed to help bring about innovation and change in institutional approaches to learning and teaching that went beyond a concentration on professional development for individual teachers (Gibbs, 2003). One was the requirement for all HE institutions to develop and publish Teaching and Learning Strategy documents (discussed later in the section). A second was the proposal for the establishment of an Institute for Learning and Teaching in Higher Education as a focus for increased professionalism in HE teaching.

Increased Professionalism for Higher Education Teaching

Throughout the 1980s and 1990s an increasing number of HE institutions had set up a specialist 'learning and teaching' unit to support professional development for academic and associated support staff. The activities of such units would typically include the provision of resources and events such as workshops, seminars, day conferences as well as guidance documents and individual consultations: participation at events was almost always on a voluntary basis. In contrast to the UK schools sector, there was no requirement for HE teachers to have undertaken any formal preparation for working with students. In-house courses for newly appointed academic staff were increasingly offered, sometimes in collaboration with other HE institutions. These were aimed at meeting the needs of the particular institution, although some degree of standardisation was achieved through a national course accreditation scheme, such as that operated by the Staff and Educational Development Association (SEDA).

The Dearing Committee proposed the establishment "of a professional Institute for Learning and Teaching in Higher Education (ILT), one of whose roles would be to accredit programmes of higher education teaching training. … The Institute would provide the basis for a nationally recognised system of professional qualifications for higher education teachers based on a probationary period, and followed up with appropriate continuing professional development at later career stages. Differing levels of expertise would be recognised by different forms of membership of the Institute" (NCIHE, 1997, paras. 14.28 and 14.29). While the Committee stopped short of recommending that this should be *compulsory* for newly appointed staff with teaching responsibilities, it hoped that ILT membership would become "the normal requirement".

In 2004 the Institute expanded to become the Higher Education Academy (HEA) with a wider brief. It continued its role in supporting the professional development and recognition of staff in HE, while also co-ordinating a nationwide network of 24 Subject Centres, each of which seeks to enhance the student experience of learning in specific discipline areas through a variety of means (e.g. the sharing of resources and good practice, etc.). Over time, a number of nationally funded schemes have been established aimed at promoting and rewarding excellence in HE teaching. For example, a total of 81 'Centres for Excellence in Teaching and Learning' (CETLs) have been established across a variety of institutions since 2005. They receive a high level of funding to reward excellent teaching and to promote further pedagogical research and the dissemination of good practices.

Institutional Strategies for Learning and Teaching

The Dearing Committee's proposal (Recommendation 8) for the publication of institutional strategy documents for learning and teaching was the first time that all HE institutions had been required to formulate an explicit statement of their approach to learning and teaching. The first (partial) strategy documents were published in 1998 and these were revised and expanded in 2000 and 2002.

Institutional strategies were also obliged to outline the methods and procedures that would be used to promote pedagogical development. The change mechanism most frequently cited in the first round of strategy documents published by English HE institutions in 2000 was continuing professional development (specified by 91% of institutions), with the exploitation of ICT not far behind (81%) (Gibbs, 2001). However, the extent to which these aspirations were transformed into reality varied considerably. Not only were there the usual competing demands and reward structures for teachers in HE (e.g. the national Research Assessment Exercise which measures past performance and funds future research within disciplines and

institutions), there was also the increased administration necessary for the accountability processes required by the Quality Assurance Agency.
More recently, students' views of their university experience of learning have been formalised through the establishment of a National Student Survey that informs the Teaching Quality Information website:
(http://www1.tqi.ac.uk/sites/tqi/home/index.cfm). This survey of final year students' satisfaction with the teaching and support provided by university courses in England, Wales and Northern Ireland has been commissioned and backed by the Higher Education Funding Councils. The survey is also supported by the National Union of Students. It covers topics that include teaching, assessment and feedback, academic support, organisation and management, learning resources, and personal development. Although the survey provides a little guidance to university departments about *how* their teaching and student support can be improved, the survey results are publicly available and provide an important source of information that can be used by prospective students to guide their enrolment choices.

Impact of Technology Adoption

The use of ICT has also had a significant impact on universities. It has brought with it heightened levels of expectations, in terms of speed of access, increased access, personalised services and on-demand services. As western societies become progressively more information rich and 'self' educating there are increasing pressures on universities to meet the needs of 21st Century students. Using ICT to support students' diverse and changing needs requires flexibility and this in turn requires technology (Collis & Moonen, 2001). Introducing ICT, however, into university provision is not without its problems (Kirkwood & Price, 2005).
From the 1990s, and in recognition of some of the changes and developments in society and in student expectations, the UK Government instigated initiatives to promote and develop the use of ICT innovations in HE. The Dearing Report (NCIHE (National Committee of Inquiry into Higher Education), 1997) made recommendations for increased use of ICT for teaching, learning and administration in universities. These recommendations reflected the institutional adaptations necessary to cope with changes in the quantity and circumstances of students entering higher education. They also proposed that ICT would enhance students' skills that would be necessary in their future working lives, for example, in information handling and for effective and appropriate use of new technologies.
United Kingdom Government funding for ICT developments in the post-school education sectors is provided through the Joint Information Systems Committee (JISC). This body "provides national" ICT services, and steers innovations by granting financial support to targeted "programmes" and "projects" (http://www.jisc.ac.uk/). The educational impact of JISC has not been an unqualified success: too often its programmes and projects have been technology-led.
In the early 1990s the UK Government launched the Teaching and Learning Technologies Programme (TLTP) to promote the use of ICT in higher education. TLTP funded a number of discipline-based inter-institutional software development projects. Unfortunately, some of these innovations did not serve the student population well. Each project produced an evaluation report and a meta-evaluation (Coopers & Lybrand, 1996) reviewed all the projects with the objective of identifying good practice and 'lessons to be learned'. It found that most projects had failed to capitalise on existing knowledge of teaching and learning with technologies and that the projects could have been improved if they had applied previous research.

More recently, a survey of the adoption of online learning environments in UK Further and Higher Education institutions concluded that "pedagogical issues …. appear to have been of secondary concern until now" (JISC/UCISA, 2003, p.7). This is not solely a UK phenomenon. Reviews of ICT use in universities in the Netherlands, Germany, the United States of America, Australia, Sweden and Finland have all revealed similar shortcomings (Kirkwood & Price, 2005).

This is a generalised problem faced by the HE sector in the United Kingdom. There has been too much attention on developing the technology infrastructure, discipline-based software and resource repositories, while insufficient attention has been given to how and why teachers and students might benefit from the use ICT. The UK Government remains wedded to a vision of technology-led transformation throughout all sectors of education (Department for Education and Skills, 2005). The most recent e-learning strategy document from the Higher Education Funding Council for England [HEFCE](Higher Education Funding Council for England (HEFCE), 2005), however, provides a glimmer of hope by indicating that there should be an increased focus on *student learning* in institutional approaches - a welcome shift in emphasis away from the previously dominant technological drivers. There is an increased attention being focused on professional development to support the use of ICT in teaching and learning as a consequence.

Professional Development for Technology Use

The weaknesses identified in many ICT innovations arise less from the use of technologies *per se* than they do from the teaching and learning practices that they are intended to support. One of the fundamental problems in HE is that many academic teachers lack a pedagogical understanding of the form of their practice. The introduction of ICT to facilitate and support the curriculum makes this issue more acute - it tends to make teaching more visible and a less 'individual' activity. In more traditional universities a lecturer or professor is relatively free to design, organise conduct their teaching as they please within the overall requirements of the course or programme. The theoretical premise or philosophy of their teaching is rarely discussed - it is not under scrutiny, nor is it 'publicly' available. Rarely would one lecturer go and observe the practices of another lecturer, especially if uninvited.

Increasing use is made of technology to support teaching and learning as universities move to more blended models of educational provision. Lectures, tutorials and seminars can become less transient as some aspects (at least) of teaching are made available to students 'anytime and anywhere'. Courses that have a web presence are quite visible and are open to greater scrutiny by peers. Lecturers can observe and scrutinise each other's websites and online materials and they are exposed to potentially increased critique.

Another consequence of having courses online is that poor teaching practices are not only visible but often accentuated. Making audio recordings of lectures (or just the lecturer's notes) available on an institutional intranet or online learning environment simply reinforces transmissive, 'information transfer' practices. Although fairly commonplace, actions such as these do little to enhance and develop students' learning and deeper understandings, particularly bearing in mind the current emphasis in western countries on constructivist approaches in higher education. Such teaching practices are unlikely to be challenged in conventional teaching contexts. Developing materials for online contexts requires teachers to understand the underlying pedagogical purposes and to reflect upon their own beliefs and practices relating to the nature of knowledge, learning and teaching. Without such fundamental considerations, materials end up being translated for the web as opposed to being transformed (Carswell, *et al*., 2000). Technology-led innovations do not improve educational practices in themselves - it is teachers who are the agents of change (Kirkwood & Price, 2005).

Formerly, some professional development programmes lacked pedagogical insight so that they resulted in ICT skills 'training' for staff. This approach tended to identify skills shortages and sought to remedy any deficiencies through improving each individual teacher's awareness of, and skills in *how to* use, information communication technology. As a consequence, university teachers were only likely to *supplement* their existing teaching practices rather than *reflect* upon their appropriateness (e.g. Evans, Gibbons, Shah., & Griffin, 2004; Szabo & Hastings, 2000). After reviewing a programme that adopted such an approach, Haynes *et al.* (1997, p.161) report that …

> *staff have initially used IT to support their current working arrangements, such as the production of typed handouts and lecture presentations and are more confident using IT to reinforce existing working practices rather than to embark on radical new learning practices.*

Professional development programmes of this sort focus upon effecting change in individual teachers, without contextualising existing practices within departmental or institutional teaching and learning strategies. Departmental and institutional contexts are important determinants of teaching practices (Knight & Trowler, 2000; Ramsden, 1992), hence academic managers also need to be incorporated into a professional development framework that aims to improve teaching and learning with information communication technology.

Despite the rapid growth in the use of ICT in UK higher education, the impact upon teaching and learning could hardly be described as impressive. Many innovations aimed at enhancing educational processes in HE have failed to achieve their intended outcomes. In particular, professional development programmes for university teachers have often been unsuccessful in bringing about adaptation and change in teaching practices. In the next section we will consider how pedagogical research can illuminate some of the underlying issues of teaching, learning and technology in higher education.

Issues Concerning Teaching and Learning with ICT

Teaching issues - Some professional development activities in relation to ICT appear devoid of underlying considerations regarding the nature of teaching. Practitioners can acquire technical skills for using ICT to supplement existing practices without being required to examine and reflect upon the changing nature of learners and of teaching in HE, or their existing conceptions of teaching. Various studies (Samuelowicz & Bain, 1992; 2001; Trigwell & Prosser, 1996) have demonstrated that university teachers hold a variety of conceptions of teaching and that those conceptions are related to how they approach their teaching. In other words, if a teacher believes that teaching is about increasing students' knowledge they are likely to adopt a teacher-centred approach to teaching - their conception of the task is as transmitting information to the student. In contrast, if teaching is viewed as enabling the development of student's conceptions, then a student-centred approach to teaching is likely to be adopted - teachers engage learners in activities that promote each individual's understanding of a topic. Issues such as these are more fundamental to making effective use of ICT than understanding how to use the technology *per se*.

Information communication technology can support either teacher-centred or student-centred conceptions of teaching, but each requires a very different approach to how ICT can be used to support learning (Laurillard, 1993). The problem is that less sophisticated conceptions and approaches to teaching become more visible in a technologically rich learning environment. Frequently it is not the technology that is failing, but the teaching and pedagogical approach.

On the surface it would seem that the way to improve the effective use of technology in HE is to develop teachers' own understanding of their conceptions of, and approaches to, teaching as a foundation to understanding how to use technology effectively. The situation is, however,

more complex. Ho, Watkins and Kelly (2001) pointed out that while it is possible to change a teacher's conceptions of teaching, it is not always possible to change their approach to teaching. They described an approach to professional development that attempted to change teachers' frameworks for conceptualising teaching and learning. Evaluation revealed that six out of the nine teachers who started with relatively unsophisticated conceptions of teaching showed enhanced conceptions of learning after the professional development programme. However, only three of these teachers introduced changes in their teaching practices.

Norton and her associates (Norton, *et al*., 2005) argued that there is a difference between university teachers' beliefs about teaching and their practices. The practice of teaching represents a compromise between a teacher's academic and social contexts (Trigwell, *et al*., 1999). Amundsen, Saroyan and Frankman (1996) investigated changes in an individual teacher's beliefs and practices over a five-year period as a result of professional development. One of the issues that teachers struggled with was the institutional context and its lack of support for learner-centred teaching. These included, lack of formal training for teaching in HE, lack of institutional rewards for good teaching (research had priority) and limited views of assessment - these had the effect of promoting rote memorisation (leading to surface learning).

Hockings (2005) reported institutional barriers that caused an innovative teacher to revert to teacher-focussed approaches. She argued that it is not enough to change the practices of one teacher; systemic and systematic change are required at departmental level so that learner-centred teaching practices are not eroded. So even if professional development programmes are successful in enhancing teachers' conceptions of teaching, changing practices may be difficult because their approach is mediated by their working environment (Gibbs & Coffey, 2004). In order to teach better and facilitate better learning, departmental cultures need to encourage the improvement of student learning (Knight & Trowler, 2000).

> *There is evidence that the environment of academic departments – including their leadership – influences the quality of teaching and learning in universities ... Again, the key factor in the equation is the staff member's perception of the context of academic work (Ramsden, 1998).*

Learning issues - Great variability has been found in the ways in which students undertake learning tasks and in their actual study behaviours. Research has revealed different *conceptions of learning* (Säljö, 1979) and different *approaches to learning* (Marton & Säljö, 1976; 2005). Students also have different *expectations* of teaching and learning activities (Kember, 2001). These variations account for the different ways in which students respond to learning tasks and activities. They are highly significant when there is a disparity between the (often implicit) beliefs and assumptions about learning and teaching held by students and those assumed by their teachers.

Policy decisions to include ICT in courses or programmes of learning might have unintended negative impacts. For example, some students encounter a dissonance between their expectations of teaching and learning in HE and their previous experience (Kember, 2001). As a result, they might use ICT inappropriately, preventing them from attaining the anticipated outcomes from learning activities. Further, students who are unfamiliar with or anxious about using computers may adopt avoidance strategies. If senior managers are unaware of how institutional policies affect learners the necessary support structures and skills development for students may not be put in place, marginalising the value that ICT can bring to teaching and learning.

Similarly, if the use of ICT has not been integrated into the structure of the course by constructively aligning it with the assessment strategy (Biggs, 1999), it will not be used in the manner intended by teachers (Garland & Noyes, 2004). As one study pointed out:

> *Again and again learners emphasised the role of the marking scheme in their decision to use ICT resources. Without adequate reward structures, students were unlikely to access online resources or tasks (Concannon, Flynn & Campbell, 2005, p.509).*

A Holistic Approach to Teaching and Learning

The complexity of teaching and learning processes within varying HE contexts is captured well in a model developed by Goodyear (2001) – see Figure 1. Professional development activities aimed at preparing individual teachers to make more effective use of ICT are likely to focus solely upon the lower levels of the model's *Pedagogical Framework* (i.e. pedagogical strategy and tactics). It is unlikely for there to be any explicit consideration of the philosophy or high level pedagogy (the overall approach related to beliefs about the nature of knowledge and learning) for any particular educational programme, despite the need for increased collaboration and teamwork (between academics and with technical and/or support staff) that accompanies many ICT innovations.

Figure 1 About Here

The *educational context* will not be uniform, even within any particular institution – each course or programme will have its own contextual dynamic. Similarly, technology-driven professional development activities are unlikely to explore the impact on course planning and design of the wider *organisational context*. Often these factors might be considered as fixed and beyond the influence of individual teachers, despite having significant effects on educational practices and upon learners and learning. Norton, Richardson, Hartley, Newstead, and Mayes (2005) found that differences in teacher's intentions across different institutions, and between teachers with different levels of experience, appeared to result from contextual factors. Hence, the dominant teaching paradigm of a department or faculty may influence how teachers approach teaching, despite their underlying beliefs. For example, the conventions or regulations in a faculty, department or even across the institutional as a whole may prevent particular assessment strategies being put in place, such as the use of collaborative outcomes for student activities.

Targeting professional development activities at academic managers is important so that they can be aware of the implications of ICT policy on students and staff. Too often it seems that institutional strategies create barriers that impede innovations to enhance student learning (Hockings, 2005). Strategies need to be devised that enable staff to not only to provide students with basic ICT skills and information literacy, but to enable them to use these skills in consistent and progressive ways throughout a degree programme. In effect, this means encouraging learners to develop a better understanding of when, where and how to use ICT appropriately. Activities such as these are different in nature from those targeted at individual staff – they focus on the roles and responsibilities of academic managers in developing and supporting a culture of student-centred learning and teaching. This would enable all staff to engage in professional development in a collegiate manner with a view to solving common problems relating to teaching and learning with ICT.

Issues in Professional Development in Higher Education

Teaching and learning with ICT needs to be informed by an understanding of relevant research into its impact on education. If we aim to improve the quality of our teaching and

ultimately the learning experiences of our students then we need to have a stronger synergy between research and practice (scholarship). By strengthening the nexus between these activities, the focus of professional development shifts from being topic driven to problem solving (Elton, 1995). We concur with Elton's view that this promotes an entirely different and more unitary philosophy for professional development; one in which "developers and academic teachers collaborate with the aim of improving the student learning experience" (p.183). Hence evidence-based professional development needs to incorporate institutional research about students' experiences of the educational value of ICT in their courses.

How Should we Frame Professional Development?

Professional development is not about giving staff a prescription to follow for improving their teaching – it is much more complex than that. Teaching and designing courses and programmes of study are difficult. The role of the professional developer is not to provide teaching staff with a pre-determined set of technical or procedural skills, nor is it to impart relevant theories. The aim should be to empower staff to grow in their own directions. This is in accord with active, learner-centred conceptions of learning and teaching. The process needs to begin with staff feeling confident about change, and confident about reflecting on their own practice. Professional developers need to help create an environment in which academic and support staff are enabled to move from "espoused theory" about teaching and learning to "theory in action" (Argyris & Schön, 1974). The *espoused theory* is the set of values and beliefs that we use to describe to other people (and ourselves) why we do what we do, while the *theory in use* relates to the values and beliefs that underpin what we *actually* do in practice. For any individual, these might or might not be compatible, although that person may not be aware of any incompatibility.

The term 'professional development' implies that professionals are capable of deriving solutions for operating in novel and uncertain environments. One approach to framing an appropriate programme is to understand that academics, as professionals, should be capable of operating in a world of uncertainty. Professional development programmes should concretise this uncertainty in a way that prepares academics to deal with new and complex teaching situations in the future. Any attempt at technifying or prescribing teaching is presumptuous and ignores the role of context. An overly prescriptive approach is unlikely to lead to successful implementation in novel teaching situations. Participants in professional development need to have 'equality' with the developers rather than feeling that developers privilege their knowledge. As such they need to be contributors and developers in their own personal journey of development.

Issues Surrounding Change

For staff to feel confident about change they need to know that support is on hand if, and when, required. Professional developers need to take on board a consultative role assisting staff to structure innovative uses of ICT and to understand how to integrate it into their curriculum. This role also needs to extend to follow-up research by which the factors of change can be understood as well as their impact on both the curriculum and teaching and learning practices.

This enables staff to understand how their change has impacted on students, what factors have contributed to its success or failure, and where improvements need to be targeted. For example, less emphasis on assessing factual recall and more concentration on assessing the application of knowledge may encourage students to adopt *deep* approaches to learning, considered more desirable in higher education (see Richardson, 2000, for a review). Elton *et*

al. (1990) have found that a feedback model of this kind, based on sound educational theory, is most successful. As a *critical friend* facilitating feedback, the professional developer promotes the ideals of "facilitative reflection" and *reflective practice* assisting staff in changing their practice (Schön, 1983).
Change is a process, not an event. It is also a highly personal experience brought about by frustrations, concerns, motivations and perceptions (Pickering, 2006). This dimension is often a more significant factor in determining whether a change factor is successful or not. Individuals involved in changing their practice go through stages about their feelings toward an innovation as well as their skill and sophistication in using it. In reality, change takes time and is only achieved in stages, being neither steady nor continuous (Hall & Loucks, 1978). Frequently policy makers, managers and even academics assume that a professional development activity or intervention can immediately be applied with great sophistication and vigour, when that is not necessarily the case. Change is also difficult to measure. The current climate in HE is one of measurement and assessment. Inevitably there will be some conflict when professional developers are asked to measure the impact of their programmes, particular if they share the view that change is a personal process occurring over time. We shall consider how these various issues impact in a particular case, that of the UK Open University.

Institutional Context – The UK Open University

The Open University (OU) was founded in 1969 to offer degree programmes by distance learning across the United Kingdom. It accepts all applicants over the normal minimum age of 18 without imposing formal entrance requirements, subject only to limitations of numbers on specific courses. With more than 180,000 students enrolled, including more than 25,000 students studying in other countries around the world, it is the largest academic institution in the UK in terms of student numbers. It can be considered to be one of the world's *mega universities* (Daniel, 1996). Since it was founded, more than three million students have studied its courses. Most students remain in paid employment while undertaking their studies.
Originally, nearly all of its courses were offered to students through a variety of media: specially prepared correspondence materials, combined with television and radio broadcasts, video and audio recordings, tutorial support at a local level and (in some cases) week-long residential schools. In recent years, however, the University has made increasing use of computer-based support, particularly CD-ROMs and DVDs, dedicated websites and computer conferencing links. Use of the Internet has become progressively more important as a growing proportion of learners undertake their studies in locations around the world.
The courses are developed centrally at the university's main 'campus' in Milton Keynes where academics work collaboratively in teams with academic-related, production and technical support staff. Course development time can range from one to three years. During course presentations the students are allocated to groups of around 24-30 and these are supported by a part-time Associate Lecturer. There are around 8,000 of these, who form the primary point of contact between students and the course on which they are enrolled.

Teaching and Learning Focus in the Open University

The United Kingdom Open University has a long and acknowledged tradition of understanding the needs of its students – adult learners studying part-time and independently, frequently without the educational qualifications normally demanded for entry into the higher education sector. Considerable time and effort has been spent on embedding quality assurance and quality enhancement procedures within the institution. The Open University's reputation for the quality of its teaching extends throughout and beyond the United Kingdom. This was

based, however, on a very successful, but increasing outdated, model of paper-based correspondence teaching and learning whereby the university provided self-contained courses consisting of very high quality materials, supplemented by other media and resources.
In the early years considerable use was made of television broadcasts, but spiralling costs and the development of the Internet caused the OU to rethink its strategy for media deployment. In 1995, an initiative was launched to encourage new uses of technology in courses, particularly online applications. This involved recruiting 33 new academic staff whose primary responsibility would be to encourage and support innovative uses of ICT for learning and teaching. The prevalent view at that time was that the OU was a university using out-dated 1970's and 80's mass media technologies, such as television. Something different was needed for a future in which digital media would avail much greater individualisation and social interaction through increased connectivity. The innovative use of ICT and its mainstreaming into the curriculum and support systems, research into using ICT in learning and teaching, the impressive growth in the number of students using ICT and the developing skill base in the Associate Lecturer community have all contributed to transforming the image of the OU into that of a progressive leading-edge institution. The current focus in the university is on the needs and requirements of students in the 21st Century.
The UKOU is currently developing its own Virtual Learning Environment (VLE). The intention is to use a consistent portal to make available online as many courses and support services as possible. This has required considerable infrastructure and resource investment, as well as significant professional development support. Academic staff are encouraged to make use of a range of online tools in their teaching, and library and student support facilities are also available to all registered students via the Internet.
Recent policy changes have enabled students to contact their tutors (part-time Associate Lecturers) using the medium of their choice. This happens most frequently by email and telephone, but can also happen by means of computer conferencing, mobile phone, SMS text messages, mail and face-to-face contact. This has raised a range of professional development needs for associate lecturing staff (Kirkup & Kirkwood, 2005), some of whom find that they lag behind students in their use of the latest technology. This extends also to those involved more centrally in course production; students are expecting more innovative uses of ICT in education.

The Culture of Teaching and Learning in the Open University

The culture of the OU is collaborative and participative and quite often teaching and learning innovations come from the ground up. The university has always adopted a supportive approach to students and has been concerned with the scholarship of teaching and learning from its inception.
At a macro level the university has invested in significant quality assurance processes and procedures to monitor and maintain a good quality student experience. This is not an insignificant activity, given that the university can have about 200,000 students enrolled at any one time. The Centre for Institutional Research, within the Institute of Educational Technology has a specific remit to collect data on students' experiences of courses and other services through annual and bespoke quantitative surveys (whereby large scale surveys can be specifically designed and administered on request) and specific qualitative research.
At a micro level, 'supported open learning' involves each student being part of a relatively small course-based tutor group (often local or regional) receiving support from an Associate Lecturer. These part-time members of staff guide students in their coursework, provide study support and advice about progression. Most importantly, they mark their assignments and provide feedback to each student on their performance.

This has proved to a successful mix for the UK Open University. Almost all of the subject-based academic reviews undertaken by the Quality Assurance Agency resulted in the teaching being deemed 'excellent'. The student experience is also valued and appreciated. In the UK National Student Surveys carried out in 2005 and 2006 the Open University was ranked first in England and Wales for student satisfaction (http://www.hefce.ac.uk/learning/nss/data/2006/). It was also ranked fifth of all UK universities for teaching quality in the 2004 Sunday Times University Guide. The Open University is often excluded, however, from the HE 'league tables' due to the modular and part-time nature of its courses that makes direct comparisons impractical for certain criteria. The flexibility of educational provision that the OU provides, enables students to engage in modules and top-up programmes that do not necessarily lead to them completing a degree with the University. Completion of a qualification is the rather out-dated UK "gold standard" for measuring student progression and retention in higher education.

Most staff at the UKOU share the university's ethos of offering quality and supportive learning to all who desire it, evident in the high student satisfaction and teaching quality ratings. Even so, the introduction of ICT into educational use over the past ten years has required considerable change. Those changes are not only in the technologies that are used for teaching and learning, but also in the assumptions, models, and processes that underpin the educational endeavours of the UK Open University. Within any large organisation there are a wide range of perspectives and supporting change within this context is difficult. The question facing the UKOU now is whether academics are ready to engage with the teaching and learning issues that ICT brings and how we can support them in doing so.

Teaching and Learning Support and Professional Development

Professional development and academic support is, and always has been, given a high priority at the Open University. In its first year of teaching the University established an academic unit – the Institute of Educational Technology (IET), whose main remit is to support the faculties in their development and support of students' learning and teaching. Within IET the Centre for Educational Development provides a range of professional development activities and support for staff that is both formal and informal. The provision ranges from award-bearing courses to workshops and specialist consultancy sessions. Its approach has been theoretically underpinned and research driven. In comparison, many other institutions have academics that rely upon *opinion-based practice* (Boyle, 2004). If, as practitioners and managers, we 'think' we are following through our beliefs and conceptions of how to adapt to changing educational environments, then this can create a barrier to moving forward with new ideas and, more specifically, with effective educational practices. In contrast, *evidence-based practice* enables staff to actively examine their assumptions, to seek evidence as to the effectiveness of their practice and to support change when it is indicated.

The OU has adopted this approach and has made considerable investment over the years in gathering evidence of students' experiences both as a quality assurance mechanism and as a quality enhancement tool. This enables academics to engage in evidence-based practice that is underpinned by research into students' experiences. The question is, however, whether academics take up the opportunities available to engage with these activities. It has been our experience that while many of the academic support staff readily engage with professional development opportunities for using ICT in teaching and learning, many academics appear to be reluctant to do so. The following section discusses the framework that we have put in place in the UKOU in an attempt to address such concerns.

A Framework for ICT Professional Development in the Open University

The impetus for our own professional development framework was twofold. First, was the desire to provide continuing support for enhancing the quality of teaching and learning with ICT at the UK Open University? Second, was the aspiration to create an environment in which academic staff would more readily engage in professional development activities, especially in utilising ICT in teaching and learning?

Concerns had been expressed by students, through the annual Courses Survey (one of the major instruments for monitoring and evaluating UKOU courses and services), that some ICT course components were less valuable to their learning. On investigation, it appeared that not all academic staff exhibited a coherent understanding of the *educational rationale* for using ICT or media in teaching and learning. Some uses of ICT were merely 'add-ons' to existing courses that employed pedagogic models appropriate for self-contained, largely print-based materials intended for independent study. In some cases, ICT use in courses appeared to satisfy institutional policies rather than sound pedagogic rationale.

Professional development activities were needed that focused on the *academic rationale* for using Information Communication Technology. The underlying assumptions and pedagogic framework would transcend existing academic, faculty and managerial boundaries. The team responsible for devising the programme had considerable experience not only of facilitating professional development, but also of examining students' educational experiences of ICT use. They had, themselves, conducted institutional research into student learning. Evidence-based professional development workshops on ICT use had been provided for more than ten years and considerable feedback had been amassed from staff on their professional needs. It had become clear, though, that institutional policy decisions could hamper the pedagogical advantage of using ICT due to a lack of understanding of the implications for students and teaching staff. "To be effective, conceptual changes must run in parallel with organizational changes" (Fanghanel, 2004, p.589).

In order to engage academics in professional development there needed to be an overarching approach. Professional development needed to address the predominant culture within the university and not just focus on individual teachers. Improving teaching and learning through professional development needs to be supported by appropriate strategic policies (Blackmore & Blackwell, 2006; Knight, Tait & Yorke, 2006). Warren Piper (1994) argued that programmes tended to focus on teaching and learning improvements with the individual academic. He predicted that as more institutions see the need for change in policy as well as practice, programmes will extend to supporting management and policy-oriented staff. The framework described and discussed here adopts the latter approach.

There is no one single way to tackle professional development for teaching and learning with ICT in higher education. Any approach should be eclectic and facilitative, which is why we present a framework that is not of a prescriptive or formulaic nature. We hope that it can be interpreted within an institution's own particular context. Nonetheless, we do feel that there are important components that need to be included.

We have discussed issues that were important in shaping our rationale for this framework. It acknowledges that in order to improve the quality of students' experiences when using ICT in their studies, a holistic approach to course and curriculum design must to be adopted. This includes all staff involved in teaching and learning with ICT - whether academic or those supporting academics; developing courses or supporting courses; and/or managing strategy or developing policy. We argue that this framework needs to be underpinned with sound educational theory and research into students' experiences of ICT in their studies. The model in Table 1 illustrates the target groups and the purpose of professional development for each.

Table 1 About Here

Individual Staff

Professional development is available for all staff engaged in creating courses and programmes of study, regardless of whether their roles are academic or academic-related. The programme needs to concentrate on the pedagogical implications of adopting ICT in the courses on which participants are currently working. These sessions need to be underpinned with theoretical models of teaching and learning as they apply to the university's adult independent learners. In campus-based institutions, the needs of learners who are expected to study independently to a greater extent deserve consideration. Acknowledging the fact that assessment often defines the de facto curriculum, we promote the concept of constructive alignment (Biggs, 1999). The basic premise is that the curriculum is designed so that the learning activities and assessment tasks are aligned with the learning outcomes that are intended in the course. Hence learning and teaching activities are designed to enable students to attain the intended learning outcomes and the assessment methods and tasks are designed to evaluate the achievement of those outcomes.

We further support the programme with findings from research and evaluation studies of students' experiences of learning with ICT at institutional, national and international levels, which are presented to supplement the pedagogical theories and models. Later sessions in the programme concentrate on particular ICT instantiations and illustrative applications of those instantiations.

Middle Management Groups (Faculty Managers, Deans)

The aim of targeting middle management is to empower this group to make more informed decisions about ICT use in courses and to put in place strategies that incorporate these technologies into programmes of study in a developmental manner. The emphasis is upon the *educational setting* and the *organisational context*. Managers are responsible for approving and resourcing the production of new courses in their curriculum area. They need to assess whether proposed uses of ICT will be appropriate and valuable for the learners and whether proposals represent a good investment of time and money. This requires on-going dialogue and consultation on ICT policy with deanery/department management. These people are also significant agents in changing the climate in faculties in ways that can either support professional development through active engagement, or counter professional development through lack of engagement or endorsement.

Senior Management (Institutional Managers, Vice Chancellors, Pro Vice Chancellors)

The UK Government's recent e-learning strategy (Department for Education and Skills, 2005, p.14) recognises that an institution-wide approach is necessary …

> *we must provide the means and motivation for teachers and practitioners to use ICT well. They cannot do this without the support and leadership of their senior managers, so we must help leaders develop their own and their institution's ICT capability as part of their overall strategy.*

Senior managers and administrators have responsibility for developing and implementing teaching and learning strategies and institutional policies for ICT deployment. The professional development activities devised for them are of a more subtle nature, given that

they are a group that probably consider themselves least in need of professional development. The institutional policies set by senior management are of key importance, in that they can either promote or stifle innovative and pedagogically advantageous uses of ICT by individual teachers or course teams. Activities targeted at management groups need to concisely present evidence about rigorously researched experiences and impacts of ICT policies and practices on the quality of students' education. They should also indicate the likely outcomes of particular policy actions (or inactions).

The Impact

Since implementing this strategy over the last few years we have noticed a considerable increase in the adoption of ICT in courses and in awareness of the issues of using ICT in teaching and learning. Students too are reporting increased levels of satisfaction with ICT, where its use has been constructively aligned with the learning outcomes and assessment strategies of the course (Kirkwood and Price, 2005).

Continued dialogue with staff from all levels concerning varying aspects of ICT use from policy-making to implementation, gives us confidence that this approach is working, however, 'validating' the effect of one's philosophy and framework for professional development is a thorny issue. As previously stated, change is a process not an event, and the process is continuous. So when would be the optimum time to measure change as a way of assessing the impact of the framework? Additionally, how should we measure this change? Further, if one adopts a professional development philosophy that supports the ideals of collegiate working across groups of workers at different levels, how could one - or *why* should one - fragment that collaboration in an attempt to make some token measurement of its value? At present we are grappling with the issues of how we evaluate the impact of this holistic approach to professional development for ICT use in teaching and learning that goes beyond the superficial reporting of the 'feedback sheets' that participants complete after workshop sessions.

It is unlikely that any serious assessment of the impact of professional development programmes can be done in any other way than longitudinally, probably over a five year period. And 'assessment' of changes in individual academics' beliefs or practices is not only difficult but unlikely to be insightful. Academics are sophisticated and intelligent people who absorb influences and engage in developments from a variety of sources. They are likely to experience any number of impacts and changes upon their beliefs and practices initiated outside of any institutional professional development programme. The acid test has to be changes in students' experiences and/or satisfaction levels. Professional development programmes cannot and should not be self-serving: if they do not positively alter the student perceptions of their experience we have gained little.

Incentives and Barriers

At the OU, encouragement provides the main incentive to engage in professional development activities. There are neither direct financial inducements nor rewards linked to promotion or advancement for engaging in such activities. In recent years the annual Teaching Awards scheme has provided some kudos (and a small monetary award) for a small number of exemplary individuals or teams.

Unfortunately, many academic staff perceive their professional development activities as being narrowly focused on how to use particular media, such as the Voice Learning Environment (VLE) or other Internet tools. Unfortunately, as we have already demonstrated, technology-led innovations are rarely successful because they overlook the importance of

appropriate pedagogical design in courses to enable students to achieve their goals. This incentive to 'keep up' with recent innovations can act as a barrier or constraint as some participants might come to sessions with expectations that are not matched with the aspirations of the providers to facilitate a deeper understanding of the inherent learning and teaching issues.

This is an example of dissonance between teachers' beliefs and practices. Norton, Richardson, Hartley, Newstead and Mayes (2005) investigated the variation between the beliefs and practices of more than 600 academic teachers across four institutions in the United Kingdom. They found that while teachers' conceptions of teaching were orientated towards supporting student learning and problem solving their actual practices were oriented towards a knowledge transmission style.

It is possible to interpret these findings as an illustration of what Argyris and Schön (1974) term espoused theory and theory in action. Espoused theory is what we use to describe to others what we think we do, while theory in action is implicit in what we actually do as practitioners and managers – these may be at variance with one another in any individual. When this is applied to the design and presentation of courses, particularly when ICT-rich, the mismatch can prevent the desired outcomes from being achieved. For example, while a course might purport to value student collaboration and teamwork by providing Internet tools to facilitate the process, the teaching practices might actually embody a largely transmissive, information-transfer approach, reinforced by assessment methods that reward the ability of individual students to recall factual information.

A major barrier is the belief that technologies in themselves can bring about changes in learning and teaching practices. Academics and managers need to understand the advantages that various media technologies offer and to exploit their use in well designed course that focus not simply on information acquisition, but on activities that support student learning and the development of their conceptions and understandings.

The Future of Teaching and Learning at the Open University

The OU looks placed to keep pace with technology and how it can be exploited to support students in a variety of ways, wherever they live and work. Future developments look set to go beyond just award-bearing courses and consider the changing focus of education in a society that is more informationally and educationally rich. In western societies, education is increasingly being seen as important not only as a means to a good and continually developing career, but also as an activity to enhance leisure and recreation. With this vision, though, comes a requirement to understand how to harness technology in a way that provides effective education for the learners we hope to serve in the future.

Looking to the future, will technological innovations ever plateau and consequently the need for professional development in the educational use of ICT decline? We feel that this is unlikely. In fact, emerging ambient and mobile technologies such as personal digital devices and mobile phones are likely to be the next phase of development. They bring with them an array of access and communication capabilities, as well as, issues surrounding the nature, amount, and type of information and activity with which learners can engage. This is likely to involve universities in even more radical pedagogical shifts and paradigm changes.

The Internet is not only bringing new ways of accessing the world's rich information resources, it is also changing the role of the general public from being *recipients* of information to being *creators* of information as well. All universities will need to consider the implications of that shift and make the necessary adaptations to their missions, roles and

activities. While HE will no longer be the primary source of information and knowledge, it will retain a vital role in enabling learners to effectively engage with, and process, the vast quantities of information (of variable quality) that are available. What will become ever more crucial are well-founded ways of thinking and acting in, and about, this world and beyond.
Future educational programmes will need to change from 'information push' to 'information pull'. Students will expect to be collaborators and contributors to their learning as opposed to more passive recipients. Academics too, will need to change their practices to accommodate more student-centred and collaborative ways of working: for many, this could be a difficult transition. To support these educational changes, technology is essential. Changes in practices are a must. Holistic professional development programmes which support these changes are vital if universities are to prosper in the educational economy.

Conclusion

In the numerous articles and reports we have read we are still dismayed to find that discussions about the value of ICT in higher education still focus on the technology itself as though it alone were the driver for change. We want to dispel this myth. We have found considerable evidence that ICT use in HE has not had a transformational role on student learning. Technology is not the agent of change - it is teaching staff who are the drivers for educational change. To do so effectively, university teachers need to be aware of their own beliefs and practices concerning teaching and how these impact on the experience of learners. We argue that the emphasis on technology *per se* has meant that teaching staff have not received appropriate development and support to make best use of ICT. Where professional development programmes have concentrated on developing technical skills, existing teaching practices are likely to be replicated rather than revised.
Even when professional development programmes focus on development and support of teachers' understanding of teaching and learning issues, they are often unable to implement innovative practices due to the departmental and institutional context. These environments have a significant impact on how academics actually undertake their teaching practices. No amount of professional development for individual teachers can alter an environment in which they feel stifled and unrewarded for innovative and progressive teaching. The organisational context and environment must have support structures in place that encourage student-centred learning, where the use of ICT is constructively and progressively aligned with teaching programmes. If an institution is serious about improving the quality of education for its student body while using ICT, then it needs to adopt a professional development programme for the whole institution. In other words, institutions should have overarching integrated policy and practice if they are to understand the inter-relatedness and impact of any actions that are taken, whether at an individual, department, faculty or institutional level.

We have developed a professional development programme that attempts to avoid these major shortcomings and have described and analysed our framework in terms of the benefits it can bring not only to individual teachers but also throughout the institution. In short, we believe that improving student learning using ICT requires a professional development programme that addresses departmental and institution practices and policies, as well as individual ones, while also understanding the pedagogical implications of ICT choices in educational programmes.

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Figure 1. Pedagogical framework, educational setting and organisational context for teaching and learning with technology (source: Goodyear, 2001, p. 44) (This depiction is an adaptation of Goodyear's (2001) original model)

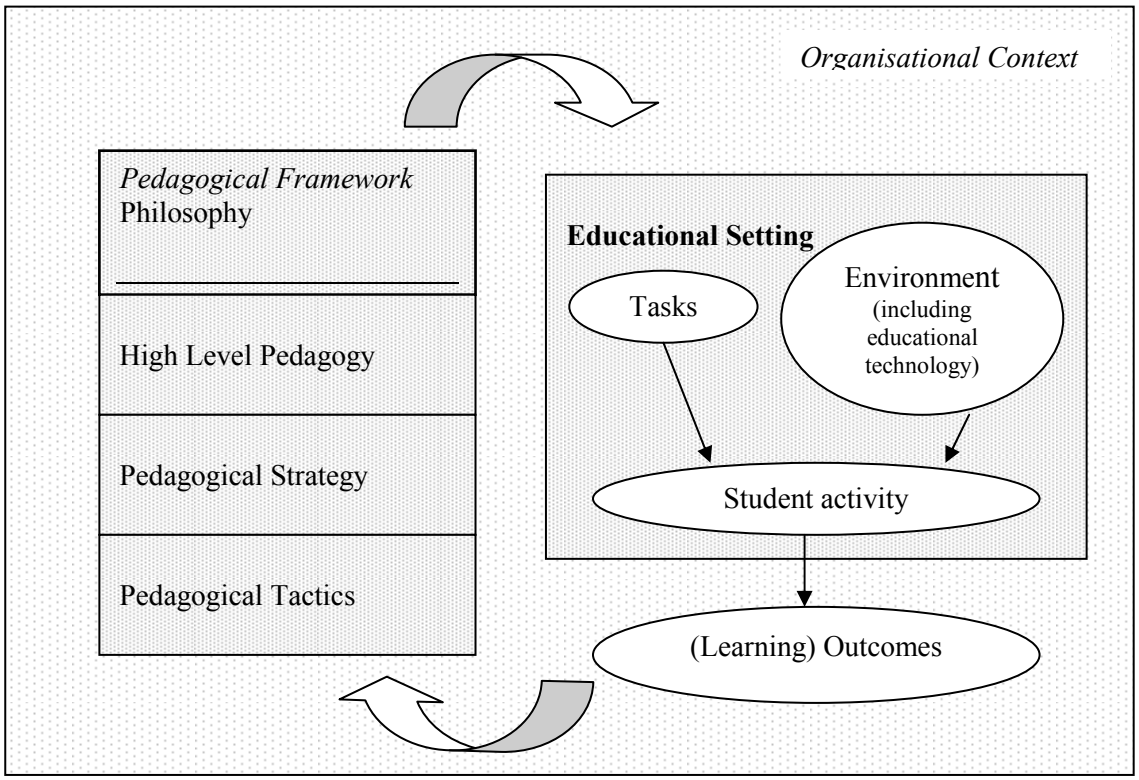

Table 1. A Framework for Continuing Professional Development (CPD) for Using ICT in Teaching and Learning.

Group	Role	Purpose of CPD	Aim
Senior University Managers	University policy and decision making on the use of ICT	To develop fuller understanding of the effects of university ICT policies and strategies on students, staff and resources	To promote **strategic** decision making that embeds the necessary support structures and resources to support policy decisions
Middle Managers	Faculty/school/department level policy making on the use of ICT in the overall curriculum	To understand the implications of faculty/school/department level ICT policy and strategies on students' learning and its implications for staff and resources	To promote **strategic** decision making that supports the coherent application of faculty/school/department level policy in course programmes by providing the appropriate and student and staff support structures and resources
Individual teaching and learning staff	Development of courses using ICT	To develop an understanding of the pedagogical rationale of using ICT in their courses and what the implications of their choices are on students, staff and resources.	To promote contextualised reflective practice and **tactical** choices on pedagogically driven ICT use, aimed directly at improving the quality of the student learning experience.