CHANGING POSTGRADUATE RESEARCH EDUCATION THROUGH THE USE OF TECHNOLOGY: PARADIGMS IN EDUCATIONAL DEVELOPMENT

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Abstract

This paper considers developments in postgraduate research education in the School of Nursing Midwifery and Social Work (SNMSW) in the Faculty of Medical and Human Sciences (FMHS) at the University of Manchester UK (UoM). The paper’s analysis will draw upon a case study of the experiences of, and rationale behind, the development of online postgraduate education, focusing on the development of an online PhD, in the SNMSW at the UoM. The paper will consider the role of the paradigmatic case as an indicator of fundamental changes in educational methods. The case study includes an outline of strategic drives for change, selected results of a 2-year study into the impact of online education on postgraduate education in the SNMSW at the UoM, and a description of the application and integration of diverse technologies. This paper reports on the first of a series of evaluative student focus groups and considers the implication of the results.

Research Literature

Little work has been undertaken on the experiences of PhD students and in particular very little on student experiences of technology-enhanced PhD study (Leonard, Metcalfe, Becker, & Evans, 2006). Leonard et al.’s systematic review found clear evidence of the need for more and better research on how postgraduate researchers experience doing a doctorate and found no evidence of the use of technology-enhanced interaction. The e-learning research agenda of the UK Engineering and Physical Sciences Research Council (EPSRC) highlights the role of interaction, co-operation and community in learning and the role of e-learning in providing new relationships between computer and learner and the formation of new forms of learning community. Additionally the UK Association of Learning Technologies’ (ALT) research strategy (2005) notes the role of participatory learning in the leverage of the wisdom of the crowd and the use of technology without learning design. This paper draws on work in progress on a University of Manchester funded online PhD programme. We explore how the output of the project can address genuine problems identified by policy makers and practitioners (Furlong & Oancea, 2005) in relation to the effective use of technology to improve the learning outcomes for doctoral students.
Case Study

Below is a description of the drivers for and output of the development of online provision for postgraduate research education (PGRE) in SNMSW.

Background
In 2001 the School of Nursing Midwifery and Social Work (SNMSW) commenced a programme to develop postgraduate research methods courses by modeling new approaches in classroom settings which would inform the development of conversationally (Laurillard, 1993) orientated online units. Since 2002 students have elected to study the Research Methods programme by either a blended route in which they attend face-to-face seminars or by an entirely online route. Each year a higher percentage of students have elected to study online with 78% studying by this route in 2007. Retention has been 90-92% and the mean assignment mark for students who elected to participate in online rather than face-to-face discussions has been higher. Therefore the School concluded that PGR students achieve at least as well studying by the online route (Campbell, Gibson, Hall, Richards, & Callery, 2008).

In 2006 the School considered the framework for PGRE provision. The School, top rated in its field in the UK, had a desire to increase the quantity, quality and international diversity of students recruited, whilst maintaining high academic standards. However, potentially good students were unable or reluctant to move to Manchester due to significant professional and, in many cases, personal commitments; students tend to register after some years of professional experience and career development, 68% register part time, 87% are female, 91% are aged over 31 years and 39% over 41 years. Part-time home students often travel considerable distances in order to study at UoM (61% live outside Greater Manchester). Additionally Nursing and Social Work are culturally specific professions and so international students who register for full-time study often choose to collect data in their home countries, sometimes converting to part-time registration for part of their studies. It had not always been possible to arrange local supervision in accordance with the Policy for Collaborative Research Degrees as, for example, when students are based in countries where academic nursing or social work is not developed in higher education. It became clear that extending the use of technology could address the issues emerging from the review of PGRE provision and that there was a clear desire to improve the engagement of part-time students with University of Manchester research environment and a wish to enhance communication with students working part time and/or at distance.

Implementation
Considerable time was spent conceptualising a model for an online PhD that would provide skills training, promote engagement in a research community and ethos and ensure a close relationship between students and supervisors. A graphical representation of the elements and relationships within the existing PhD programme was developed and translated into a series of units and elements within the University’s Virtual Learning Environment (VLE). The initial proposal was to develop an online PhD route for distributed students; however it quickly became apparent that all PhD students would
benefit from access to the online environment, and therefore all PhD students in the September 2006 intake were included in the project plan.

The students registered as “distributed” had access to an additional area for online supervision and communication, though this was also made available to resident students on request. The structure and organization of the PhD was reviewed and enhanced, and an intensive induction week was planned and delivered. Minimum technical specifications for student’s computer equipment and Internet access were put in place and a pre-course remote support/trouble shooting mechanism established. The steering group presented developments to supervisors and also to all postgraduate teaching staff to promote the adoption of online methods and to obtain feedback. The feedback from both groups was positive. Students now access all transferable skills and research methods training online. Students have the option to register as distributed students and undertake supervisory sessions online. Research events are streamed with associated discussion groups and students are provided with online social areas including desktop audio-visual conferencing facilities.

Discussed below are the main elements that form part of the online PhD programme.

**Transferable skills and research methods training.** Sir Gareth Roberts in his review of science and engineering skills in the UK stated that:

> Learning transferable skills should be an important part of the PhD process. Today’s PhD student is the highly-skilled academic or business researcher of tomorrow, and will need interpersonal and management skills to fill these roles effectively. HEIs have a vital part to play in educating their students about the benefits of such training, and must do more to encourage participation and provide high-quality and appropriate training. (2002, p.128)

In response to Roberts’ comments 13 online units were developed in which all PGR students participate: Literature Management; Producing a CV; Research Governance and Ethics; Guidance to Writing your Thesis; Research Management; Qualitative Research Methods; Quantitative Research Methods; Intervention Studies; Action Research; Statistics; Survey Methods; Historical Methods; Statistics; and Systematic Reviews.

The length of the units varies from two weeks to two semesters and the units are driven by student activities and discussion board dialogue. Each unit has a unit leader and draws on expertise from across the university in the form of short audio/visual sequenced presentations, discussion board contributions by experts, or screen capture videos demonstrating particular software skills. Both online and resident students undertake the same programme of study and attendance is judged by the contributions students make to the discussions surrounding each activity.

**Student presentation area.** As part of the PhD programme students are expected to present their work at key stages of their research. Resident students do this through face-to-face seminars which are recorded; online students submit audio and PowerPoint. All
presentations are streamed as flash video and archived and are therefore available both live and as a searchable resource. Each presentation is linked to an online discussion group.

**PhD research forum seminars.** The research forum seminars play a key role in the development of a vibrant research community. Therefore it is of particular importance that both online and resident research students can participate. All seminars are streamed and archived and made available live and as a searchable resource. Each seminar has an attached discussion group in which distributed students, resident students, presenters and staff can debate relevant issues. The seminars are also made available as podcasts.

**Personalised supervision areas.** Each student-supervisor partnership has exclusive access to a personalised supervisory area. The area is held within the institutional VLE but draws on a range of external resources. Three desktop video conferencing applications are available. Skype is embedded in the VLE and used to inform supervisor-student conversations; Adobe Connect is used for formal supervision sessions and document sharing; and Vmee, developed in house, is used as a low bandwidth back up. It was felt to be of particular importance for supervisors to have visual contact with the students in order to assess not only academic progress but to better provide pastoral support. An open source blog application has been adapted and integrated into the VLE and is used by staff and students to write up a permanent record of supervision sessions.

**Documentation and support resources.** All documentation and support resources are available through the VLE including library skills, IT skills and access to University support services, a calendar of events and announcements.

**Student social area.** This is an open area for students and includes instant voice chat, video conferencing and text chat. Further work is being undertaken in this area to adapt social networking applications such as ELGG (see http://elgg.org/) to provide a more comprehensive social environment.

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**Evaluation**

Evaluation is at an early stage; however feedback from staff-students groups has been positive, though some technical problems have been experienced. Supervisors and students on MPhil programmes have requested similar facilities and the distinction between online and traditional PhD students is fading. All PhD students now have access to the online areas highlighted above and the ability to engage in flexible technology enhance supervision. This is proving of particular use when data collection is undertaken in countries other than the UK. Additionally plans are in place to provide undergraduate dissertation students with similar provision. Students and supervisors are forming meaningful relationships through the use of desktop conferencing applications and students are requesting additional online provision. Student numbers have increased and online students have been recruited to the programme.
**Student Focus Groups**

The first intake of the online PhD enrolled in September 2006 and a small cohort (n = 6) of students were accepted as distance online students. A second student cohort (n = 8) was accepted in September 2007. Student locations included England, Scottish Islands, Lebanon, USA, and Ireland. Although the cohort is very small they provide what is at present probably the only source of data available in the UK for evaluating this form of study (Leonard et al., 2006). Therefore an evaluative focus group for the 2006 intake was held in September 2007 and the students (n = 3, a 50% sample) were asked to discuss their experiences when using the virtual environment and their thoughts on undertaking a PhD online. The focus group was structured around two themes: technology and community and three sub-themes: online asynchronous research seminars, online transferable skills training, and online supervision.

**Transferable skills.** Students commented on the timing of transferable skills sessions but made little direct comment in relation to the technology. As the units are online their timing has been changed very easily and these are now spread across the first two years of study.

**Research seminars.** The students commented on the benefits of exposure to a collection of online seminars highlighting in particular the benefits of exposure to research activities both those directly and not directly related to work they were undertaking. If the units had not been streamed such access would not have been possible:

> Even if they’ve not been anything connected to what I’m doing because I think its very interesting to hear how other people have done their research, different methods it’s a very good learning tool from that aspect because its real life.

They felt that this exposure provided a very good learning experience where they were able to look at the application of different methodologies and consider different forms of qualitative and quantitative analysis. The nature of the presentations allowed the students not just to read the paper but understand the problems people had when conducting research in the field:

> I think when you listen to how it really is it makes more sense because you are listening to the problems people had so its not just like reading a paper.

The students also commented on the potential benefits of more structured search, cross referencing and retrieval functions.

> I’ve been stuck on some analysis stuff, it would have been nice to find somebody that had done a similar study, not just the subject area but the research methods and then I could have listened to it again

Limited comment was made about the technology per se but rather about the access to otherwise unrecorded and therefore, for these students, inaccessible knowledge:
I’m part time so it’s difficult as well but I like to read the other people’s comments, they usually ask some questions and hear other people’s ideas about things or you know or different interpretations of what they’ve said I found that useful.

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People’s comments are as useful as the presentations; it’s good to see how people think generally.

The students highlight two main areas that would have improved their experience of the online research seminars: access to a wider community and the ability to search the contents of the seminars. Although students did have access to discussion boards related to each seminar it was felt that wider community contacts would have better allowed them to engage with people’s comments, questions, ideas and different interpretations. At the time of the focus group the online research seminars were available as separate links within a VLE. As an outcome of the focus group a searchable archive is being developed.

The students also highlighted the flexibility that distributed research seminars provide. The key theme that emerged was accessibility, the ability to be able to participate from home rather than, for some a, significant journey to and from the University was warmly welcomed.

It’s very convenient because you don’t have to come in for it I can just sit at home and listen to it without having to park the car or set off three hours early or something so its great.

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The flexibility is brilliant particularly if you’re working as I know myself particularly if you’ve got a family so it would have been very difficult.

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And the fact that you have the convenience of being at home as well is one of the main things. Its like having academics in a family setting and you’re not missing out, it’s really good and although initially it took me time to control . . . but you know, the convenience was there, the time, you don’t have to take your bath and wash you face and you’re ready to have a lecture.

Supervision area. Particular comment was made on the use of the online record of supervision. The students found this particularly useful and made suggestions about changes in practice that could increase its usefulness.
I found that it’s useful especially when I have to recall some of the things that we actually discussed because usually XXX’s very good at getting back, right . . . and she has sent you something, so I was able to trace source and put things together and link things and realised it shouldn’t be and I was able to put the comments in . . . so I found it useful.

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I don’t think my supervisors read it because every time we have supervision it’s “what did we say last time?” so it’s a bit frustrating and to be honest the last few supervisions I haven’t written anything because I haven’t had time and they’ve not been reading it and if I have to go further and tell them what we’ve discussed.

The use of video conferencing for supervision was well received as was the flexibility provided by the use of technology.

About just as good as being face to face but better because you don’t have to come here.

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Very helpful, it would have been impossible to do, you know, to travel, it would have been impossible so you know it’s good.

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I found it very good as well, it’s very convenient as well and I’m just trying to think because there’s not much, I couldn’t remember, there’s not much difference. There’s freedom to speak and there wasn’t any limitation or you know this . . . or anything because that was something I was thinking would happen. There was free flow of ideas and everything, no barriers to communication at all despite the technology.

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I have found myself coming down a couple of times I think I needed that face to face contact and I don’t quite know why, maybe it’s just a bit of reassurance to actually gauge the reactions of people a bit better but I have chosen to journey up here a couple of times. But that’s a nice choice for you to make isn’t it?

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I’m doing it this way it just means I’ve got more time because when they are, you know one was sent home from nursery and it happened to coincide with the supervision so he was bobbing you know but if I’d had to come in for it I’d have
had to cancel it but he was really good and the supervisors carried on and there was no trouble, you know, with it and if they have been ill where you know you have to look after them well I’ve just managed to do a bit at night or whatever but if was a face to face student that whole day would have been totally missed. For me having children its’ just the best option and I wouldn’t, I don’t think I would have achieved as much as I would have done if I’d done it face to face.

From this limited evaluation it would seem that the potential of technology to increase the accessibility of postgraduate research opportunities is significant. Whilst the demographic make up of SNMSW PhD students is not standard it is unlikely to be unique. Other disciplines, particularly those where doctoral study may take place after a period of professional experience, are likely to have a similar student demographic.

**Implications: Is this a Paradigm Case?**

To explore the role of a paradigm case it is first necessary to consider Kuhn’s work on paradigms in scientific research and secondly to consider the meaning and definition of paradigmatic cases.

**Paradigms**

Kuhn (1972) defines a paradigm as a set of theoretical assumptions, laws and techniques for application, which members of a particular scientific community adopt. A particular paradigm acts as a framework by which a community identifies central concepts and fundamental problems and is the method by which many problems may be resolved. The paradigm is the view of the scholarly domain that is given legitimacy by the institutional valuation created by academic consensus.

Kuhn (1972) describes two change processes: firstly those within ‘normal science’ where the resulting change is within the framework of the paradigm and then those within a phase of ‘revolutionary science’ with a resulting change to a new paradigm. He labeled the first general characteristic of change within a revolutionary phase “Gestalt switch” (which roughly translates to a way a thing has been gestellt, i.e. “placed,” or “put together”). Evidence can now be offered which allows an exploration of role of the Internet and associated technologies in changing, either fundamentally or within a normal phase, the framework for educational delivery (Lam, McNaught, & Cheng, 2008; McLoughlin & Lee 2007). Evidence of the role of WWW in educational practice can be provided through case study (Sharpe, Benfield, Lessner, & De Cicco, 2005; Yin, 2003); however, it is when we consider whether or not the proffered case is paradigmatic that we explore the nature of potentially fundamental change.

**Paradigmatic Cases**

When considering postgraduate education in the FMHS at the UoM as a scholarly domain, we can ask what the educational paradigm is composed of — i.e., what are the components that have been put together to create it. Through an exploration of these elements and the whole which they form, a view can be gained on whether the case can
be described as a paradigmatic case in the sense that it is a study that highlights more general characteristics of the society in question (Flyvbjerg, 2006). In this case the criteria for judgment would in part be that the case in hand defines a change in how PGRE is conceptualized, whether educational concepts (such as educational place and community, personal contact, models of student learning, organisational models for universities) are being altered, and if new solutions to philosophical, administrative and practical educational problems are being developed.

However, identification of a paradigmatic case is problematical, as Dreyfus argues “you recognize a paradigm case because it shines. You just have to be intuitive.” (cited in Flyvbjerg, 2006, p. 232). Intuition will involve the strategic choice of case, the execution of the case study, the reactions to the study and the validity of any claims the researcher can place on the study. Therefore whether or not the case is paradigmatic, with the ensuing implications for the domain in which it is positioned, depends in no small part on the response of the academic community to reports of the case.

In terms of a paradigm case, considering whether the proffered case has the potential to have significant impact on the central concepts and fundamental problems of PGRE is necessary. One view, as expounded by Ravenscroft (2001), is that the combination of learning theory, design, implementation and evaluation used in educational technology research and development is in effect treating design as theory. That is, we are “considering learning theory, technology and context in the design of educational interactions, in ways that treat design, like theories, as something that are developed, validated, evaluated and refine” (p. 150).

If this position is accepted then the development of online educational programmes could be said to affect the core process of PGRE, in that the participants, both staff and students, are interacting with and through a technological design. The design technology mediated learning is not neutral, it will influence the nature and success of educational dialogues. Media, as Kozma (1994) argues, “possess particular characteristics that make them both more and less suitable for the accomplishment of certain kinds of learning tasks.” Furthermore the educational effectiveness of the design is scrutinized and evaluated by experts in educational technology rather than solely by the participants as was previously the case. This would seem to represent a move from the normal practices of PGRE. The focus group data would seem to indicate that fundamental problems of PGRE in the context of SNMSW could be addressed by the outlined case study, though, is far from proven. Isolation from the academic environment, the ability to participate, and a closer relation between students and supervisors are themes emerging from the data. However, the localised response of the UoM community and the response from the wider academic community about whether the case is representative of wider societal change and whether it promotes deep rooted alterations to traditional educational concepts that will demonstrate whether the case can be viewed as paradigmatic.

The technology and structure of the programme has been directly adopted by enthusiasts in other schools within UoM and promoted by the central University as one model for PGR programmes. Whilst this is positive, the response of the wider academic community
is not yet clear, nor is the long-term impact on student experience and student numbers. To a degree the change to the PhD, as a flagship programme, does reflect a growing certainty in appropriateness of a shift to a new educational model, that of distributed study, as core business. This mirrors the rise of communication technology in the wider society, and this shift does challenge a range of concepts including the nature, role and organisation of the physical university and the nature of a research community. However it is one programme addressing the requirements of a particular student demographic and a particular form of research training.

References


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