

The impact of collaborative technology-enhanced learning on concepts of teaching

(or Developing eCompetent professionals)

Tony John Churchill

ChurchT2@lsbu.ac.uk or 07748-677724

May 2011

Submitted for the degree of Doctor of Research in Education

Abstract

Much has been written about the way in which e-learning has changed learning in higher education without transforming it to meet the changing needs and expectations of stakeholders in the sector. The beliefs and practices of teachers in the sector have remained largely unchanged despite the widespread adoption of e-learning tools.

This study used a phenomenographic approach to identify the conceptual frameworks of practitioners. Among the indicators used to define these frameworks were practitioners' levels of engagement with e-learning tools and the broader concept of technology-enhanced learning. The study identified limited evidence of the transformation of beliefs and practices in the sector to a more student-centred paradigm, despite the adoption of the language associated with such a change by the majority of practitioners interviewed. It showed how many e-learning initiatives had led to the internalization of such change with the adoption of exemplars and best practice. Examples of externalization (where exemplars were adapted to context and the modifications passed to others) were much more limited. Cases were identified where practitioners had used e-learning as a means of reinforcing the existing, teacher-centred paradigm. The majority of practitioners, however, were identified as being in a 'transitional' state, adopting the language and some of the practices of a 'transformed' state. This study, therefore, considered factors influencing the adoption of a more student-centred paradigm through the use of e-learning.

Using Activity Theory, the barriers to such change were explained and lessons for future approaches to professional development derived. Through an exploration of collaborative technology-enhanced learning initiatives, the nature of learning communities that should be at the heart of such transformation were identified. This study should, therefore, be of value to practitioners wishing to innovate, those who design and deliver the professional development programmes to support them and those managing such change in HE.

Keywords: Activity theory, collaboration, e-learning, learning communities, professional development, social constructivism, technology-enhanced learning

Acknowledgements

I welcome this opportunity to thank the friends, family and colleagues who provided the help, guidance and support that made this study possible.

In particular I would like to thank my PhD supervisor, Dr Chris Comber of the School of Education at University of Leicester, who took over the role after a suspension in studies due to my work commitments. He guided me through the process of writing up and, perhaps most important, his constructive feedback re-established the self belief essential to complete. Completion would not have been possible without support in the planning and research stages by Dr Jason Hughes and Professor David Hawkrige (respectively). Other colleagues at University of Leicester who contributed were the colleagues interviewed who freely shared their time, along with the excitement and frustrations of their innovations. The thoughts shared with colleagues in the reading group of the 'Beyond Distance Research Alliance' also helped.

When I started this process, I was both surprised and delighted to find a small informal support group of parents at my son's primary school going through the PhD process. Much was shared during our occasional meetings which helped keep us all on track and particular thanks are due to Frances and Steve. Now at the end of the process, my son has started his GCSEs which highlights how long (and how much) my family have had to endure the production of this thesis. Grandparents on both sides of our family provided both moral and practical help to us all. It is difficult to imagine how I can repay the patience and love of my partner, Sharon, and sons, Nathan and Morgan, during this process. Now this PhD is complete, at least I'll have time to try.

My profound thanks go to all of the above for their advice and support over the past five years!

Table of Contents

1.	Introduction	1
1.1.	Purpose of thesis	1
1.2.	Background to the study	1
1.3.	Societal change	4
1.3.1.	Massification.....	5
1.3.2.	Meeting the perceived needs of industry	6
1.4.	ICT revolution.....	8
1.4.1.	The nature of e-learning tools.....	9
1.4.2.	Investment in ICT infrastructure.....	13
1.4.3.	Student expectations	14
1.4.4.	E-learning innovation.....	16
1.5.	Emergence of a student-centred paradigm	18
1.5.1.	Professionalisation	19
1.5.2.	Learning and teaching strategies.....	21
1.5.3.	Professional development of teaching.....	23
1.6.	Thesis structure	26
1.7.	Conclusions	28
2.	Theoretical framework	30
2.1.	Introduction	30
2.2.	Transformation and pedagogy	31
2.2.1.	Towards a new paradigm?	34
2.2.2.	Student conceptual frameworks	41
2.2.3.	Practitioner conceptual frameworks.....	44
2.2.4.	Conclusions on transformation and pedagogy	50
2.3.	Transformation and technology.....	53

2.3.1.	The transformative nature of e-learning innovations.....	55
2.3.2.	Strategies for technological transformation	57
2.3.3.	Towards a redefinition of technological transformation.....	61
2.3.4.	E-learning and professional development	63
2.3.5.	Barriers to transformation	67
2.3.6.	Conclusions on transformation and technology	70
2.4.	The relationship between media, communities and conceptual frameworks	72
2.4.1.	The nature of learning communities	75
2.4.2.	Social mediation in activity systems	82
2.4.3.	Defining transformative engagement.....	90
2.4.4.	Conclusions on the relationship between media, communities and conceptual frameworks	92
2.5.	Conclusions	93
3.	Methodology	97
3.1.	Introduction	97
3.2.	Rationale for research methodology	98
3.2.1.	Ontology	99
3.2.2.	Epistemology	101
3.2.3.	Human nature.....	102
3.2.4.	Methodological	103
3.2.5.	Conclusions on rationale	104
3.3.	Data collection	105
3.3.1.	Identifying subjects	108
3.3.2.	Mind-mapping exercise	110
3.3.3.	Interviews	113
3.3.4.	Transcription.....	116
3.3.5.	Other sources of data	117

3.3.6.	Conclusions on data collection	118
3.4.	Data analysis	120
3.4.1.	Strategic approach to data analysis.....	121
3.4.2.	Data coding	123
3.4.3.	Efficacy of coding	126
3.4.4.	Activity theory	126
3.4.5.	Representation of activity systems	131
3.5.	The practitioner as researcher	133
3.6.	Wider ethical considerations	135
3.7.	Conclusions on methodology	138
4.	Findings: Technological, pedagogical and user influences on e-learning innovations	140
4.1.	Introduction	140
4.2.	Interviewees.....	141
4.3.	Issues.....	143
4.4.	Technology	144
4.4.1.	Confidence with technology.....	145
4.4.2.	Confidence in technology	146
4.4.3.	Confidence with the learning tool.....	147
4.5.	Pedagogic development.....	150
4.5.1.	Independence.....	150
4.5.2.	Relevance	151
4.5.3.	Paradigm shift	152
4.5.4.	Pedagogic restrictions	154
4.6.	Assessment	157
4.6.1.	Objective tests.....	158
4.6.2.	Subjective tests	159

4.6.3.	Collaborative assessment	161
4.6.4.	Plagiarism detection and avoidance	163
4.7.	Student feedback and support	165
4.7.1.	Access and accessibility.....	166
4.7.2.	Structured engagement	167
4.7.3.	Impact on workload	170
4.8.	Conclusions on broad influences on e-learning innovation	172
5.	Findings: Institutional influences on e-learning innovations	175
5.1.	Introduction	175
5.2.	Organisational imperatives.....	175
5.2.1.	Student-centred learning	176
5.2.2.	Research v teaching.....	177
5.2.3.	Development of distance learning	177
5.3.	Resources.....	180
5.3.1.	Content creation costs.....	180
5.3.2.	Resource costs.....	183
5.3.3.	Course implementation.....	184
5.4.	Staff motivation and support	187
5.4.1.	Motivation to engage	189
5.4.2.	Technical eCompetence.....	191
5.4.3.	Pedagogic eCompetence	192
5.4.4.	Developing eCompetence	193
5.4.5.	Team eCompetence	196
5.5.	Conclusions on institutional influences on e-learning innovation	200
6.	Findings: Beliefs and practices	203
6.1.	Introduction	203
6.2.	Data coded demonstrating beliefs and practices	204

6.3.	Teacher-Student Interaction.....	205
6.4.	Main Responsibility for Transformation of Knowledge	211
6.5.	Control of Content.....	216
6.6.	Expected Learning Outcomes	223
6.7.	Expected Use of Knowledge	229
6.8.	Students' Existing Conceptions.....	232
6.9.	Conclusions on beliefs and practices	235
7.	Findings: Examples of uses of teacher–focussed media	241
7.1.	Introduction	241
7.2.	The nature of media – from belief, through centredness to focus	242
7.3.	Teacher-focussed media.....	243
7.3.1.	Narrative media	244
7.3.2.	Interactive media	247
7.4.	Examples of Teacher-focussed media	250
7.5.	Activity System 1: 'Virtual study skills'	250
7.6.	Activity System 2: 'Virtual lectures I'	262
7.7.	Conclusions on teacher-focussed media	276
8.	Findings: Examples of uses of student–focussed media	280
8.1.	Introduction	280
8.2.	Student-focussed media	281
8.2.1.	Adaptive media.....	281
8.2.2.	Communicative media	282
8.2.3.	Productive media.....	285
8.3.	Examples of use of student-focussed media.....	286
8.4.	Activity System 3: 'Engagement'	286
8.5.	Activity Systems 4: 'Research skills development'	295
8.6.	Conclusions on student-focussed media.....	305

8.7. Conclusions on the impact of media on learning communities.....	307
9. Conclusions	318
9.1. Introduction	318
9.2. Outcomes.....	319
9.3. Key findings	322
9.3.1. Surface v. deep engagement with TEL.....	323
9.3.2. Surface v. deep engagement with CTET	325
9.3.3. Internalised v. externalised engagement	330
9.4. Implications for eCompetence development	332
9.5. Lessons learned and critical reflection on the study.....	341
9.6. Further research	343
9.7. Final thoughts	346
Bibliography	349
Appendices	361

Table of figures

Figure 1.2: Adopter categorization	18
Figure 2.1: Spectrum of teaching approaches.....	36
Figure 2.2: Theoretical perspectives of learning.....	38
Figure 2.3 Transformation of practitioners' conceptual frameworks	40
Figure 2.5: A basic activity system	74
Figure 2.6: Social mediation in activity system.....	85
Figure 2.7: Contradictions in activity systems	88
Figure 2.8: Levels of contradiction within a multi-layered activity system.....	90
Figure 2.9: Expansive cycles in eCompetence training.....	91
Figure 3.1: Screenshot from exercise to establish efficacy of coding.....	127
Figure 6.1: Approaches to, and engagement with, e-learning.....	240
Figure 7.1: Contradictions within Activity System 1	261
Figure 7.2: Contradictions within Activity System 2	275
Figure 8.1: Contradictions within Activity System 3	294
Figure 8.2: Contradictions within Activity System 4	305

Tables

Table 2.1: Categorisation of teaching approaches related to models of e-learning	37
Table 2.2: Dimensions of conceptions of teaching	47
Table 2.3: Types of community	81
Table 3.2: Areas of work of Activities observed.....	130
Table 4.1: Interviewees by gender and role	143
Table 6.1: Dimension Four – Teacher-student interaction	206
Table 6.2: Dimension Five – Main responsibility for transformation of knowledge	214
Table 6.4: Dimension One – Expected learning outcomes	224
Table 6.5: Dimension Two – Expected use of knowledge.....	230
Table 6.6: Dimension Three – Students’ existing conceptions.....	233
Table 7.1: Nature of media used by interviewees	242
Table 7.3: Activities used as a basis for Activity System 2 - ‘Virtual lectures I’.....	265
Table 8.1: Activities used as a basis for Activity System 3 - ‘Engagement’	289
Table 8.2: Activities used as a basis for Activity System 4 - ‘Research skills development’	297
Table 8.3: Contradictions observed within Activity Systems	311
Table 9.1: Level of engagement with learning communities.....	328
Table 9.2: Communities and contradictions	334

Appendices

Appendix 1: Synthesis of e-learning categorisations.....	362
Appendix 2: Kember's comparison of categories of conceptions of teaching..	364
Appendix 3: Interviewees and Activities identified.....	365
Appendix 4: Activities categorised according to Laurillard's taxonomy of educational media	368
Appendix 5: Samuelowicz & Bains Dimensions of Beliefs & Practices (Results of structured coding of interview data)	369
Appendix 6: Tool for the evaluation of planned learning communities of courses (existing & planned)	372
Appendix 7: Index of datasets	373

1. Introduction

1.1. Purpose of thesis

The aim of this study is to develop a better understanding of the professional development interventions that enable lecturers and support staff (hereinafter practitioners) in the United Kingdom (UK) higher education (HE) sector to engage with collaborative technology-enhanced learning. In doing so, it considers the resultant developments in practice in the context of the changing needs and expectations of stakeholders in the sector. In addition to the practitioners themselves, the key stakeholders include students, their potential employers and the sector's policy makers (both local and national).

Key expectations that practitioners face are the effective utilisation of the sector's substantial investment in Information and Communication Technology (ICT) infrastructure and adopting a more student- (rather than teacher-) centred approach to learning and teaching. Both suggest the need for significant changes in the beliefs and practices (or conceptual frameworks) of practitioners in the sector. The study, therefore, includes consideration of the fundamental changes in approaches to professional development necessary to meet such challenges. In particular it explores whether engagement by HE practitioners with collaborative e-learning can contribute to the transformation of teaching in HE to a more student-centred paradigm. The nature of the communities that practitioners are engaged in and create will also be considered.

1.2. Background to the study

As will be explored below, since the mid 1990's professional development in the HE sector has been repeatedly challenged to increase both the quantity and

quality of its provision. Such challenges have been a significant motivator for this thesis given my employment in professional development roles in further education (FE) from 1996 and HE from 2000. This has involved supporting practitioners in responding to increases both in the number of their students' and their students' expectations of education which are widely perceived as increasingly consumerist.

These employment opportunities arose from my own teaching practice in FE and, in particular, my early use of the Web in teaching (from 1995). From my perspective as a new business studies and management teacher, it was apparent to me that both students and their potential employers were expecting students to be increasingly, "... active processors of information, skilled problem solvers using gaming strategies and effective communicators" (Veen and, Vrakking 2006:10). This was emphasised by my work on part-time management courses where the participants' expectations reflected Dierking's notion of lifelong learning as:-

... a cumulative process involving connections and reinforcement among the variety of learning experiences people encounter in their lives: at home, during schooling, and out in the community and workplace. (Dierking, Falk et al. 2003:110)

The Web and the rapidly emerging e-learning tools enabled me to implement teaching approaches that would otherwise have not been possible. They provided a window onto the knowledge-handling and problem-solving activities of learners. These would not have been accessible otherwise due to the increasing numbers of full-time students and restricted face-to-face time with part-timers. It became apparent to me that, whatever their mode of attendance,

the students I worked with responded positively when they were, "... in control of what they engage with and (*that they*) do not possess the patience to listen to a teacher explaining the world as it is according to him/her" (Veen and Vrakking 2006:10). My simultaneous participation in a two-year academic practice award provided me with the pedagogic awareness and vocabulary to articulate and reflect on my practical experiences.

Much of my early professional development work involved sharing techniques for creating web-based resources, deliberately avoiding the use of the complicated web design tools then available. This approach – and the subsequent availability of e-learning tools such as Virtual Learning Environments (VLE) – enabled me to focus on the pedagogic (rather than the technical) issues involved. The diversity of responses to such training interventions ultimately disabused me of any notion of a deterministic relationship between the introduction of practitioners to such technology and fundamental change in their teaching approaches. Furthermore, the responses did not fit comfortably within any of the pedagogic theories I had explored. Both the number and nature of practitioners engaging with the e-learning training I delivered whose teaching approaches appeared to change, however, warranted further investigation. In particular, a significant minority of practitioners who responded positively were not the 'usual suspects' who would normally be expected to engage with such pedagogic initiatives. This was a key motivator for the research that forms the basis of this thesis. It seeks to establish the nature of individual transformative learning experiences for practitioners that enable them to manage such experiences for their own students.

A wide range of factors appear to have influenced both the sectors' aspirations for - and ability to deliver - transformative change to meet stakeholders' needs and expectations. These will be considered in terms of the driving forces for such change – societal change, the ICT revolution and the emergence of a constructivist paradigm – along with the operational and strategic responses to them.

1.3. Societal change

Any such fundamental change in the nature of the UK's HE sector must be considered in the context of changes faced by the society in which it operates.

As Barnett and Hallam (1999) note:-

The world of the twenty-first century into which graduates will have to make their way is likely to be one of ever-widening uncertainty, challenge and conflict, bearing on the three domains of knowledge, action and self. (Barnett and Hallam 1999:149)

Their notion of “supercomplexity” describes this changing context, where the skills necessary to respond to change are as important as subject knowledge and understanding. This reflects the notion of Beck – among others - that the ‘work society’ that has prevailed in western democracies throughout the twentieth century is fundamentally changing (Beck and Camiller 2000). Beck contends that this gives rise to a ‘risk society’ in which work as it is traditionally conceived, is supplemented by political, family and public/civil work which “...puts the central focus on self-transformation” (Beck and Camiller 2000:19). Such changes necessitate change in the mode of knowledge production in terms of, “...not only what knowledge is produced but also how it is produced” (Gibbons 1994:vii).

The response of UK Governments to such societal change since the early 1990's has been to expand the numbers of students (the process of 'massification') and to place greater emphasis on the sector meeting the needs of industry.

1.3.1. Massification

The anticipated fundamental shift in the nature of work led to commitments to increase HE student numbers from successive UK Governments. Both Conservative (1979 to 1997) and Labour (1997 to 2010) UK Governments' statements on the matter emphasise the UK playing a leading role in an emerging 'knowledge society'. The Conservative policy response involved creating more graduates, with an increase in student numbers of 18% between 1994/5 and 1998/9, accompanied by only a 7% real term funding increase (Watson 2002). Labour's ambitious target (set by Secretary of State for Education, Estelle Morris, in her October 2001 speech at London Guildhall University) that, "50% of under 30s (*should*) enter higher education by 2010", was intended to contribute to their aspiration of creating a "high-value-added and high skills economy" (The Reporter 2001: unpaginated). This was at least a partial recognition that work is changing.

When this target was set the UK HE sector already had one of the highest participation rates and graduation rates in the Organisation for Economic Co-operation and Development (OECD) whilst spending a lower than average proportion of Gross Domestic Product (GDP) on the sector (Watson 2002:144-6). Watson also pointed to higher levels of graduate impact on the economy,

satisfaction and employment with higher graduate premiums in the UK than in most OECD countries (Watson 2002:144-6).

The transition from an elite (up to 15% of population) to a mass (15 to 50% of population) HE system in the UK (Trow 1974) has been achieved since the early 1980's, "... without any substantial modification of process" (Melville, Allan et al. 2009:36). To achieve the targeted increase in numbers, "... (*the*) sector needs to reach students from poorer backgrounds and those with non-traditional qualifications", with the 50% target, "... critically dependent upon widening, not just increasing, participation" (Watson 2002:147).

Whilst it is beyond the scope of this thesis to comment on the appropriateness of massification as a response, consideration will be given to the role that e-learning can play in meeting its challenge and in meeting the needs of industry.

1.3.2. Meeting the perceived needs of industry

The recognition of employers as increasingly significant stakeholders in the HE sector has given rise to the curriculum of transferability. As Stefani notes:-

In order to compete effectively in a rapidly changing world, University graduates must be able to adapt their skills to new situations, to be able to update their knowledge and understanding constantly, to be capable of making sound judgements of the value of their own and others' work and to be critical thinkers. (Stefani 2007:121)

The changing expectations of students and their potential employers are reflected in the e-learning, widening participation and employability agendas that have driven curriculum development in the HE sector since 2000. As will be explored below, e-learning not only adds another dimension to the learning environment but reflects the impact of Information and Communications

Technologies (ICT) on the wider society. As noted above, widening participation is necessary to meet the needs of 'massification' and has had a significant impact on the profile of students entering the sector (Watson 2002).

The employability agenda is reflected in the Dearing Report's emphasis on meta-learning (or 'learning how to learn') as one of the key skills for HE. This reflects both the needs of industry and of students who need to pay-off substantial student loans (for tuition fees and living expenses incurred whilst studying). Dearing recommended that programme specifications for all HE programmes should add key skills (i.e. "communication, numeracy, the use of information technology and learning how to learn") and cognitive skills (such as critical analysis) to the intended learning outcomes (Dearing 1997:16). One implication has been that:-

The significance of research ability in undergraduates has changed from being the (almost natural) ability of the best students, who would filter into the next level of education - postgraduate work, to 'research skills' being one of the nine employability skills we promise that all our graduates have the opportunity to develop. (Bostock 2007:1)

In addition to research skills, students at that 'next level' are expected (by both institutions and employers) to develop skills in independent working, communication and presentation (UK Research Councils 2001). Among the other skills identified by the Research Councils - that employers require but consider insufficiently developed in most postgraduates - are analytical thinking, project management, collaboration (including team working and leadership) and both learning and career management (McCarthy and Simm 2006). Many of the skills embodied in this 'employability' agenda can be developed through

engagement with e-learning and in particular the 'Web 2.0' technologies explored below (Melville, Allan et al. 2009:6).

1.4. ICT revolution

In the decade between the two editions of her book, 'Rethinking University Teaching', Laurillard notes that, "The Web has become established, interface design has matured, and PC access has become widespread" (Laurillard 2002:xvii). This reflects the widespread use of ICT throughout UK society. The UK Government-funded Learning and Teaching Support Network (LTSN) defined e-learning in its series of guides for practitioners as:-

... the diverse use of information and communications technologies to support and enhance learning, teaching and assessment – from resource based learning (in which students carry out face-to-face tasks supplemented by a range of online resources) to fully online courses. (Littlejohn and Higgison 2003:4)

Whilst recognising that e-learning was the, "... currently fashionable term", the LTSN guide also noted some other terms used including "Information and Communications Technologies (ICT), Information and Learning Technologies (largely in UK Further Education), Telematics (in Europe), and Instructional Technology (in North America)" (Littlejohn and Higgison 2003:3). Since 2004 the distinction has been made between Web 1.0 and Web 2.0 media. The former provides information for users to read, listen to or watch whilst Web 2.0 media enables content to be collaboratively created, edited and critiqued by, rather than for, students (Armstrong and Franklin 2008). The UK's independent Committee of Inquiry into the Changing Learner Experience (CLEX) used

Shirky's definition of the social software that underpins Web 2.0 – “Software that supports group interaction” (Melville, Allan et al. 2009:4).

The phrase ‘transparent tool’ will be used in this study to describe the technological tools that meet the expectations implicit in Web 2.0. At the time of writing (December 2010), these expectations included being web-based (with no installation needs which might pose problems for network support and security); intuitive and easy to use; supported by appropriate online guidance (so users can be largely self-taught); available free of charge or at a minimal marginal costs (once institutional subscriptions have been paid) (Armstrong and Franklin 2008).

The response of UK Governments and HE institutions to the ICT revolution will be considered in terms of the nature of e-learning tools available, investment in infrastructure, student expectations and support for e-learning innovation.

1.4.1. The nature of e-learning tools

Much of the literature since the mid-1990s (see Appendix 1) emphasises the communication element of ICT and its, “... potential ... to formulate new ways of talking to each other, new kinds of communities and new environments for learning” (Bain 2000). Mayes’ (1995) three stage categorisation of ICT engagements differentiates between primary media (providing easier access to resources), secondary media (encouraging more reflective engagement with resources) and tertiary media (such as simulations and online discussions). He maintains that learning only occurs through the genuine interaction of tertiary media because they, “support learning dialogues, through communication” (Mayes 1997:unpaginated).

Such categorisation is an important issue that has to be addressed in any study of e-learning innovations. The e-learning innovations identified in the interviews for this thesis (hereinafter 'Activities'), could be categorised on the basis of the VLE (or other) tools used. Based on the distinctions outlined above (see 1.4 'ICT revolution', p.8), these could be categorised as either Web 1.0 or 2.0 technologies. Some would regard VLEs as the former – content-driven and 'closed' (only accessible to those directly involved in the relevant course) – although they increasingly provide Web 2.0 elements – collaboration-driven and 'open'. As Melville et al noted, however, "... they tend not to be deployed by (*Higher Education Institutions*) in this way at present" (Melville, Allan et al. 2009:16).

As will be explored in the findings of this thesis, the same VLE tool can be used in a number of ways. It is desirable, therefore, to use a categorisation that takes into account the approach to learning and teaching involved in its use. Laurillard's taxonomy of educational media is based on the capacity of different tools to mediate the learning process. This categorisation forms the basis for her 'conversational framework' – description, adaptation, interaction and reflection - which explores the nature of the 12 types of interaction she regards as essential to learning (Laurillard 2002). Both the taxonomy and framework are used extensively in research on e-learning innovations and their impact on both students and practitioners. They have also been influential on both national and institutional strategies for transformation. Even trenchant critics of collaborative learning regard Laurillard's work as, "...the most cited and influential work on higher education teaching strategies" (Jacobs 2005:360).

For the purposes of this study, Laurillard's taxonomy provides both an effective means of categorising e-learning tools (and the way they are used) and one that is widely recognised and accepted. It provides, therefore, an appropriate starting point for exploring the nature of the 64 Activities identified in this study. Laurillard's five types of educational media are defined - by the nature of students' engagement (or conversations) with the media, their teachers and each other - as narrative, interactive, adaptive, communicative or productive (Laurillard 2002:89-90):-

- **Narrative media** - For many practitioners, the first use they make of a VLE is as a repository or store of information. The nature of delivery is essentially one way – from teacher to participant. Although responses of both students and practitioners are generally extremely positive, there is little evidence of any significant impact on the quality of learning;
- **Interactive media** - The user interacts with the resource in order to access the elements relevant to their needs. This enables students, to, "...make their own links between topics and follow their own line of investigation" (Laurillard 2002:124). Interactive media provide intrinsic feedback through automated responses anticipated during the authoring process rather than extrinsic feedback through commentaries on the interactions (Laurillard 2002:126-7);
- **Adaptive media** - An adaptive resource, such as a simulation or 'role-play game', changes in response to inputs from users providing feedback. Practitioners may develop their own software or adapt 'off-the-

shelf' software to meet their needs. No examples of this approach were evident in the institution at the time of the interviews (2006/7);

- **Communicative media** - A key element of delivery for such media is the communication between participants which can be either synchronous ('real-time' – chatrooms and conferencing) or asynchronous ('anytime', accessed when convenient to participants – e-mail, discussion boards and blogs). Salmon suggests that asynchronous communication makes the relationship between teachers and students more equal with participants able, "...to think rather more about their replies to the messages they have received than they otherwise would in a classroom situation" (Salmon 2002b:381); and
- **Productive media** - The focus of delivery of productive media is on participants collaborating to create content. The defining features of productive media are that learners can, "... build something, ... engage with the subject by directly experiencing its internal relationships ... (*and*) ... learn to represent these relationships" (Laurillard 2002:161). Although there is scope for production in discussion boards, wikis provide a means of creating web pages that are collaboratively developed with the contributions of each participant evident in the 'history'. Other examples of productive media include microworlds (such as Second Life).

(Laurillard 2002:89-90)

1.4.2. Investment in ICT infrastructure

Increasingly e-learning has been seen as a means of meeting the conflicting demands faced by the sector. In 2000 the Secretary of State for Education called on UK HE institutions to, "... develop and utilise ICT more systematically and effectively ... so that excellence can be offered to an expanded student population" (Blunkett 2000: unpaginated). Since 1993 much of UK Government's substantial support for ICT infrastructure and specific e-learning projects has been channelled through the Joint Information Systems Committee (JISC). The LTSN notes that rapid technological change has made it possible for e-learning to become a potential element of every teacher's 'toolkit' (Littlejohn and Higgison 2003).

Most student expectations of ICT infrastructures in HE are being met with widespread Internet access using their own equipment (e.g. 75% using university networks with own laptops or PCs), a high level of ICT support, access to online course materials and widespread ICT support for face-to-face delivery (Ipsos MORI 2008). In Spring 2009 UK HE institutions' infrastructure to support Web 2.0 was considered, "... as advanced as any internationally" (Melville, Allan et al. 2009:29). Early aspirations that e-learning could lead to substantial cost reductions, however, proved groundless because, "...delivery under these modes (*including e-learning*) currently costs more in most institutions than for conventional provision", with an expectation of long-term cost equality (Higher Education Funding Council for England, HEFCE 2003:7).

In order to justify such investment, therefore, it is necessary to establish that a significant, beneficial change (or even transformation) of learning and teaching

in the sector will result. Consideration will, therefore, be given to the extent to which e-learning can enable teachers in HE to both reconcile the key elements of their roles – teaching, research and administration – and meet the increasing expectations of stakeholders.

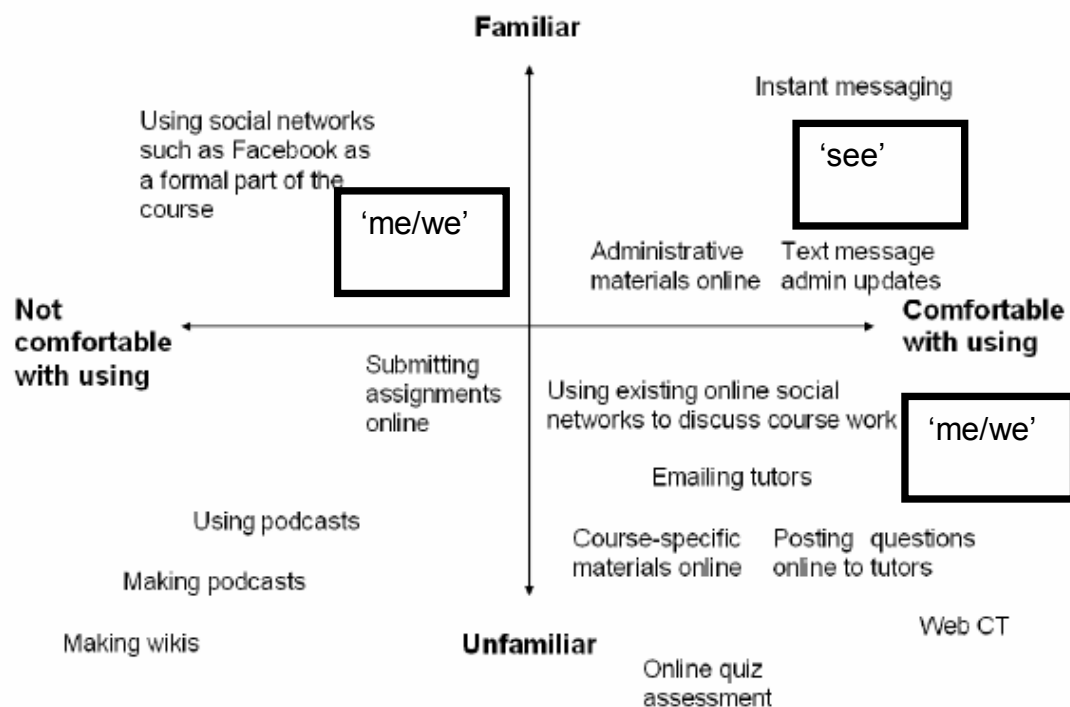
1.4.3. *Student expectations*

Changing student expectations of HE was a key motivator in the formation of CLEX whose report notes that from 11 years old students make, “high and pervasive”, social use of web technologies, creating a space which has become, “... their medium and their metier”, where they, “share and participate” (Melville, Allan et al. 2009:39).

The major survey of UK undergraduate opinion for CLEX (Ipsos MORI 2008) provided evidence that academic uses of Web 2.0 challenge both students’ conceptual frameworks and, “... their notions of space”, particularly where they intrude on the ‘me’ and ‘we’ space of social networking (see Figure 1.1, p.15) (Melville, Allan et al. 2009:24-6). Students are comfortable with academic uses of e-learning in ‘see’ spaces (where they access resources) but the educational potential of what they regard as social tools are only “dimly perceived” (Melville, Allan et al. 2009:8). They are particularly concerned if such spaces are used to reduce face-to-face contact with lecturers (Melville, Allan et al. 2009:8). Their proficiency does, however, imply that they have relatively low hurdles to overcome in order to engage in content creation (Ipsos MORI 2008). Despite their widespread access to ICT (over 60% of UK homes had broadband access in 2008), a ‘digital divide’ persists among learners in terms of access to, engagement with and competence with the technology (Melville, Allan et al.

2009:18-24). Widespread on-campus provision in addition to the reducing relative costs and increasing transparency of web access devices has significantly reduced the divide in terms of access (Melville, Allan et al. 2009). The challenge for the sector remains achieving greater student engagement with the learning uses of such devices.

Figure 1.1: Student comfort and familiarity with technology



(after Ipsos MORI 2008:15)

Whilst the development of collaborative techniques and technologies has many positive outcomes - "experimentation, collaboration and teamwork" - they can also lead to casual attitudes to referencing and "insufficiently critical" attitudes to information (Melville, Allan et al. 2009:39). This changing context for HE practitioners impacts on their roles and responsibilities as they are expected to enhance both course delivery and student support (Melville, Allan et al. 2009).

A potential barrier to e-learning achieving its transformative potential is that, "Few of the current generation of academics have ever learned through technology, so practices develop slowly and theory hardly at all" (Laurillard 2002:xvii). As a result both the familiarity and comfort of staff with Web 2.0 tools is significantly less than that of their students (Melville, Allan et al. 2009).

1.4.4. E-learning innovation

Much of the literature on e-learning innovation has described those practitioners engaged in it as 'innovators' and 'early adopters'. Such terminology draws on Rogers' work since his 1964 book categorising the innovativeness of members of any social system, suggesting a "normal adopter distribution" of such behaviour (see Figure 1.2, p.18):-

- **Innovators** – The first adopters of an innovation, characterised by a "venturesome" approach to their work. Their, "... interest in new ideas leads them out of a local circle of peer networks", and are frequently involved in geographically dispersed networks of innovators;
- **Early adopters** – The next adopters of an innovation tend to be the opinion leaders who are well-respected by their peers in any system. They tend to be, "a more integrated part of the local social system than innovators", and, "help trigger the critical mass when they adopt an innovation";
- **Early majority** – Their tendency to deliberate on any change means that they take longer to engage. They are, however, "an important link in the

diffusion process”, because half the social system has engaged once the “early majority” has adopted the innovation;

- **Late majority** – For this more sceptical group, adoption is likely to be, “...both an economic necessity and the result of increasing peer pressures”. Since the groups that play an opinion leadership role (and at least half of the social system) have adopted the innovation, the late majority are only likely to delay rather than prevent the change; and
- **Laggards** – The approach of this group is characterised as “traditional” with limited engagement in even local social systems. They tend to be, “...suspicious of innovations and of change agents”. Whilst recognising that the term laggards can be considered pejorative, Rogers emphasises that the system, rather than individuals, is primarily responsible for their late adoption.

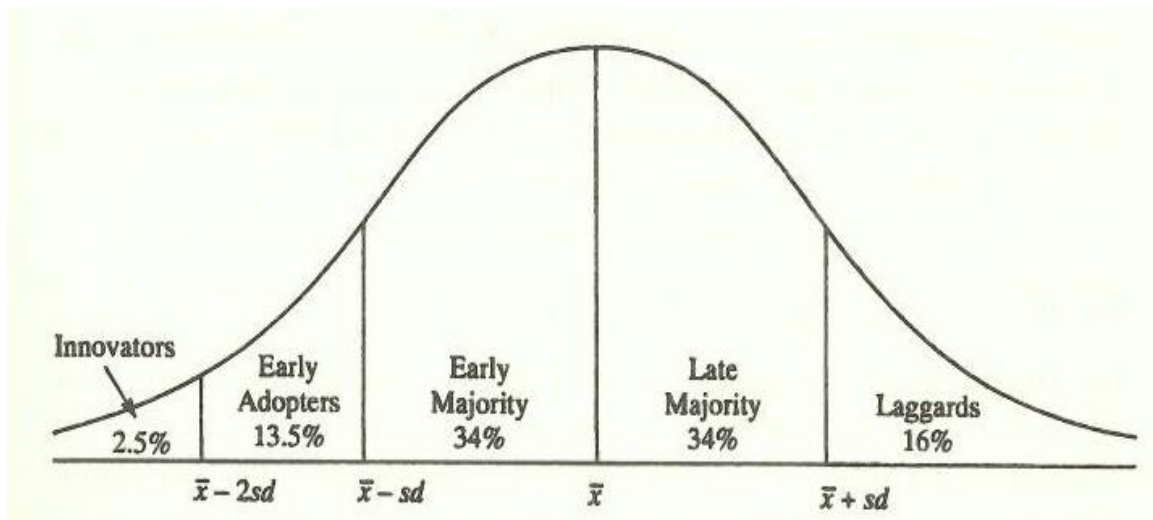
(Rogers 2003:279-99)

For an innovation such as e-learning to become embedded in a social system, it is necessary to achieve a critical mass involving adoption by the ‘early majority’ and beyond. Research into innovation has reinforced Rogers’ contention that the figures provide an, “approximate percentage of individuals”, in each category (Rogers 2003:280) and the categorisations have proved robust in research into a diverse range of innovations.

One widely recognised means of distinguishing between approaches of organisations to implementing change is to consider them as either structured or organic (Dooley 1997). A structured approach to e-learning implementation

involves central direction of what should be included in online course content (e.g. course handbooks, assessment criteria, handouts and past exam papers) with support from a central team. Organic implementation involves the institution enabling – but not prescribing - adoption by individual lecturers, schools or departments. Staff groups 'opt in' by using their existing resources or bidding for additional resources and more limited central resources.

Figure 1.2: Adopter categorization



\bar{x} = mean; sd = standard deviation

(Rogers 2003:279)

1.5. Emergence of a student-centred paradigm

The cultural paradigm can be considered a lens through which a particular community views the world. It influences both what they perceive and the way they act. A typical definition of such a paradigm would be:-

...a constellation of concepts, values, perceptions and practices shared by a community, which forms a particular vision of reality that is the basis of the way a community organises itself. (Capra 1996:6)

As a result of the paradigm they share, practitioners in an institution may react differently to a stimulus than another apparently similar community.

The extent of the sector's preparedness for the widening of participation envisaged in the massification agenda is open to question. The traditional modes of delivery in HE – typically lectures and seminars – are best suited to the relatively narrow range of UK society that has traditionally entered HE – social classes A, B and C1. Evidence also suggests that existing structures favour already strong academic performers (Gardiner 1994). This leads to concerns about whether the sector has the capacity to accommodate the increased diversity envisaged in massification.

The efforts of UK Governments and HE institutions to develop a more student-centred or constructivist paradigm will be considered in terms of the professionalisation of teaching in the sector, the development of learning and teaching strategies (strongly encouraged by government funding) and the professional development of teaching. Although they will be used as synonyms for the remainder of this chapter, further consideration will be given to the problematic nature of terms such as student-centred and constructivist in Chapter Two.

1.5.1. Professionalisation

An important element of the response to the changing context of the UK HE sector has been its 'professionalisation', mirroring changes in secondary and further education sectors in previous decades (1980's and 1990's respectively).

The Kennedy report saw the conception of professionalism as essential to meeting the increasing demands on HE from the 'student-as-consumer' and

their potential employers (Kennedy 1997). This was recognised in the creation of a professional body for the sector in 2000 - the Institute for Learning and Teaching in Higher Education (ILTHE) which became part of the Higher Education Academy (HEA) in 2004.

What constitutes a professional has been much debated, focussing on three main issues – knowledge, responsibility and autonomy (Hoyle and John 1995). Knowledge requirements of a professional generally include a specialised education, not only to develop, “... (*relevant*) practical and theoretical expertise”, but also, “... to provide ... a sense of ethical values” (Nicholls 2001:25). Responsibilities are emphasised in Universities UK definition of professionalism as:

... an individual’s adherence to a set of standards, code of conduct or collection of qualities that characterise accepted practice within a particular area of activity. (Universities UK 2004:2)

Wider definitions suggest that professionals are responsible for using their knowledge, “... ‘selflessly’ for the common welfare” (Nicholls 2001:25). Perhaps the most controversial of the three issues in HE is autonomy due to the expectation of professionals having, “... exclusive control over certain areas of operation and service as well as freedom from external supervision” (Nicholls 2001:26). Although the professional body includes elements of control by its members, there was no widespread demand from those professionals for its creation. Instead, it was, “... conceived by the Dearing Report and implemented by political intervention” (Nicholls 2001:26).

1.5.2. Learning and teaching strategies

In addition to its support for ICT infrastructure, the UK Government has also supported pedagogic innovations. These have included the generic and discipline-specific work of the LTSN - incorporated in the sector's professional body, the HEA from 2004 - and various funding streams of JISC (such as the E-learning Programme from 2005).

A series of, "conscious actions", for universities to achieve their, "ethos and purpose", was outlined by the UK Government in 2000, with the expectation of excellence in both teaching and research (Blunkett 2000 unpaginated). This was reinforced by the recognition of discipline-based pedagogic research in the Research Assessment Exercise 2008 with the caveat that this, "... may well depend upon the discipline concerned" (Higher Education Funding Council for England 2004:5). This initiated heated debate regarding the extent of synergy between areas of work that many regard as conflicting, particularly in the 'research intensive' universities.

The UK Government strategies supporting more constructivist approaches to learning and teaching have had three broad strands – the institution, the subject or discipline and the individual. From 2002 to 2005 institutions were required to develop 'learning and teaching strategies' in order to access the £92 million Teaching Quality Enhancement Fund (TQEF). Funding continued at similar levels until it was incorporated in HE institutions' core funding from 2009. The UK Professional Standards Framework for Teaching and Supporting Learning in Higher Education (UKPSF) encapsulates the HEA's expectations for professional development in the HE sector. Other factors focussing institutional

attention on teaching excellence are the annual National Student Survey and composite University league tables compiled by national newspapers.

In most institutions responsibility for implementation of plans to deliver teaching quality were devolved to disciplinary areas. Support for disciplines was initially organised through the LTSN in which individual institutions (or syndicates) sought recognition as 'centres of excellence'. Although initially a separate document, e-learning strategies have increasingly been incorporated in institutions' broader learning and teaching strategies.

Individual excellence was also highlighted through the National Teaching Fellowship Scheme with awards of up to £50,000. Whilst this was largely of symbolic importance, the requirement for teachers new to the sector to undertake a recognised learning and teaching qualification and the creation of a professional body has directly influenced thousands of practitioners in the sector (see 1.5.1 'Professionalisation', p.19). Promotion and remuneration systems are also being reviewed to reflect excellence in teaching as well as research. It should be noted, however, that in 'research intensive' institutions barriers to such change remain (Lowman 1995; Bennett 2003) with, "... an all too pervasive understanding that teaching is something an academic does, whereas research and scholarship is what makes them special" (Light and Cox 2001:29).

Despite the scale of infrastructure investment, at the time of writing (December 2010) the drive for Web 2.0 innovations was seen as, "... principally bottom up, coming from the professional interest and enthusiasm of individual members of staff" (Melville, Allan et al. 2009:26). At both macro-level (i.e. national) and

micro-level (i.e. institutional) effective innovations appear to be occurring organically despite widespread efforts to introduce e-learning in a structured way.

1.5.3. Professional development of teaching

A range of UK Government reports and strategy documents have recognised that the support provided by professional development is crucial to enable staff to overcome, "... the more complex and messy human factors", of transformation (Littlejohn and Peacock 2003:77). The creation of a UK HE professional body in 1999 placed Initial Professional Development (IPD) for new teachers high on the sector's agenda. Membership of the professional body was expected for, "... all new full-time academic staff with teaching responsibilities", acquired in most institutions through completion of an HEA-accredited, M-level teacher training course undertaken as a requirement of probation (Dearing 1997: Recommendation 48). Continuing Professional Development (CPD) of existing staff was also encouraged with 'ring-fenced' Government funding. The scale of investment in learning and teaching means that the "education environment" in HE has:-

... rapidly evolved over the last decade (1995 to 2005) supporting a shift in the quality agenda from regulation to enhancement and an increase in national support for teaching and learning development. (Dempster and Deepwell 2003:46)

The specific professional development interventions used to implement such strategies are wide ranging and can be presented as a continuum. At one pole are specific training interventions such as workshops intended to develop specific behavioural characteristics or competencies. The learning that such

interventions develop is generally characterised as single loop where, “... errors are corrected without altering the underlying governing values” (Argyris 2002:206). Practitioners are enabled to develop the skills or competency necessary to respond to a specific context but their conceptual frameworks remain unaltered. The other pole involves a series of interventions intended to develop the more general capacity for critical reflection. Reflection involves double loop learning where practitioners are enabled to correct errors, “... by changing the governing values and then the actions” (Argyris 2002:206). As a result they are able to apply both experiential and theoretical understanding in a variety of contexts.

This gives rise to three models of professional development interventions representing different combinations of competency and critical reflection development (Nicholls 2001; Carr 1992):-

- **Pre-technocratic** – an apprenticeship model where development is largely expected to take place ‘on the job’ from more experienced colleagues. As Nicholls notes, “The primary focus ... is learning about professional requirements and competencies, many of which have been identified by external agencies” (Nicholls 2001:43). Such approaches tend to emphasise single loop learning;
- **Technocratic** – this model involves, “... development and transmission of a systematic body of knowledge”, “... the interpretation and application of knowledge to practice”, and, “... supervised practice in selected placements” (Nicholls 2001:44). It relates to what Gibbons called ‘Mode 1’ knowledge production which is knowledge focussed, researcher led

and discipline-bound (Gibbons 1994). Such approaches result in a balance of single and double loop learning; and

- **Post-technocratic** – the development of professional competencies through practice and reflection. This involves the creative interpretation and solution of problems that are not clearly defined. Such approaches tend to emphasise double loop learning, relating to Gibbons ‘Mode 2’ knowledge production – problem-focussed, collaborative and inter-disciplinary (Gibbons 1994).

A further factor to consider in the design of any professional development intervention is whose needs it is intended to meet. The following categorisation of those needs is adapted from the CPD framework of the General Teaching Council (Wales) for the school sector (in Bubb and Earley 2007:8):-

- **Individual needs** – activities, “... focus on a (*practitioner’s*) own needs and be identified by the individual ... as supporting their own professional development and/or career objectives”;
- **Institutional needs** – activities, “... targeted at the requirements of the (*institution*) that currently employs the (*practitioner*)”; and
- **National needs** – “... these CPD activities would meet the demands of national and local initiatives”

(Bubb and Earley 2007:8).

The quality regulation (or assurance) agenda referred to by Dempster and Deepwell initially addressed institutional needs through the 1980s with

increasing national direction through the 1990's and early 2000's (Dempster and Deepwell 2003). Meeting the standards or competencies dictated by the institution or state initially encouraged pre-technocratic and subsequently technocratic approaches to professional development.

The Dearing report brought an increasing emphasis on the role that meeting individual needs – with practitioners, “... taking responsibility as reflective practitioners” (Bubb and Earley 2007:8) – has in meeting the wider institutional and national needs (Dearing 1997). This signalled a shift to quality enhancement where individuals were enabled to develop critically reflective approaches to their practice in order to meet their own and wider needs. This is widely seen as encouraging a post-technocratic approach to professional development although the extent to which IPD and CPD interventions in the sector achieve this is debateable. This thesis will explore the extent to which support for practitioners' development of e-learning achieves the transformative aspirations of the post-technocratic model.

1.6. Thesis structure

Chapter Two reviews the literature relevant to the study in order to problematise some of the key terms introduced in Chapter One. It explores the nature of the transformation envisaged in terms of pedagogy, technology and communities. The chapter concludes by considering activity theory – a cultural-historical framework of analysis – as a means to explain the issues observed.

Chapter Three justifies the broad methodology and specific methods chosen for the study. It explains the techniques used to collect the data and analyse

conceptual frameworks of the practitioners interviewed and the examples of e-learning innovation identified.

Chapters Four and Five explain the emergent themes influencing e-learning innovation identified by the practitioners interviewed. The former addresses direct influences such as the technology used, pedagogic approaches and user influences. The latter addresses organisational issues such as the imperatives underpinning the changes, the resources available and the motivation of (and support for) practitioners. Each theme is considered in terms of the issues (both positive and negative) identified by interviewees.

Chapter Six explores the beliefs and practices of practitioners that betoken their conceptual frameworks. Six dimensions of constructivism are identified for each interviewee using a continuum between teacher- and student-centred approaches. Based on this analysis a hierarchy of transformative engagement with e-learning is established.

Chapters Seven and Eight begin by describing uses identified of teacher- and student-focussed media (respectively) as the basis of the e-learning innovations in the study. Such media are explored further using activity theory to describe and analyse cases of their use in e-learning innovations. These chapters conclude by considering the diverging outcomes of cases and any inter-relationship between the media selected and the conceptual frameworks of the practitioners undertaking them.

The purpose of Chapter Nine is to reflect on the extent to which this study has achieved its objectives, considering the possible opportunities for further

research in this area. Based on these conclusions, it proposes guidelines for changing professional development in UK HE to use technology-enhanced learning to effectively promote the transformation of learning and teaching in the sector.

1.7. Conclusions

A key aspect of the transformation of learning and teaching expected of the HE sector is the increasing relative importance of meta-learning skills compared to the acquisition of disciplinary knowledge. As noted above (see 1.4 'ICT revolution', p.8), the increased ability to communicate information has also had significant effects in both business and social spheres. As a result, one of the main drivers of this change has been the huge impact on wider society of the technologies that HE is expected to embrace to enhance learning. The quantity of information that such technologies make both available and searchable has increased exponentially, so that establishing the quality of the content accessed has become the major challenge.

The operational responses of HE institutions to meet these demands for change have been heterogenous. The common factor has been greater equality of emphasis between the three pillars of academic practice – learning and teaching, research and administration. The outcome for training in the sector has been:-

- The formalisation of IPD requirements for the sector; and
- Increased emphasis on CPD in the sector

The prominence of staff development functions – including pedagogic and e-learning training – has risen significantly. For many, e-learning has been seen as a means of meeting the conflicting demands that practitioners face. The ‘student-as-consumer’ expects courses to be of a high standard and flexible whilst mass participation means that opportunities for face-to-face interactions are reduced. To meet the demands of the quality agenda, precious tutor time needs to be used in new and more flexible ways, whilst mass participation requires new blends of delivery to meet the needs of diverse learners.

Based on this context, the questions this study seeks to address are:-

- What are the beliefs and practices of HE practitioners engaging with technology-enhanced learning (TEL)? Are practitioners’ conceptual frameworks modified by collaborative engagement?
- What barriers are encountered to the adoption of TEL Activities?
- What are the key features of a staff development framework that encourages the adoption of collaborative TEL? What is the nature of the learning communities created?

If the proposed connection between TEL and transformation is valid then this study seems timely. Whilst the bodies of work published on these individual areas are considerable, explorations of the links between the two are limited.

2. Theoretical framework

2.1. Introduction

This chapter considers the nature of the transformation envisaged in HE, reviewing research on changing pedagogic practice and the impact of the use of ICT in the sector. This will be considered both in terms of the approaches and beliefs of practitioners and the strategies and cultures of the institutions they work in. The aim of the chapter is to provide the basis for developing a framework to evaluate whether engagement with e-learning has influenced the beliefs and practices of practitioners in the HE sector. This is considered in terms of the transformative impact of pedagogy, technology and communities promoting professional development. The Oxford English Dictionary defines transformation as, “The action of changing in form, shape, or appearance; metamorphosis” (OED Online 2010). In order to consider the much discussed transformation of learning and teaching in HE it is necessary to consider who (or what) is being transformed and how.

This chapter considers:-

- The nature of the transformation of pedagogy envisaged in the HE sector;
- The ways in which technology influences transformation, including the extent to which technology can be said to determine such change;

- The nature of learning communities in professional development, their wider uses in the sector and the extent to which such activities contribute (or act as a barrier) to transformation; and
- Possible relationships between media, communities and conceptual frameworks.

2.2. Transformation and pedagogy

The broad term ‘the student experience’ has been widely used to encapsulate the range of changes sought to meet the increasing demands on the UK HE sector (see 1.2 Background to the study, p.1). This thesis focuses on the learning and teaching – or pedagogic - aspects of that experience. Whether pedagogy is the ‘science’ or ‘art’ of teaching is contentious (OED Online 2010, Cambridge Online 2010 respectively). It is clear, however, that the phenomena observed for pedagogic research involve complex human interactions. They do not, therefore, lend themselves to ready measurement. As a result, apparently homogenous inputs can result in heterogenous outputs.

The need for increasing emphasis on learning (rather than transmissive teaching) has been widely recognised and promoted (Dearing 1997; Edwards 1997; Jarvis; Holford et al. 2003). The nature of the transformation of learning and teaching envisaged is illustrated in Allee’s work in which she distinguishes between ‘traditional thinking’ (pre-transformation) and ‘new thinking’ (post-transformation) (Allee 1997). This transformation involves a switch to teaching approaches where students develop understanding by “seeing in terms of whole” (rather than by “dissecting into parts”), are motivated to do so by “intrinsic creativity” (rather than by “external forces and influences”) and

developed knowledge collectively rather than individually (Allee 1997:5). A key part of this change is, "... the adult's assumption of control over setting goals and generating personally meaningful evaluative criteria" (Brookfield 1986:19). Allee emphasises that transformed learning occurs in cycles, citing the work of Deming and Kolb with their development of and variations on the "Plan-do-study-act cycle" (Allee 1997:90). Such cycles occur not only for individuals but also for groups as students:-

... build off the learning, knowledge, experience, questions and insights of one another in a generative and co-creative manner. (Allee 1997:90)

Despite the widespread recognition of the need for universities to adapt the way they deliver the curriculum, "... the transmission model that still dominates education has changed little" (Garrison and Anderson 2003:1).

In order to emphasise learning – and promote communities of learners - in the sector, the student skills outlined above (see 1.3 'Societal change', p.4) can be considered in two broad areas – those required for independent learning and those developing criticality. Developing independent learning skills is a process where, "... knowledge is created through the transformation of experience" (Kolb 1984:41). The skills for independent learning, by definition, are likely to be developed in isolation whilst those for criticality (involving the exchange of ideas) are more likely to be developed collaboratively in a learning community (Garrison and Anderson 2003:3). As Garrison and Anderson note in the past:-

Independence and collaboration seemed contradictions ...
(because) ... the provision of increased learner
independence in terms of space and time meant a

corresponding loss of collaboration and increased isolation.
(Garrison and Anderson 2003:3)

As considered below, the development of these skills – and of learning communities - has been extensively explored in pedagogic literature. Whilst these developments have been identified as potentially transformative, few would argue that they are preeminent in the learning and teaching on most UK undergraduate programmes (Melville, Allan et al. 2009). Despite the prevalence of constructivism in pedagogic literature, there is no widely accepted theoretical framework evident in UK HE (Coffield, Moseley et al. 2004:142).

Although the development of both independent learning and criticality are considered in this study, its primary focus is the change within institutions and the wider HE sector necessary to enable these transformations to occur. This represents, "... one of the key challenges facing teachers in higher education" (Light and Cox 2001:60) and substantial changes in the sector's professional development will be required if it is to be met. A useful distinction can be made between studies of relationships between teaching approaches and practices and students' learning in terms of:-

- **Micro-analysis** - "... relationships between student and teacher interactions and cognitions, and associated issues determined from classroom dialogue"; and
- **Macro-analysis** – "... relationships between classroom interactions and cognitions and the wider sociosystemic cultures through which learning is mediated" (Jaworski and Potari 2009:220)

As the research questions above make clear, this study is broadly a macro-analysis. Whilst this will, where appropriate, be put in the context of micro-analysis, it will focus on the socio-cultural dimensions of practitioners' engagement with e-learning. In particular, it will seek to draw conclusions that will inform professional development to support transformation. It, therefore, seeks to go, "... beyond findings of the micro-analytical process in order to focus more specifically on social situations and concerns, a process of macro-analysis" (Jaworski and Potari 2009:220).

The aim of the transformation envisaged is for HE to become, "... a community of learners dedicated to achieving higher-order learning outcomes" (Garrison and Anderson 2003:5). As will be explored further below, e-learning can facilitate the collaborative dimension of transformation. Nevertheless, providing access to content in multimedia formats and automated feedback to students (through online quizzes) can also reinforce the prevailing emphasis on transmission.

The nature of the pedagogic transformation envisaged will be considered in terms of the current paradigm (and how it might change) and the conceptual frameworks of students and practitioners.

2.2.1. Towards a new paradigm?

As Jarvis suggests, over the past three decades, "... learning has gradually replaced education in the educational vocabulary" (Jarvis, Holford et al. 2003:viii). Whilst the vocabulary may have changed, pedagogy has, "... remained more or less invariant even when radical technologies have been introduced" (Noss 2009:1). It has been suggested that, rather than a widely

accepted theoretical framework, there is a continuum of contested definitions or models of pedagogy ranging:-

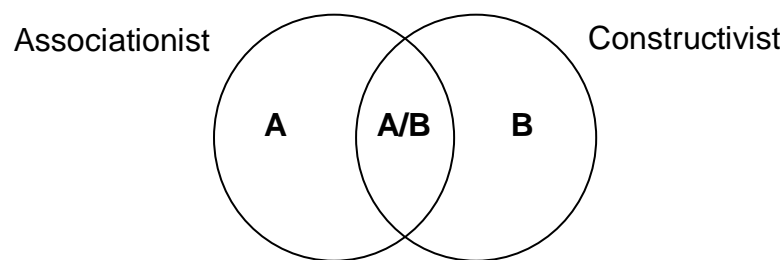
... from definitions which concentrate narrowly on teaching techniques to those which deal with broader issues such as the significance of culture, power, social structure and identity (Coffield, Moseley et al. 2004:129).

The poles of this continuum can be described as teacher-centred (focussing on instruction or knowledge transmission) and student-centred (focussing on construction or learning facilitation) (Carnell 2007). Teacher-centred approaches emphasise aspects of teaching promoting understanding which can be readily measured - including the acquisition of facts, figures and procedures - through didactic or transmissive delivery (Marton and Saljo 1976). Student-centred approaches emphasise aspects of learning involving engagement with ideas rather than facts, promoting learning through the transformation of concepts and approaches (Marton and Saljo 1976). Such approaches involve learning facilitation through a range of student engagements such as activity-based learning. In terms of pedagogic theory, teacher-centred approaches would be considered associationist whilst student-centred approaches would be considered constructivist. Mayes and de Freitas consider these to be part of an emerging consensus on approaches to teaching, using them as the basis for their consideration of the relationship between such approaches and models of e-learning (see Table 2.1, p.37) (Mayes and de Freitas 2004).

The extent to which there could be said to be a clear distinction between teacher- and student-centred concepts of teaching is questioned by Kember (see 2.2.3 'Practitioner conceptual frameworks', p.44). This is reflected in

Mayes and de Freitas' representation of the relationship between associationist and constructivist theories as a Venn diagram (see Figure 2.1, p.36). The overlap between the two spheres of apparently distinct teaching approaches (A and B) suggests a transitional region (A/B) between the respective theories which will be explored further below (see 2.2.3 Practitioner conceptual frameworks, p.44). When analysing specific teaching interventions it is often possible to identify elements of both teacher- and student-centred approaches. For example, whilst a lecture may be seen as betokening an associationist approach, the inclusion of activities to engage students in the content incorporates cognitive or constructivist elements.

Figure 2.1: Spectrum of teaching approaches



(after Mayes and de Freitas 2004)

The collaborative element of e-learning has expanded significantly with the emergence of Web 2.0 over the past decade (prior to December 2010). This development is reflected in the emphasis that Mayes and de Freitas give to collaborative approaches such as social constructivist and communities of practice in their model (Mayes and de Freitas 2004) (see Table 2.1, p.37). Both models focus on collaboratively developing or transforming content. Mayes and de Freitas represent the relationships between these four theories of learning with a Venn diagram (see Figure 2.2, p.38). This illustrates that practitioners

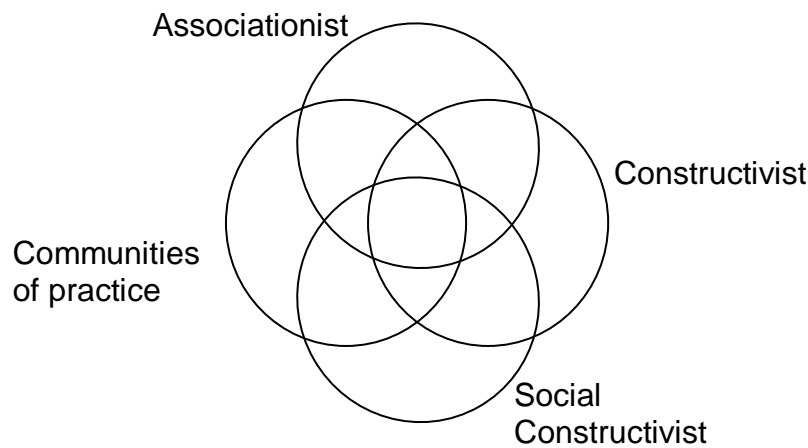
may adopt aspects of another approach to teaching – shown by the overlap between the spheres - without necessarily fundamentally changing their conceptual framework (see 2.2.3 Practitioner conceptual frameworks, p.44). This recognises that even in a teaching intervention built around such collaboration there may well be teacher-centred elements conveying factual information as a basis for the interaction. This representation of theoretical perspectives of learning is used by Mayes and de Freitas to analyse different models of e-learning (Mayes and de Freitas 2004). In this thesis it will be used as a basis for the description of pedagogic approaches that inform practitioners' conceptual frameworks.

Table 2.1: Categorisation of teaching approaches related to models of e-learning

Teaching Approach	Description
Associationist	Relates to an instructional design philosophy in which the model is, "... characterised by an analysis of the learning outcomes into subject-matter units" (Mayes and de Freitas 2004:24).
Cognitive or constructivist	This approach relates to curriculum based on "... learning-by-doing, and the importance of feedback", with the model, "...characterised by active ownership of the learning and teaching activities by the learners, producing task outcomes for feedback from tutors or peers" (Mayes and de Freitas 2004:15).
Socially-mediated constructivist –	In this approach, "... learning and teaching activities will be designed to provide scaffolding ... with the tutor having the main responsibility for providing the guidance", and the model is, "... characterised by active discussion across groups of learners" (Mayes and de Freitas 2004:19).
Communities of practice	This approach draws on the work of "... Lave and Wenger ... (<i>emphasising</i>) the need to learn to achieve a desired form of participation in a wider community ... (<i>with</i>) the model characterised by a focus on the development of real-world practice." (Mayes and de Freitas 2004:19).

(after Mayes and de Freitas 2004)

Figure 2.2: Theoretical perspectives of learning



(Mayes and de Freitas 2004:25)

It is only once the social dimension of student collaboration is added that the fundamental nature of the transformation envisaged is apparent. Phillips' dimensions of constructivism not only illuminate the fundamental features of constructivist theories but also some of the distinctions between learning and teaching that is transformed – a new paradigm – rather than that which is a more efficient adaptation of the old paradigm (Phillips 1995:7-9). Each of the three dimensions represents a spectrum between two poles. The first dimension is defined by the extent to which either the learner can invent reality or that reality is a template (invented by others) waiting to be discovered. Both the remaining dimensions concern the nature of 'knowledge construction' by, with or for the learner. The second dimension addresses whether this is an active process for the learner or something that is passively received. The third dimension concerns the extent to which knowledge construction is a social or an individual process.

It is possible to use these dimensions to characterise the transformed university as an institution where learners are actively (and collaboratively) involved in establishing a new picture of reality. The focus of this thesis is on the potential barriers to the transformation of the sector from teacher-centred - (based on associationist or constructivist theories) to student-centred concepts of learning (based on social-constructivist and communities of practice theories) (see Figure 2.3, p.40). Each of Phillips' dimensions, therefore, highlights an aspect of pedagogy that needs to be considered if such barriers are to be overcome:-

- **Arrow One** – moving from learning from a pre-established template to the engagement of learners in discovering that reality with the lecturer;
- **Arrow Two** – moving from the passive receipt of knowledge to an active process focussed on the learner;
- **Arrow Three** – moving from knowledge construction as an individual process to one that is social.

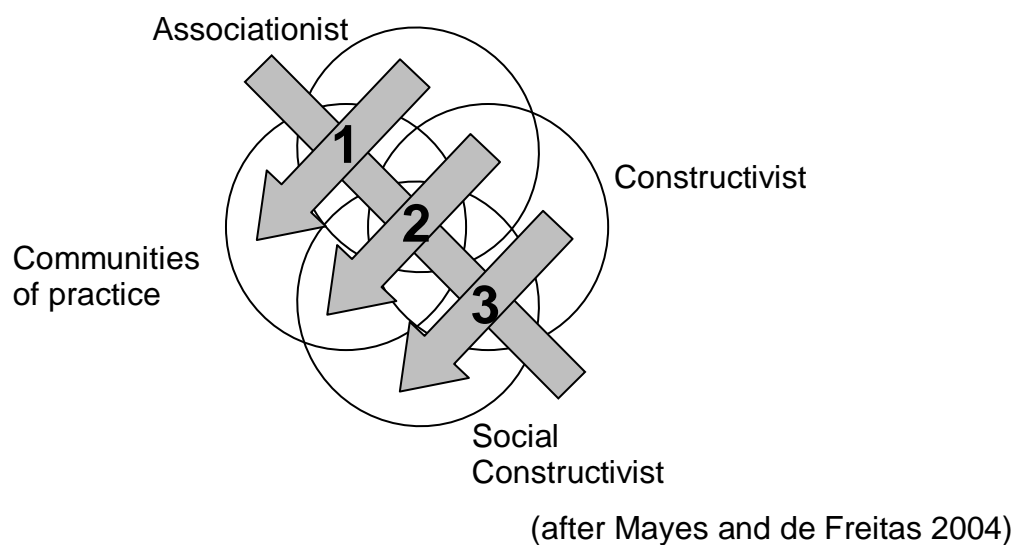
(see Figure 2.3, p.40)

For many categorising constructivist approaches as teacher-centred will be controversial. The rationale for this distinction will be tested throughout this thesis. If the collaborative potential of TEL identified above can facilitate these changes then it can at least in part address the widespread concerns that the transformation envisaged cannot be achieved with the resources currently available to the UK HE sector.

Constructivist and social constructivist approaches to learning imply the adoption of a meta-learning approach rather than purely focussing on the

construction of discipline-based knowledge. Barnett contrasted the nature of the “academic competence” (of “discipline-world”) with “operational competence” (of “work-world”) and the broader-still skill set required for “life-world” (Barnett 1994:178). This provided the rationale for Dearing to embed transferable skills (a subset of meta-learning skills) in the curriculum (Dearing 1997:16). Increasingly the experience of each student is expected to be personalised depending on their initial levels of discipline-specific knowledge and transferable skills (Melville, Allan et al. 2009). As will be explored below, communities of practice implement such approaches to learning in a ‘work-world’ context.

Figure 2.3 Transformation of practitioners' conceptual frameworks



It should be noted that the efficacy of social constructivist approaches is contested. For example, the need for further research is advocated by Brophy (Brophy 2006), whilst the reliability of the ‘knowledge’ retained is questioned by Nuthall (Nuthall 2004). It is for other research to establish whether such concerns seriously undermine the efficacy of social constructivist approaches,

the case for which is built upon the wide ranging research outlined above that points to its transformative potential. This thesis will explore how to encourage and support the adoption of such transformative approaches.

2.2.2. Student conceptual frameworks

This thesis explores the influences on practitioners' willingness to engage with innovations intended to transform concepts of learning and teaching in the HE sector. It focuses, therefore, on the conceptual frameworks of practitioners.

There are three main reasons why this literature review also considers the conceptual frameworks of students. First, practitioners' understanding of their students' conceptual frameworks is likely to have an impact on their approach to planning and implementing any innovation in their academic practice. Second, the practitioners' conceptual framework as a student might have an impact on their engagement with innovation. Third, as noted above (see 1.2 'Background to the study', p.1), the experiences and expectations of HE students are changing rapidly. Their deep engagement with Web 2.0 technologies provides both motive and capacity for the transformation of learning and teaching in HE.

For CLEX this entails:-

...renegotiating the relationship between tutor and student to bring about a situation where each recognises and values the other's expertise and capability and works together to capitalise on it. (Melville, Allan et al. 2009)

Phenomenographic research places particular emphasis on the identification of, and accounting for, the concepts of individuals that enable them to understand phenomena in the world around them. In an education context phenomenographic research gave rise to the influential categorisation of

student learning approaches as being either deep (engagement with ideas and their application beyond the course) or surface (engagement with facts and information required to pass the course) (Marton and Saljo 1976). Subsequent phenomenographic research by Entwistle and Ramsden gave rise to a further categorisation of strategic learning where students pragmatically adopt deep and surface approaches as appropriate to maximise their course grades (Entwistle 2000:3).

Gibbs and Coffey's review of international literature on the impact of training on university teachers indicates some improvements in their students' learning (Gibbs and Coffey 2004). They identified that students of trained teachers (predominantly on programmes with a constructivist orientation) achieved some improvements in learning (as measured by scores on Marsh's Student Evaluation of Educational Quality scale). They did not, however, identify any significant improvement in students' deep approaches to learning (as measured on the Module Experience Questionnaire based on Ramsden's work) (Gibbs and Coffey 2004). Student attitudes to the student-centred teaching approaches encouraged by constructivist training are generally positive although they have doubts regarding institutional resources and commitment to implement such changes (Lea, Stephenson et al. 2003). In Biggs' comparison of learning and teaching in HE institutions in Western and Confucian heritage cultures (such as China, Korea, Japan, Hong Kong and Singapore), he questions whether Western HE institutions have embraced a constructivist paradigm. The only significant difference he identified in levels of student engagement was in the only instance where Problem-Based Learning (PBL) had been adopted in a Western HE institution (Biggs 2003:125-6). This

represents a social constructivist approach indicating the potential benefits of collaborative learning that will be explored further below.

There remains among practitioners an expectation that students entering the HE sector have common concepts of learning based on their past experience of education (Kirkwood 2009). Students are expected to have (or rapidly develop) a deep approach to learning and will not, therefore, expect didactic delivery of content which they then reproduce for assessment purposes. Students with such an approach expect to be taught in a facilitative way and to transform the content delivered in order to demonstrate their acquisition of knowledge.

Students who do not make this transition in their concepts of learning, therefore, have significant problems in adapting to the HE sector (Kember 2001).

Kirkwood suggests that learning approaches of students entering the HE system in the UK differ significantly from HE teachers' expectations due to the tendency of:-

...school examinations (*to*) favour the recall of information and principles that have been memorised and, in order to achieve success learners often adopt a very instrumental (*or surface*) approach to their studies (Kirkwood 2009:111)

It is clear that students do not consider transformation to have been delivered because, "... universities are not currently (*June 2008*) perceived to be leading the way in developing new ways people can learn" (Ipsos MORI 2008:42). This reinforces the concerns identified above regarding whether the UK HE sector is prepared for the widening of participation envisaged in the massification agenda. It also reinforces concerns that existing structures favour already

strong academic performers (see 1.5 'Emergence of a student-centred paradigm', p.18).

It is debateable whether uniformity of student concepts of learning was ever a reasonable assumption in UK HE (Dearing 1997; Kirkwood and Price 2005).

Whilst it was an elite system (see 1.3.1 'Massification', p.5), however, there was the capacity for HE to address diversity of concepts on an ad hoc basis. The emphasis of the Dearing Report on meta-learning (or 'learning how to learn') recognised the need for a more systematic approach to addressing such diversity in a mass system (Dearing 1997:16).

2.2.3. *Practitioner conceptual frameworks*

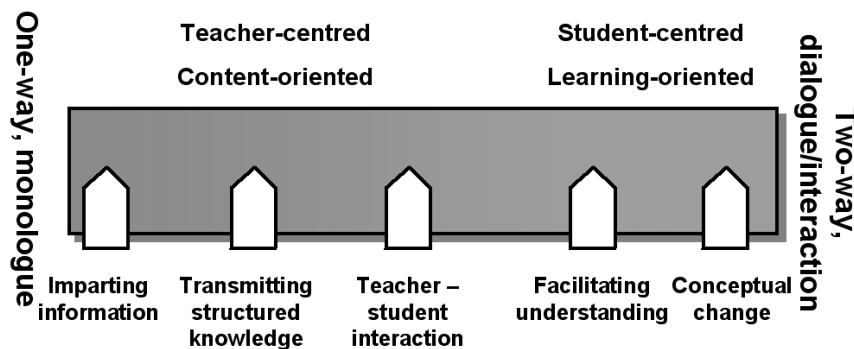
In the field of educational theory and research in HE, constructivism has been described as, "...akin to a secular religion" (Phillips 1995:5). Such approaches suggest that a learner has a conceptual framework that is modifiable and that through their experiences they are able to reconstruct their understanding of the world or to change their concepts (Biggs 2003:12). Research suggests, however, that the diversity of student conceptions of learning is also reflected in that of their teachers' conceptions of, and approaches to, teaching where:-

Some view effective teaching as being concerned with bringing about *quantitative* change in students (increasing how much they know about their subject), while others focus on effecting *qualitative* transformations in how learners interpret the world (promoting conceptual change in students and building their knowledge and understanding). (Kirkwood 2009:113 - original author's emphasis)

Based on his review of literature on practitioner beliefs and practices, Kember places these on a continuum between teacher- and student-centred concepts

(Kember 1997) (see Figure 2.4, p.45). Teacher-centred concepts include imparting information, transmitting structured knowledge and teacher-student interaction or apprenticeship. Student-centred concepts include facilitating learner understanding and conceptual change (Kember 1997).

Figure 2.4: Kember's model of conceptual frameworks of teachers



(see Appendix 2) (Kember 1997:260)

This notion of a continuum builds on the extensive research on approaches practitioners adopt to teaching in HE and phenomenographic research on the extent to which such approaches reflect their conceptual frameworks. In Bruner's 'Folk pedagogy' he characterises the four types of teaching on such a continuum from 'surface' to 'deep' learning as learning by "... being shown", "... being told", "... constructing meaning" and "... joining a knowledge-generating community" (Watkins 2000:74). Samuelowicz and Bain consider the distinction between 'surface' and 'deep' learning from the practitioners' perspective, suggesting a five stage continuum between these poles - imparting knowledge; transmitting knowledge; facilitating understanding; changing students conceptions and finally; supporting student learning (Samuelowicz and Bain 1992; Samuelowicz and Bain 2001).

Samuelowicz and Bain used six dimensions of teaching in order to locate practitioners on this continuum (Samuelowicz and Bain 1992). Kember included this hierarchy as one of the models illustrating his continuum (see Figure 2.4, p.45). In order to locate practitioners' conceptual frameworks within this hierarchy they, "... extracted from the global conceptions ... dimensions that could be used as a basis for description and reflection" (Ho 2000:36). With further minor adaptations by Ho, this provides six dimensions of conceptions of teaching (Ho, Watkins et al. 2001:153), each encompassing bi-polar descriptions of attitudes - either teacher-centred (A) or learning-centred (B) (see Table 2.2, p.47). Two of Samuelowicz and Bain's dimensions also have intermediate dimensions ('A/B') (see Figure 2.1, p.36).

The conceptual framework of practitioners influences their courses in two significant ways:-

- **Teaching approaches** – 'teacher-centred' conceptual frameworks will lead practitioners to emphasise, "... how to organise, structure and present the course content in a way that is easier for the students to understand" (Lindblom-Ylänne, Trigwell et al. 2006:286). Those with student-centred frameworks, "... focus on what students do in relation to their efforts to activate students' existing conceptions, and on encouraging them to construct their own knowledge and understandings" (Lindblom-Ylänne, Trigwell et al. 2006:286); and
- **Learning approaches** – the way in which practitioners teach impacts on the way that students learn because they, "... cue their students, directly or

indirectly, to *reproduce (their)* view of epistemology and pedagogy”
(Kirkwood 2009:113 - original author's emphasis).

Table 2.2: Dimensions of conceptions of teaching

Dimension	Description
Dimension 1	Expected Learning Outcomes - from expecting reproduction of information, through basic understanding to developing a transformational understanding of the subject matter;
Dimension 2	Expected Use of Knowledge - from knowledge being bound by the curriculum to it being used to interpret reality;
Dimension 3	Students' Existing Conceptions - from existing conceptions being ignored, through being an obstacle to be overcome to them being considered the starting point for learning and teaching;
Dimension 4	Teacher-Student Interaction - from one-way communication initiated by the teacher to both being actively involved;
Dimension 5	Main Responsibility for Transformation of Knowledge - from passive reception by to active engagement of the student;
Dimension 6	Control of Content - from teacher to student control.

(Ho, Watkins et al. 2001:153) (see Appendix 5)

One clear distinction Kember identifies between the various models is the attitude they reflect to movement along the continuum. Some of the models he identified, such as Samuelowicz and Bain's early work (Samuelowicz and Bain 1992), present the process as a 'conveyor-belt' with practitioners moving from teacher- to student-centred concepts in response to appropriate stimuli. Others, however, regard the barriers between teacher- and student-centred concepts as much more significant than other movements along the continuum (Kember 1997). Samuelowicz and Bain adopt this position in their later work (Samuelowicz and Bain 2001).

Attractive though a simple continuum – between associationist (reflecting teacher-centred approaches) and constructivist (reflecting student-centred approaches) - is for locating practitioners' conceptual frameworks, it is debateable whether it can fully account for the diversity of concepts observed in this thesis. For example, whilst associationist approaches are categorised as teacher-centred, some of its incarnations are as student-centred as approaches that are labelled constructivist (Mayes and de Freitas 2004:8). The distinctive feature of constructivism is that it:-

... demands participation at all levels and moves responsibility and empowerment down the hierarchy, thereby flattening it. The teacher, the instructivist 'Sage on the Stage', will increasingly become a 'Guide on the Side' in this setting. (Bjørke, Ask et al. 2003:6)

For transformation to take place the common vision of practitioners in the HE sector (or at least within a particular institution) must change, making the paradigm as important as the individual beliefs and practices. To achieve such change, a collaborative response is considered essential:-

... to tackle the cultural barriers inherent in traditional structures and approaches to education. There is a need for cultural change, especially in higher education. (Boyle and Cook 2003:42)

The complexity of introducing teaching innovations in HE institutions should not be underestimated. As Kirkwood notes, they are, "... highly complex", and contextual factors act as significant barriers including:-

- "variations in users' conceptions of teaching and learning"; and
- "the primacy of assessment requirements".

(Kirkwood 2009:110)

Part of the critique of the move to a mass HE system is that it creates a significant new barrier to student-centeredness in the sector. Others suggest that e-learning itself is a barrier due to the potential for separation of teacher and student, its impersonal nature and that it is sequential (Truss 2003). As Hiltz notes, massification involves, "... commercialisation and a shift of pedagogical roles towards the division of labour and a factory system" (Hiltz, Turoff et al. 2007:68). Furthermore, e-learning is frequently seen as part of a cost-cutting agenda by educational institutions (see 1.4.2 Investment in ICT infrastructure', p.13).

An important consideration when addressing the transformation of individuals' conceptual frameworks is the extent to which they are mutable. As Mayes et al note, "...the tendency to continue to teach in traditional ways is a strong counteracting force", when seeking to encourage innovation (Mayes, Morrison et al. 2009:4). In their seminal report on learning approaches in post-16 education, Coffield et al identified 71 models, examining the 13 they considered most influential in detail. They note the, "... strong intuitive appeal", of teaching approaches based on students' learning styles. For example, they could be seen as an opportunity to enable students to develop a potential counterbalance for the, "... negative effects from lower levels of contact between lecturers and students" (Coffield, Moseley et al. 2004:1).

Some influential models, such as Gregorc's or Dunn and Dunn's, suggest that preferred learning styles are constitutionally based and are consequently difficult to change (2002 and 1992 respectively - cited in Coffield, Moseley et al. 2004). One of Coffield et al's key findings, however, was that the learning

approaches of students are mutable, capable of being, "... modified by teachers, the design of the curriculum, assessment and the ethos of the course and institution" (Coffield, Moseley et al. 2004:10). Based on these findings they recommended a broad meta-learning (or learning how to learn) approach, incorporating activities for developing in areas of relative student weakness (Coffield, Moseley et al. 2004:132).

Boyle and Cook advocate collaborative engagement with the aim of creating, "...vibrant communities of practice" (Boyle and Cook 2003:42). Whilst Wenger's notion of 'communities of practice' will be explored in detail below (see 2.4.1 'The nature of learning communities', p.75), it is unlikely that individual engagement will be sufficient to change an organisation's cultural paradigm.

2.2.4. Conclusions on transformation and pedagogy

Although there appears to have been widespread adoption of student-centred language and of e-learning technologies, the sector has not widely adopted student-centred concepts of learning. As a basis for further study it is necessary to establish the barriers that have prevented transformation.

Delivery in the sector has been characterised as, "passive-information-transfer" to students (Garrison and Anderson 2003:4). For example, it could be argued that the use of lecture capture software emphasises not only the isolated nature of learning but also the recall of facts rather than engagement with ideas. The transformed curriculum delivery envisaged by this study would entail the use of information in a fundamentally different way that is:-

- Active or collaborative (rather than passive); and

- Constructive or transformative (rather than transmissive).

Approaches to professional development need to consider more than factual content concerning teaching techniques and strategies, encompassing the theoretical frameworks that underpin them. The definition of pedagogy used for this thesis recognises that:-

(Pedagogy) is informed by a view of mind, of learning and learners, of the kind of knowledge that is valued and above all by the educational outcomes that are desired (Leach and Moon 1999:268)

This suggests that for transformation to occur, the “view of mind” (regarding teaching and/or learning) of the individuals involved has to change. Such fundamental change requires a shift of belief systems or conceptual frameworks of practitioners, students and the institutions in which they are based.

Phenomenographic researchers consider the conceptual frameworks of individuals – whether students or practitioners - to be, “critical aspects of learning” (Marton 1997:unpaginated). Adopting such an approach for this study would involve considering the nature of the conceptual frameworks of practitioners in the HE sector, whether they need to change to transform learning and teaching in the sector and how this can be achieved.

Establishing definitively whether such a social constructivist or even constructivist approach to teaching is desirable is beyond the scope of this thesis. The author’s contention is that it is and that this is supported by the majority (but by no means all) of the pedagogic literature published over the past 40 years. The focus of this thesis is to establish appropriate methods of

influencing the conceptual frameworks of practitioners in HE to achieve the envisaged transformation.

If learning for students is to be about engaging with ideas (rather than just factual content), then such approaches should also inform professional development. The rationale for this is not only based on the perceived effectiveness of such approaches but also on the need to provide an example of effective practice for practitioners who have not previously experienced them as students (Melville, Allan et al. 2009; Dempster and Deepwell 2003; Jasinski and Planet 2007).

Boud suggests that the transformation (or “reconstruction”) envisaged in constructivist approaches not only requires freedom in learning but also generates freedom through learning (Boud 1989). If e-learning has a role to play in transformation then it is likely to be achieved by enabling learning through its apparent capacity to, “support learning dialogues, through communication” (Mayes 1997:27). It is necessary to establish, therefore, whether practitioners in the sector use the communications elements of e-learning to provide a learning experience that is not only more reflective but one that is genuinely collaborative. The LTSN concludes that:-

The key to improving the effectiveness and quality of student learning and making it worthwhile is to replace existing traditional modes of teaching with more active and engaging learning opportunities, delivered where appropriate by e-learning. (Littlejohn and Higgison 2003:7)

Transforming learning involves engaging with the emerging constructivist paradigm in HE. Transparent tools in VLEs have the potential to bring

collaboration and co-operation to the fore of knowledge production (McConnell 2006). This suggests a 'relational' model of teaching with a clear academic community and shared purpose associated with earlier generations of academe (Bennett 2003). Although the workload for staff and students is not reduced, the nature of the work for both is significantly changed.

It is evident from the above analysis that the pedagogic transformation envisaged in HE:-

- Seeks to achieve conceptual changes in students;
- Should be facilitated through changing the conceptual framework of HE practitioners; and
- Is widely expected to involve the use of e-learning (but is not determined by such use).

The term 'concepts of teaching' will be used when considering practitioners' practices (whether from their own or their students' perspectives). The term 'concepts of learning' (or conceptual framework) will be used when considering practitioners' and students' beliefs on epistemological issues regarding the nature of knowledge.

2.3. Transformation and technology

Over the past 15 years (to December 2010) e-learning has been one of the most prolific subjects for publication regarding academic practice in HE. Most UK HE institutions fund Virtual Learning Environments (VLEs) – software packages providing a range of transparent e-learning tools. VLEs are either

sourced from commercial suppliers (e.g. Blackboard) or provided by funding the staffing required to support an open-source solution (e.g. Moodle). Funding for further innovation is provided by various Government-backed initiatives encouraging novel uses of existing tools or the creation of new ones (see 1.4.2 'Investment in ICT infrastructure', p.13).

As a result, practitioners have shared their experiences of the multitude of new tools made available within the HE sector and continue to do so. Much of the literature considers the impact of such innovations, concluding whether they have had a positive impact on specific groups of students. Indeed, Russell collated a substantial body of research supporting the notion that e-learning made “no-significant difference” to educational outcomes (Russell 1999). As Garrison noted, however, most of the research identified by Russell concerned the use of e-learning as a means of delivering content and the recall of the information delivered (Garrison and Anderson 2003:19). The key aspects of a transformed learning environment - or ‘learning ecology’ as Garrison describes this transformed state – are that, “e-learning extends beyond its access to information and builds on its communicative and interactive features” (Garrison and Anderson 2003:3).

The impact of changing learning technologies will be considered in terms of the contribution of e-learning to technological transformation, the strategies developed to achieve it, how relevant terms used in the sector are being redefined and the barriers that practitioners experience.

2.3.1. *The transformative nature of e-learning innovations*

Research has highlighted the expectation that VLEs will enhance the quality of learning and its flexibility (Littlejohn and Higgison 2003; Jones 2004). As noted above, some would categorise VLEs as 'closed', Web 1.0 technologies supporting didactic delivery of material (see 1.4.1 'The nature of e-learning tools', p.9). VLEs do, however, increasingly provide 'open', Web 2.0 elements which enable collaborative learning although such features are routinely underused in HE (Melville, Allan et al. 2009:16).

The categorisation of e-learning tools above takes into account practitioners' teaching approaches, but to label media as either associationist or constructivist, for example, would suggest a deterministic relationship (see 1.4.1 'The nature of e-learning tools', p.9). Practitioners' conceptual frameworks would either determine the tools they adopt or e-learning could introduce constructivist approaches to learning and teaching by stealth (i.e. the notion of a 'Trojan horse' explored further below). The notion of technological determinism is widely referred to in the literature, suggesting that fundamental changes (or transformation) will necessarily flow from the adoption of ICT (Fisher 2006:294). For example, Garrison and Anderson suggested that e-learning:-

... pervades, and will transform, all teaching and learning whether it is campus-based, distributed, or distance education. Moreover, it has the real potential to enhance traditional values and ethos of higher education by fostering communities of learners and through integration of research into the curriculum. (Garrison and Anderson 2003:109)

Whilst the subject of such transformation is usually clear – the students – the object of the change not only changes according to who is using the term but is often not made explicit.

Further consideration will be given to the terminology used and the extent to which an individual practitioner's beliefs and practices influence their choice of media. Nevertheless, it is possible to associate particular media with the approaches to e-learning they are likely to encourage:-

- **Teacher-centred** - Both narrative and interactive media could be broadly described as fitting this category because their prime purpose is the transmissive delivery of factual content rather than student engagement with ideas. Where the resources are redesigned to take advantage of the non-linear nature of e-learning, they can be described as interactive;
- **Student- or learning-centred** - The purpose of such resources focuses on the broader learning process (rather than content) in order to challenge an individual's conceptual framework through communicative or productive media.

The relatively passive engagements with e-learning suggested by teacher-centred approaches fit with the “insistent individualism” of UK HE with little or no overlap between the 'worlds' of student, teacher and researcher-scholar (Light and Cox 2001:30). Student- or learning-centred approaches typify the envisaged transformation of learning and teaching in the sector. Mayes and de Freitas recognise that, “Few current e-learning examples are pure derivatives of pedagogical frameworks” – associationist, cognitive, socially-mediated

constructivist or communities of practice. They do highlight, however, a range of examples which include elements of them (see 2.2.3 'Practitioner conceptual frameworks', p.44) (Mayes and de Freitas 2004:23).

The focus of much of the literature on the transformative pedagogic impact of e-learning (and Web 2.0 in particular) is on its potential to promote collaborative approaches to teaching. This is achieved through the way that it, "... extends beyond its access to information and builds on its communicative and interactive features" (Garrison and Anderson 2003:3). This will be addressed in detail below, exploring whether e-learning interventions overcome – or entrench - the apparent contradiction between independence and collaboration. On many campuses this contradiction is reflected in the complete separation of face-to-face and distance learning provision within disciplines. The potential for blurring of the boundary between distance learning and 'on-campus' students has been widely noted (Woo, Gosper et al. 2008) and this will also be explored further below.

2.3.2. Strategies for technological transformation

The notion that the use of ICT is likely to bring about transformation was reflected in the titles of three UK Government reports – 'Transforming the way we learn: a vision for the future of ICT in schools' (2002), 'Fulfilling the potential: transforming teaching and learning through ICT in schools' (2003) and 'Harnessing the potential: transforming learning and children's services' (2005) (Fisher 2006:295). The latter document emphasised the capacity of ICT to, "Transform teaching, learning and help to improve outcomes" (Department for Education & Sciences 2005:4). In its introduction, the then Secretary of State,

Ruth Kelly, stressed that ICT could be, "... a universal utility, creating more flexible learning opportunities for everyone" (Department for Education & Sciences 2005:3). Since 'Harnessing the potential...' represented the strategy of its funding department, it had a significant influence on Higher Education Funding Council for England's (HEFCE) 2005 e-learning strategy and its aim:-

... to support the HE sector as it moves towards embedding e-learning appropriately, using technology to transform higher education into a more student-focused and flexible system, as part of lifelong learning for all who can benefit. (Higher Education Funding Council for England 2005:5)

This statement illustrates how the use of technology is frequently seen as determining outcomes – in this case, "... a more student-focussed and flexible system". E-learning has been described as a 'disruptive technology' with the potential to have a significant impact on – and even posing a threat to – existing institutions (Garrison and Anderson 2003). Others suggest that the transformation expected of e-learning may result from more gradual change or "dynamic evolution" (Oliver, O'Donoghue et al. 2003:149).

Kirkwood's analysis of, "... the stated policies and strategies of governments and HE institutions", identified the following objectives of ICT innovation:-

- "to facilitate a substantial increase in student numbers in HE without a proportionate growth in expenditure";
- "to provide more flexible approaches to teaching and learning without compromising the quality and standards of the HE experience";
- "to widen participation in HE by catering for a more diverse range of students";

- “to facilitate the involvement of learners (and sometimes teachers) located in more than one country or continent”; and
- “to help prepare learners for living and working within technology-rich environments and societies”.

(Kirkwood 2009:108)

The first of these is evident in the aspiration of David Blunkett – one of Kelly’s predecessors as Secretary of State - that ICT would facilitate a substantial increase in student numbers without a commensurate increase in budgets, whilst maintaining standards (Blunkett 2000: unpaginated).

The implementation of e-learning has been undertaken without an understanding of the likely impact on individuals and their organisations of the complex relationships involved (Littlejohn and Peacock 2003; Kirkwood 2009; Conole 2003; Wilson 2003). There is:-

... little consensus among researchers about how to measure the effects of technology in education and how studies should be designed. (Wellings and Levine 2005:2)

Furthermore, strategic statements at both national and institutional levels are frequently based on, “... little or no supporting evidence” (Kirkwood 2009:109). Jacobs suggests that many institutions have based such decisions on the desire to, “... present an image of technological ascendancy when it comes to learning and teaching” (Jacobs 2003:ix). Nevertheless, e-learning has, “...moved into the mainstream of higher education and is beginning to be recognized as a strategic asset” (Garrison and Anderson 2003:106).

One of the defining features of the transformation that is subject of this thesis is that a tipping point has been reached – the point beyond which the desired change becomes self-sustaining (Gladwell 2001). Such change is the, “...the result of many factors that move thinking and behaviour in a consistent direction”, overcoming the barriers to it (Jackson, 2006, p.11). In the context of this study, once the tipping point is reached mainstream practitioners (beyond the innovators and early adopters) engage with the change (1.4.4 ‘E-learning innovation’, p.16), ensuring it is not only sustainable (once the early majority engage), but becomes part of the cultural paradigm (Gunn 2010).

The national and institutional strategies outlined above, have led to a diverse range of individual e-learning innovations – the building blocks of this transformation. Various attempts have been made to codify criteria for making such individual innovations sustainable. This involves demonstrating not only that the innovation is ‘successful’ in its original context, but that it is adaptable to other contexts and deliverable by other practitioners. The definition developed by Gunn will be used in this thesis which sets three criteria that e-learning innovations must meet to be considered sustainable:-

- Their design, development and implementation has, “... been through a proof-of-concept stage and has been judged, on the basis of evidence produced, to be beneficial to teaching and learning”;
- They, “... have proven potential to be adopted, and possibly adapted, for use beyond the original development environment”; and

- Their continued use and development, “... do not remain dependent on one or a few individuals who created them”.

(Gunn 2010:90)

2.3.3. Towards a redefinition of technological transformation

The hurdles to achieving sustainable innovations are being reduced by the transparent e-learning tools provided by the VLEs funded by most UK HE institutions. They provide a means to extend e-learning tools beyond innovators and early adopters with limited technical obstacles to their use. Furthermore, since each additional tool added in VLE upgrades adapts the increasingly familiar interface, the psychological barriers to engaging with the ‘new’ are reduced. This fuels the expectation, highlighted by research such as Jones’ wide-ranging survey (Jones 2004), that VLEs will lead to improvements in, “...the flexibility and quality of learning” (Littlejohn and Higgison 2003:6).

The term technology-enhanced learning is increasingly being used rather than e-learning to emphasise that technology is a means or catalyst (rather than an end in itself) in curriculum planning. Among UK organisations adopting the term are HEFCE, the Teaching and Learning Research Programme (TLRP) and the Universities and Colleges Information Systems Association (UCISA). UCISA’s 2008 survey of TEL defined it as:-

...any online facility or system that directly supports learning and teaching. (Browne, Hewitt et al. 2008: 2)

In response to a Royal Society consultation regarding teaching at all levels of UK education of STEM subjects (science, technology, engineering and mathematics), TLRP suggested that these disciplines had:-

... yet to come to terms with the importance of supporting individuals in developing the capability to produce their own knowledge, rather than merely consume the knowledge of others. (Noss 2009:1)

This represents pedagogy as a driver, rather than passenger, in the process of transformation enabled by TEL (Andrews and Haythornthwaite 2007).

In its 2009 strategy revision – ‘Enhancing learning and teaching through the use of technology ...’ - HEFCE took a more pragmatic approach (Higher Education Funding Council for England 2009). It recognised three potential levels of benefits of e-learning according to the nature of the innovation:

- **Efficiency** – “existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner”;
- **Enhancement** – “improving existing processes and the outcomes”; and
- **Transformation** – “radical, positive change in existing processes or introducing new processes”.

(Higher Education Funding Council for England 2009:2)

Based on these definitions of levels, the objectives of Blunkett’s statement would be defined as efficiency whilst Kelly’s would be defined as enhancement or even transformation (see 2.3.2 Strategies for technological transformation, p.57). This led HEFCE to revise its strategy with the enhancement of learning

and teaching as its “primary focus” for which technology would play a supportive role (Higher Education Funding Council for England 2009:8). As a result, HEFCE would adopt, “... a more general, problem-based approach to institutional change as opposed to a technologically determined approach” (Higher Education Funding Council for England 2009:5). Plenderleith and Adamson identified similar shifts away from technological determinism in the devolved policy and funding arrangements for Scotland, Wales and Northern Ireland (Plenderleith and Adamson 2009:11).

For the purposes of this study the following definitions were derived:-

- **Technology-Enhanced Learning (TEL)** - The use of online facilities to support the transformation of learning.
- **Collaborative Technology-Enhanced Learning (CTEL)** - The use of collaborative online facilities – widely referred to as Web 2.0 tools - to support the transformation of learning.

2.3.4. E-learning and professional development

As has been noted above, the scale and prominence of professional development functions in HE have grown significantly in order to support transformation of learning and teaching in the sector. Dempster and Deepwell note that e-learning has, “... informed these changes (*in professional development*) and been influenced by them” (Dempster and Deepwell 2003:46). Hughes et al identify three broad approaches to the provision of support for both e-learning and broader learning and teaching issues – integrated (linked central provision), parallel (central but separate provision) and distributed (a variety of

provision throughout the institution) (Hughes, Hewson et al. 1997:57-62).

Whilst this refers primarily to the physical location of the support, it is also possible to use the terms to describe the delivery support to develop both e-learning and pedagogic skill sets.

In its recommendations to the sector, CLEX advocates that individual practitioners, HE institutions and the relevant professional and funding bodies should develop a changed (and more equal) relationship between students and their tutors. This should be based on informed, research-based decisions on which (or whether) e-learning tools should be used in each learning and teaching context (Melville et al. 2009). In order to exploit the potential contribution of Web 2.0 technologies to achieve this, the support for practitioners (both locally and nationally) should enable them, "... to become proficient users of an appropriate range of technologies and skilled practitioners of e-pedagogy" (Melville et al. 2009:5). Although not explicitly referred to in the recommendations, it was evident throughout that encouraging constructivist approaches would provide the desired "richer education experience" and Web 2.0 technologies are expected to play a fundamental role in achieving this (Melville et al. 2009:36).

For many, e-learning has been seen as a means of meeting the conflicting demands that practitioners face. The 'student-as-consumer' expects courses to be of a high standard and flexible whilst mass participation means that opportunities for face-to-face interactions are reduced. To meet the demands of this quality agenda, precious tutor time needs to be used in new and more

flexible ways, whilst mass participation requires new blends of delivery to meet the needs of diverse learners.

The widespread adoption of transparent tools such as VLEs (e.g. Blackboard and Moodle) has significantly reduced the initial technical barriers to e-learning adoption. The technical skills necessary to use them can be provided by relatively short training courses. The remaining barriers, therefore, tend to be conceptual with practical barriers often being used as, "... a smokescreen for something else: deep concerns and threats which are felt, for example, in the face of taking on some new role" (Light and Cox 2001:58).

As noted above, e-learning strategies have increasingly been incorporated in the broader learning and teaching strategies rather than standing alone as separate documents. In their review of learning technology staff development in the HE sector, Littlejohn and Peacock identify five stages:-

- **Pioneering** (to 1993) – early pioneers of the medium generally with a, "...strong focus on subject content being enhanced by being presented in a rich multimedia format (*which they believed*) would engage and motivate learners";
- **Practice** (1993 to 1997) – "a dramatic increase in the availability of computers ... resulted greater use and diversity of practice in learning technologies". Despite increased levels of support this had limited impact on 'mainstream' delivery;
- **Policy** (1997 to 2001) – a combination of strategy and funding led to the creation of, "... a wide range of accredited pathways and postgraduate

programmes”, to achieve the required ILTHE (and subsequently HEA) membership. Guidelines from the professional body on, “... embedding learning technology encouraged the development of modules that combined both pedagogy and technology, placing learning technology as an integral method for supporting learning, alongside the more traditional forms of teaching”;

- **Pedagogy** (2001 to 2005) – the new millennium saw, “... an increasing emphasis on the design of online courses based on a wide variety of educational models ... (*including*) ‘blended’ learning, which integrates online learning with face-to-face interactions”; and
- **Partnership** (2005 on) – “Staff developers adopted different approaches to co-ordinating the effort to ‘mainstream’ learning technology”. These focussed on efforts aimed at, “... bridging communities within and between institutions”, in order to break down traditional barriers (e.g. between academic, support and technical staff).

(Littlejohn and Peacock 2003:78-84)

The specific dates given above are the author’s estimates based on Littlejohn and Peacock’s broad indications. Whilst the delay between policy pronouncement and implementation and the variability of implementation across the sector make such precision questionable, the dates give an indication of the rapid development in this field in the two decades prior to writing this thesis (1990 to 2010).

Experience in the compulsory education sector in the UK (primary and secondary) reinforces Littlejohn and Peacock's concerns regarding the effectiveness of the traditional staff development model - a combination of pre-technocratic and technocratic approaches - in the introduction of learning technology (Showers 1987). This model focuses on specific training interventions to influence teaching practice although research suggests it is likely to have limited impact unless a further element of reflection, supported by peer coaching in implementing the innovation, is included (Showers and Joyce 1996).

The need for an effective pedagogical framework as a basis for reflection is taken into account by the term eCompetence which the European eCompetence Initiative defines as, "... the integration of pedagogical concepts and institutional frameworks into the process of technological innovation in teaching and learning" (European eCompetence Initiative 2009). The Initiative differentiates between personal and institutional competence in the use of ICT:-

- **Personal eCompetence** – “describes (*an individual teacher's*) ability and confidence at using ICT in their teaching and course delivery”; and
- **Institutional eCompetence** - “describe(s) the structures, processes and policies in place that embed ICT use.”

(European eCompetence Initiative 2009)

2.3.5. Barriers to transformation

The introduction of VLEs has significantly reduced the technical barriers to acquiring the skills necessary to implement e-learning. Support has been

enhanced by the introduction of learning technologist posts in many HE institutions whose roles have evolved beyond basic ICT competencies to encompass sharing pedagogic practice. Despite this Wilson suggests that, “Much effort has been wasted through poor understanding of the technology and its application” (Wilson 2003:72). The remaining barriers are:-

... the more complex social, cultural and organisational issues involved with mainstreaming technology in learning and teaching. (Littlejohn and Peacock 2003:77)

In order to meet such demands, staff development functions have had to develop beyond the, “pleasant cottage industries on the fringe of academe”, they remained throughout the 1990’s (McNaught 2002). In moving towards the ‘partnership stage’ professional development has begun to extend beyond the traditional academic role.

Manzo identifies a number of barriers to the adoption of a constructivist approaches to learning and teaching, including the current infrastructure of HE which transmits existing knowledge with assessment practices which assess convergent thinking (rather than the divergent approach encouraged by constructivism) (Manzo 1998). In a comprehensive literature review on embedding e-learning innovation in Australian institutions, Jasinski identified three significant barriers or chasms to be overcome:-

- **“A chasm between early and mainstream adopters.** Early and mainstream adopters have different reasons to adopt and have different expectations, so momentum can be lost if these differences are not addressed”;

- **“A support structure chasm.** Mainstream adopters need qualitatively different support than early adopters, yet support systems are set up for early adopters ... (*The*) mainstream adopters are not so enamoured with the technology and are looking for practical solutions to real problems”; and
- **“A technology-pedagogy chasm.** E-learning technologies are adopted at a faster rate and are more advanced than e-learning pedagogies. This highlights the need to have sound underpinning pedagogy as technology use tends to sustain rather than alter existing patterns of teaching practice”.

(Jasinski and Planet 2007:3)

A further factor conflicting with developing constructivist approaches is that few HE teachers have themselves been taught using such approaches (Manzo 1998:287-290). As a result, “... letting go of familiar, comfortable pedagogic practice and adopting new ways of doing this is a painful process” (Littlejohn and Peacock 2003:85-6). Whilst the psychomotor and cognitive domains may have been addressed by professional development (through technical and pedagogic training), the affective domain has not been satisfactorily addressed (Littlejohn and Peacock 2003:86). It is essential, therefore, to address the remaining barriers perceived by practitioners in the sector to transformation through e-learning. Whatever the support structures, “... support services and projects ... require ‘two-way communication’ to close the loops between central information, strategic missions and local implementations” (Dempster and Deepwell 2003:50).

The extent to which large national projects can link efficiently and effectively with local strategies and organisational change has been questioned. In part this is due to, "... their fixed term duration ... (*and the resultant*) start-up and wind-down overheads" (Dempster and Deepwell 2003:47). Nevertheless, the funding provided, "... buys time in which discussion, debate and learning can take place" (Oliver, O'Donoghue et al. 2003:149). Nevertheless, CLEX recommends that the UKPSF and the wider work of the HEA should be developed with the explicit aim of, "... identifying and spreading best practice in the use of Web 2.0 tools in pedagogy" (Melville, Allan et al. 2009:42).

2.3.6. *Conclusions on transformation and technology*

Any claim of technological determinism in HE should clearly be treated with caution. Coffield et al, for example, conclude that research in the field of learning and teaching has found, "... no powerful predictors of learning in higher education" (Coffield, Moseley et al. 2004:127). Indeed, Simpson's review of research on factors influencing course completion suggests that the strongest predictor is whether a student meets basic administrative requirements such as the provision of a photograph (Simpson 2003:20).

In many instances there are reasonable claims to have identified an innovation that has led to efficient or enhanced delivery of specific learning outcomes. Rather than transforming, e-learning has frequently achieved, " ... the same but different" (Fisher 2006:295). In this thesis HEFCE's levels of impact of e-learning – efficiency, enhancement and transformation (Higher Education Funding Council for England 2009:2) - will be used as a starting point to

differentiate the impact of the innovations observed, although the definition of the term “processes” will be considered further.

Nevertheless, technology is still perceived as a potentially transformative tool as illustrated by the title of a December 2009 HEA publication – ‘Transforming Higher Education through technology-enhanced learning’ (Mayes, Morrison et al. 2009). The extent to which such fundamental change can be achieved requires further consideration of transformation in terms of the nature of learning and teaching in the sector.

An aspect of organisational culture that will influence the success of e-learning innovation is the nature of the support available. As Dempster and Deepwell note, “The most effective embedding occurs usually where the institution and its departments have a supportive culture” (Dempster and Deepwell 2003:49). The criteria they identify for such a culture are where:-

- “learning technology users do not feel isolated”;
- “the relationship between the centre and the local is strong but flexible”;
- and
- “communications are good”.

(Dempster and Deepwell 2003:49)

For e-learning to have a transformative impact on learning and teaching in the sector then the changes it is built on must be sustainable. It is important, therefore, that the sustainability of individual innovations should be considered, with Gunn’s criteria identified as a suitable tool.

A further area identified for specific consideration in this thesis is practitioners' beliefs and practices, including their influence on the e-learning tools selected. Laurillard's typology of educational media, with its focus on collaboration and widespread recognition, provides a suitable basis for this.

2.4. The relationship between media, communities and conceptual frameworks

The literature outlined above provides a comprehensive basis to describe the nature of examples of e-learning innovation and the conceptual frameworks of practitioners undertaking them. Whilst this enables a degree of analysis, it was felt at the outset of this study (and confirmed by subsequent findings) that a gap remained in terms of analysing relationships within the communities in which practitioners engage in such innovation. Furthermore, much of the existing literature does not provide a suitable basis for the analysis of the relationship between practitioners' engagement with e-learning and their conceptual frameworks. Addressing this gap was necessary to account for significantly different outcomes from apparently closely related innovations with similar practitioner motivations.

The definition of Laurillard's categories of e-learning media or tools focuses on their role in mediating the learning process. This recognises that learning is not a simple, linear process with the inputs of practitioners leading directly to the desired outcomes. This process is mediated by a range of artefacts selected by practitioners such as the lectures and seminars they deliver (Dewey 1961; Vygotsky 1978). Activity theory focuses on this mediated relationship providing a, "... research framework and set of perspectives originating in Soviet psychology in the 1920s" (Nardi 1996:7). Vygotsky drew on both the

T Churchill

evolutionary theory of Darwin and historical materialism of Marx to develop his notion of learning as a mediated relationship. One of the factors that distinguish the longitudinal or historical analysis involved in activity theory from anthropology, for example, is its emphasis on consciousness. According to Vygotsky, consciousness is, "... a phenomenon that unifies, attention, intention, memory, reasoning, and speech" (Nardi 1996:11). Nevertheless, activity theorists believe that consciousness is more than, "... a discrete set of cognitive acts", and is:-

... located in everyday practice: you are what you do. And what you do is firmly and inextricably embedded in the social matrix of which every person is an organic part.
(Nardi 1996:7)

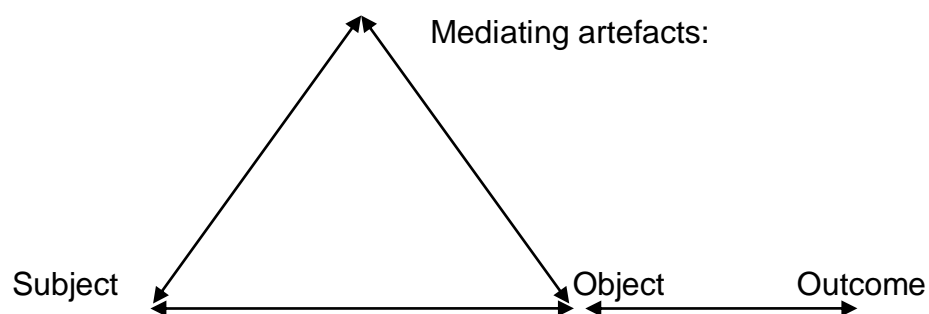
The context – social, historical and cultural – is an essential part of this relationship (Vygotsky 1978). This goes deeper than context being the environment or container for the actions of an individual because it profoundly influences the individual, those they interact with and the way the mediating tools are perceived. The context is, therefore:-

... a weaving together of the learner with other people and tools in a web or network of socio-cultural interactions and meanings that are integral to the learning. (Russell 2002:68)

An activity can be defined as, "... any motivated and object-oriented human enterprise, having its roots in cultural history, and depending for its actual occurrence on specific goal-oriented actions" (Van Oers 2001:71). Immediate objects - such as improving student knowledge or skills in a particular area - contribute to wider outcomes such as developing students' reflective approaches to the discipline. This can be represented as a simple activity

system showing the mediated relationship between subject (usually a group of students), artefact (the practitioners' intervention) and the object (the immediate learning objective of the intervention) (see Figure 2.5, p.74). Since this thesis focuses on practitioners' (rather than students') conceptual frameworks, the practitioner is the focus of the activity systems analysed. Based on this simple representation, introducing an e-learning innovation is a case of replacing one mediating artefact by another. This suggests that the key obstacles to success are the willingness and ability of the individual practitioner to implement it and engage their students.

Figure 2.5: A basic activity system



(Engeström 1999a:30)

One means of differentiating between constructivist approaches is whether they consider the development of knowledge to be an individual or collective process (2.2.3 'Practitioner conceptual frameworks', p.44). Roth and Lee highlight the increasing emphasis on the collective dimension in pedagogic research since the early 1990s (Roth and Lee 2006). Two areas of research are considered below to provide a more comprehensive basis for the exploration of the social dimension of e-learning innovation:-

- **Learning communities** – based on the literature on organisational learning, including Lave and Wenger's work on communities of practice; and
- **Social mediation in activity theory** – based on Engeström's development of the concept of learning as a socially mediated process.

These provide a basis to explore the relationship between media, communities and conceptual frameworks. The following consideration of the relevance of the term learning communities to higher education will explore both Wenger's work on communities of practice and the nature of the information exchange encompassed by the concept of learning communities. The potential of activity theory will be considered as both a descriptive and analytical tool to explore the factors influencing the implementation of e-learning innovation.

2.4.1. The nature of learning communities

With an increasing emphasis in pedagogical literature on context or learning environment, a student's identity with the community within which they are learning has become a focus for research (Lave and Wenger 1999). The rapid expansion of discipline knowledge in the late 20th century has meant that it is too great to be held by individual practitioners, even with the knowledge handling tools provided by ICT. Communities of professionals working collaboratively are the only effective means of utilizing such a volume of knowledge. Whilst it is possible for professional bodies (such as the HEA) to play a role in creating such communities, Lave and Wenger suggested that this role was more likely to be fulfilled by 'communities of practice'. These are likely

to be less formal and fleetier of foot than official bodies (Lave and Wenger 1999). The skills required to develop such communities are the meta-learning skills increasingly required by employers and emphasized by Dearing (see 1.3.2 'Meeting the perceived needs of industry', p.6).

The work of Lave and Wenger on communities of practice seems particularly relevant to UK HE where the power relationships are not as clear cut as in many organisational contexts. Such communities consist of:-

... groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. (Wenger 2006:unpaginated)

They define such communities in terms of three dimensions – the domain, practice and community. The domain refers to the, "... something fundamental (*the members*) have in common", establishing its relevance to the members and its, "... significance beyond the immediate members". The practice is what the members share through the community, both from and with each other and through formal and informal activities. In the resultant communities, "Socializing and learning are not necessarily distinct" (Wenger, White et al. 2010:4-21).

A range of communities can emerge from collaborative activities such as e-learning including:-

- Within the course teams introducing e-learning;
- With other e-learning innovators; and
- Among the students who are engaged in the e-learning generated.

Interdisciplinary learning communities have been recognised as a feature of delivery in many US universities since the early 1980s. The term 'learning

community' has been used there as a synonym for 'community of learners'. In such communities, "... students learn the information as they collaborate ... in carrying out activities with purposes connected explicitly with the history and current practices of the community" (Rogoff 1994:210). The degree of interdisciplinary collaboration in delivery ranging from limited co-ordination of syllabi to, "... full-time active learning based on an interdisciplinary theme" (Kellogg 1999:2-5).

In the UK much of the early emphasis on learning communities in HE was on the institutions' staff working together with the "cohesiveness" and "identity" of such communities identified as one of the key, "... characteristics of sustained (*organisational*) success" (Shattock 2004:179-80). This suggests that the existing structures and communities within most UK HE institutions – as in the USA - still reflect what Gibbons would call Mode 1 knowledge production (Gibbons 1994:2), characterised as, "... hierarchical, substantially introvert, guarded, careful, precise and measured" (Melville, Allan et al. 2009). If transformed, institutions would reflect Gibbons' Mode 2 where, "... problem contexts are transient, and problem solvers highly mobile, (*nevertheless*) communication networks tend to persist and the knowledge contained in them is available to enter into further configurations" (Gibbons 1994:5). In Mode 2 knowledge production much greater emphasis is placed on the institution's community of learners - the interaction between students and academics and how the nature of information exchange between them can be transformed.

Common features of the multitude of definitions of learning communities are a shared purpose of learners and their applicability beyond educational contexts.

Kilpatrick's derivative definition suggests that:-

Learning communities are made up of people who share a common purpose. They collaborate to draw on individual strengths, respect a variety of perspectives, and actively promote learning opportunities. (Kilpatrick, Barrett et al. 2003:12)

Such definitions indicate its relevance beyond education and the concept has been extensively used in the business, public and voluntary sectors. This diversity is reflected in attempts to define learning communities by their context:-

- **Work-orientated communities** – “... communities of practice ... or situated learning communities”;
- **Research-orientated communities** – “... scientific communities in academia, research and development communities in business”;
- **Learning-orientated communities** – “... curricular learning communities ... such as class-support communities, virtual learning communities”; and
- **Hobby-orientated communities** – “... communities of interest and ... fantasy/gaming”.

(based on a translation of Seufert, Moisseeva and Steinbeck's work - Littlejohn and Pegler 2007:45)

It is possible to categorise learning communities based on the degree of formality of the way support for community interactions is structured. Based on
T Churchill

their analysis of virtual learning communities, Lewis and Allan suggest three categories with increasingly formal support structures:-

- **Simple learning communities** – “... a meeting ground for like minded individuals ... in which (*they*) can tackle common problems or issues”;
- **Managed learning communities** – “... formally supported by an organization or agency ... (*and*) clearly linked to and focused on organisational needs” ;
- **Complex learning communities** – “... series of practitioner learning communities ... (*each with*) an internal facilitator”, who has access to a facilitators’ community or similar strategic body external to their organisation to develop the complex community’s objectives.

(Lewis and Allan 2004:20-32)

The majority of learning communities established in UK HE would be categorised as managed. They are supported by the institution and are likely to focus - whether directly (to produce assessed work) or indirectly (enhancing student skills for assessment or employability) - on its need to develop students.

Dence and Mobbs suggest a derivative categorisation of online communities with six categories (see Table 2.3, p.81) defined by the nature of the online space, its purpose and who is allowed to access it (Dence and Mobbs 2007:3). This was adopted as a starting point for this study despite the limitations the authors recognise in the research underpinning their categorisation – based on a literature review and personal observations of the sector.

The nature of the community developed forms an essential part of the scaffolding that supports student-centred learning. Feedback to students provides an essential element of this scaffolding because, "... action without feedback is completely unproductive for a learner" (Laurillard 2002:55). The focus of communities of practice in HE is likely to be disciplinary. They are, therefore, familiar to academics in universities that have:-

Traditionally ... been collegial communities that have enjoyed professional autonomy ... (*with the*) scholarly ideal expressed (*as*) a thirst for knowledge and love of learning uncontaminated by material considerations. (Harley, Muller-Camen et al. 2004:330)

Whether this ideal has been a reality for academics in most HE institutions is open to question, but there are certainly many barriers to the involvement of students in such learning communities. The massification agenda in particular means that there are insufficient resources reproduce these communities in a format familiar to most academics. The challenge is whether TEL and Web 2.0 can provide an alternative environment to create manageable learning communities on the scale required.

A key driver for adoption of Web 2.0 technologies is that they can promote, "...the sense of being a contributing member of a learning community, which is one of the hallmarks of higher education" (Melville, Allan et al. 2009:36). They provide a basis for the development of both, "... a new sense of communities of interest and networks", and opportunities for diverse attendance patterns – part-time, distance and work-based learning (Melville, Allan et al. 2009:5-8). Wenger not only recognises the potential of technology to meet the demands of these dimensions, but also that:-

... the patterns of interactivity and connectivity enabled (*by Web 2.0 technologies*) are in remarkable alignment with the ways communities function as a context for learning.
(Wenger, White et al. 2010:20)

Table 2.3: Types of community

Community type	Attributes of domain, practice and community
Community of self	a private and individual space, meeting one's own interests, needs and use, whether for personal or professional reasons;
Community of need	a purposive and collective space based on team/group, task/role or cohort/class needs, and possibly bound in time and/or scope;
Community of interest	a social and collective space, for personal or professional interest or use, and possibly meeting transient needs with shifting memberships and constituencies;
Community of many	a public space that offers open publishing and reading of contributions, with posting/editing permissions determined either by the technology itself or by discretion of the site owner or manager;
Community of practice	a professional or discipline based space, having a 'necessitated belonging' and a reality based in practice that can transcend organisational boundaries or even take precedence over institutional/organisational loyalties and values.

(Dence and Mobbs 2007:3)

Whilst recognising the pedagogical barriers to learning, Lave and Wenger suggest that the nature of the learning community poses the most significant barrier. In particular, they focus on the way that such communities reproduce themselves and the role within them for newcomers and the, "relations ... between these newcomers and the cultural and political life of the community" (Lave and Wenger 1999:26).

Whilst the relationship between students and practitioners may change, practitioners retain a vital role in motivating students to engage. As will be explored below, this involves facilitating and planning the learning communities they are responsible for through the artefacts – both physical and psychological - that mediate the learning process. A key aspect of their success is the extent to which such artefacts can be, “... integrated into social practice” (Nardi 1996:14).

2.4.2. Social mediation in activity systems

According to Roth et al, interest in (or at least citations in ISI Thomson Web of Science of) the leading activity theorists – Engeström, Leont’ev and Vygotsky - “... has risen exponentially over the past two decades” (Roth, Lee et al. 2009:132). Engeström developed the representation of the simple activity system outlined above to include three contextual factors – rules and procedures, community and division of labour. Within the context of higher education these can be defined as:-

- **Rules and procedures** – the organisational restrictions and conventions within which the practitioner is expected to operate;
- **Community** – the group (or groups) of colleagues and students within which the practitioner operates; and
- **Division of labour** – the compartmentalization evident in the organisation between disciplines (e.g. faculties and schools) and staff groupings (e.g. academic and support)

(after Engeström 1999a:31-2)

Their inclusion creates what has been called the 'expanded mediational triangle' (EMT) (Jaworski and Potari 2009). These additions emphasize the mediating influence of societal context, or social mediation, as well as the impact of the artefacts selected (Engeström 1987). This places the activity in a broader, collaborative system (Leont'ev 1981; Engeström 1987). In addition to formal rules, there are the informal, "... norms, routines, habits, and values", that also shape communities (Russell 2002:71). Engeström's additions to activity systems, "... represent more fully the essential social relations that teachers ... need to account for to understand learning" (Russell 2002:68). In the context of education:-

... learning is viewed as expanding involvement - social as well as intellectual - with some activity system over time, rather than the internalization of discrete information or skills. (Russell 2002:69)

The addition of the community elements demonstrates how mediating artefacts provide the bridge between the interdependent external and internal processes of learning (Kuuti 1996). As noted above, the relationship between practitioner and students is likely to change as a result of the introduction of e-learning. Russell suggests the division of labour changes so that the student can act as teachers of other students, "... or even as teachers of the teacher" (Russell 2002:71).

As Daniels notes, for Engeström the activity itself forms the basis of mediation (Daniels 2001:14). Others have proposed a dual layered activity system where the semiotics (or layered meaning) of the activity are also considered (Sharples, Taylor et al. 2007). The advantage of Sharples et al's approach is that it

encourages researchers to look at practitioner beliefs (and the rationale for them) as a context for the observed changes. It should be noted, however, that semiotics is an integral part of developing understanding through the mediation process according to Vygotsky (Wertsch 1988). In this thesis, therefore, an alternative framework is outlined for considering practitioner beliefs in a more structured way obviating the need for the complexity of a second layer of activity system analysis. Engeström's single layered concept of activity theory is developed here, using Sharples et al's terminology as a basis for this drawing on his experience of the UK HE sector (see Figure 2.6, p.85). This gives rise to three derivative elements of social mediation relevant to the HE sector:-

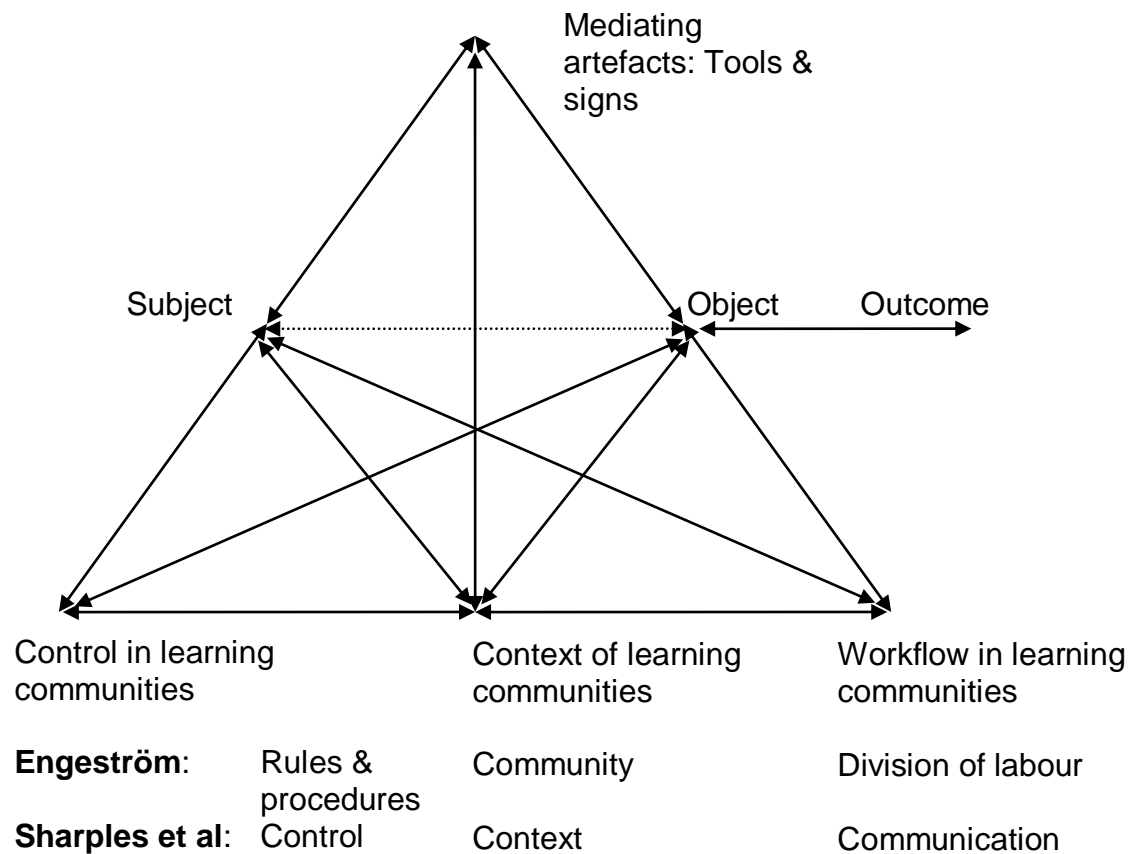
- **Control in learning communities** – incorporating both the formal and informal dimension of control prevalent in the sector;
- **Context of learning communities** - recognising the more specific meaning that community increasingly has in a HE context – after Wenger's notion of community of practice; and
- **Workflow in learning communities** – recognising the diverse communication flows that constitute the division of labour in HE.

(after Engeström 1987; Sharples, Taylor et al. 2007)

This adaptation of activity theory, incorporating consideration of conceptual frameworks, provides a strong descriptive tool to explore the data collected. One of the criticisms of activity theory is that it is a, "... descriptive tool rather than a strongly predictive theory" (Nardi 1996:7), leading Kuuti to suggest that the use of the term 'theory' is, "... slightly misleading" (Kuuti 1996:25). Few

would argue with this criticism, for as both Nardi and Kuuti note this misses the point of activity theory (Nardi 1996; Kuuti 1996).

Figure 2.6: Social mediation in activity system



(after Engeström 1987; Sharples, Taylor et al. 2007)

An important aspect of activity theory is that it:-

... rejects cause-effect, stimulus-response, explanatory science in favour of a science that emphasizes the emergent nature of mind in activity and that acknowledges a central role for interpretation in its explanatory framework. (Cole 1998:104)

As a result, in wide ranging contexts it provides a tool that is able to analyse the, "... messy human relationships" (Littlejohn and Peacock 2003:77) in a wide range of contexts, whatever the inadequacies of its title. As a result it provides

a means of understanding the relationships between mediation, interactivity and social dimension. Its emphasis on activity or practice makes it a powerful analytical tool that can provide a basis for theory formulation in the research context in which it is applied.

In using activities as the basis for analysis the researcher also needs to be aware that:-

Activities are not static or rigid entities; they are under continuous change and development ... This means that each activity also has a history of its own. Parts of older phases of activities often stay embedded in them as they develop, and historical analysis of the development is often needed in order to understand the current situation. (Kuuti 1996:26)

This history is not only evident in the activity but in the mediating artefacts that have been, "... created and transformed during the development of the activity itself and carry with them a particular culture – a historical residue of that development" (Kuuti 1996:26). This reflects both the constantly changing nature of any psychological process such as learning and the intergenerational, collective nature of any human activity (Cole and Engeström 1993).

A further critique of activity theory is regarding the wide range of scale of the activities it is used to consider. One of the early decisions that a researcher needs to make is what constitutes an activity for their study. In order to consider individual actions in their context:-

... a minimal meaningful context for individual actions must be included in the basic unit of analysis ... (and as a result) our research is always essentially collective even if our main interest is in individual actions. (Kuuti 1996:26)

When considering the delivery of an HE course, for example, the delivery of a single lecture is unlikely to have the minimal context necessary to be considered an activity. The lecture is more likely to be considered one of a number of actions that contribute to the broader activity that in turn consists of a number of operations (such as creating presentations and handouts in this instance) (Kuuti 1996:33). The activities likely to be considered the basic level of such research into an HE course might be the delivery of course modules. For this research it is evident that the activities to be considered have to be more than the isolated use of a discussion board or other e-learning tool. To be considered an activity, the practitioner has to engage in a more systematic use of the medium.

The key tool that takes activity theory beyond description to analysis is provided by focussing on the tensions and contradictions within such systems.

Engeström suggests these, “...are the motive force of change and developments” (Engeström, Miettinen et al. 1999:9). Such contradictions can be categorized as either:-

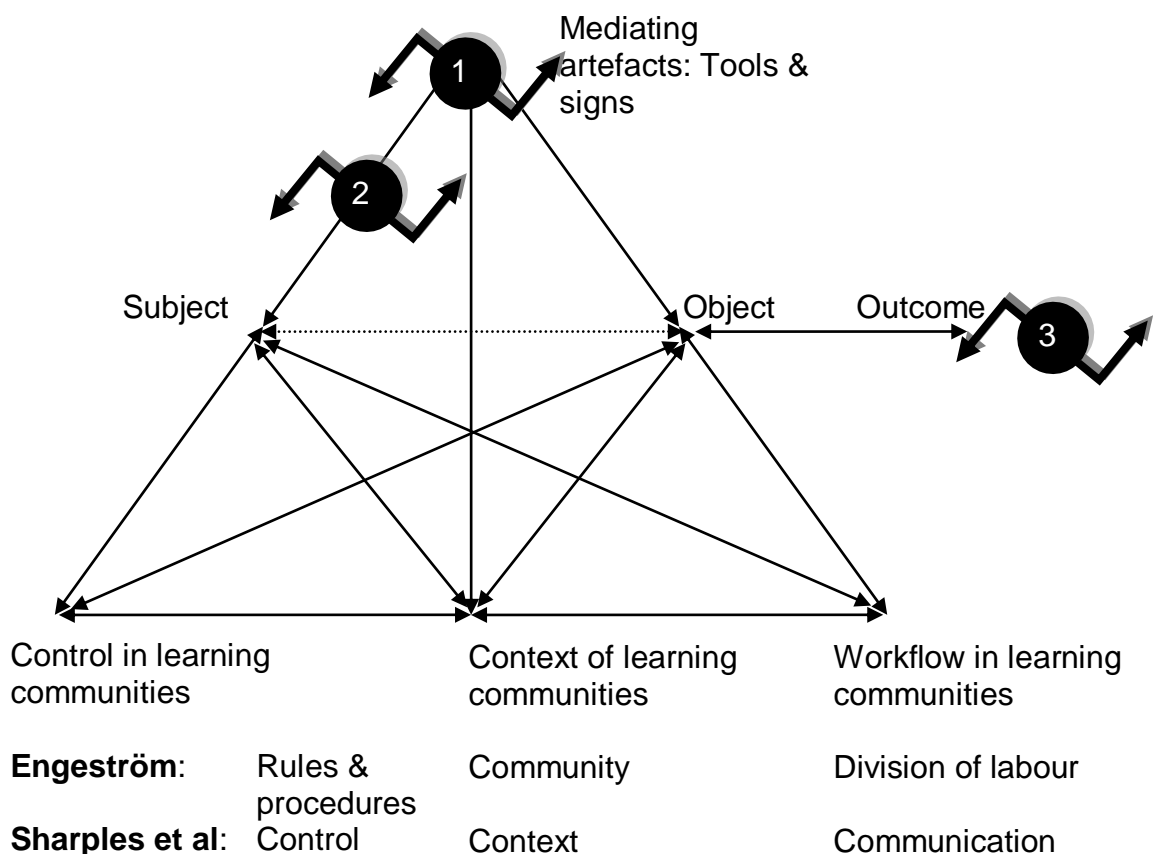
- **Primary or Level 1** – an inner tension within an element of the system (e.g. rules and procedures, community, division of labour, subject, object, mediating artefacts) (see Figure 2.6, p.85 - contradiction 1); and
- **Secondary or Level 2** – a tension between elements of the system (see Figure 2.6, p.85 - contradiction 2).

(Engeström 1999a,; Engeström 1987; Engeström 1999c)

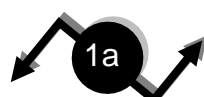
This helps develop an understanding of the effectiveness both of innovations and any barriers that prevent it achieving the immediate objective. Engeström suggests that activity theory is:-

... a method of grasping the essence of an object by tracing and reproducing theoretically the logic of its development, of its historical formation through the emergence and resolution of its inner contradictions. (Engeström 1999b:382)

Figure 2.7: Contradictions in activity systems



(after Engeström 1987; Sharples, Taylor et al. 2007)

 = contradiction identified in activity system (number indicates level of contradiction; letter indicates specific contradiction for reference in the text)

Engeström suggests that small scale cycles of “innovative learning” are a necessary (but not sufficient) indicator of transformation (or expansive change as Engeström terms it) (Engeström 1999b:385). Such change requires expansive learning (where, “... students are invited to look at (*their institutions*’,) contents and procedures critically”) and for the contradictions to be addressed within the network of activity systems that constitute the organisation (Engeström 2005:170). This leads to consideration of the extent to which the outcomes of individual innovations and those of wider activity systems are compatible. Engeström considers addressing these levels of contradiction to be the driver of expansive learning (Engeström 1999b:385).

In order to confirm transformation (or expansive learning), Engeström identified two further levels of potential contradiction:-

- **Tertiary or Level 3** – a tension between the system and a more advanced form of the activity (see Figure 2.6, p.85 - contradiction 3); and
- **Quaternary or Level 4** – a tension between the system and similar, linked or neighbouring activities (see Figure 2.8, p.90 - contradiction 4).

(Engeström 1999a; Engeström 1987; Engeström 1999c)

The triangle represents the mediated activity. It can also be considered in terms of a series of sub-triangles which reflect its:-

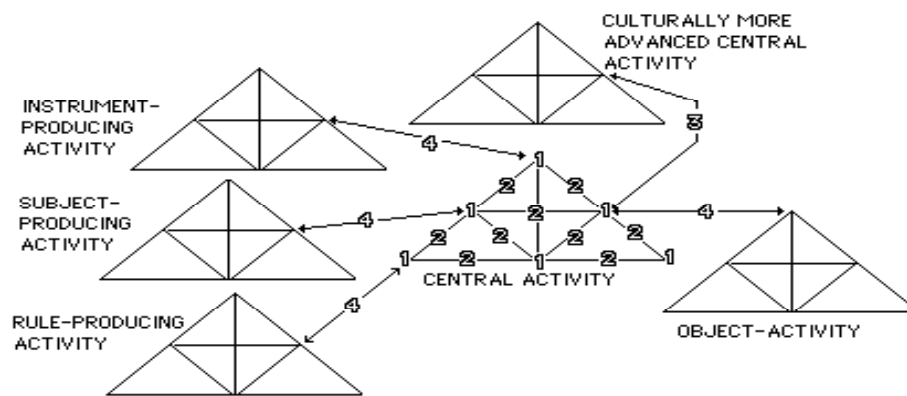
... complex formations in which equilibrium is an exception and tensions, disturbances, and local innovations are the rule and the engine of change. (Cole and Engeström 1993:8)

These are the contradictions that Engeström identifies as the drivers of change.

As Roth and Lee note:-

This framework can potentially overcome a range of troublesome dualisms in education: individual versus collective, body versus mind, subject versus object, and theory versus praxis. By making activity the minimal unit of analysis, activity theorists take a holistic approach without reducing any pole of a dualism to its corresponding opposite ... This integration occurs at a higher level: the activity as a whole. (Roth and Lee 2007:218)

Figure 2.8: Levels of contradiction within a multi-layered activity system



(Engeström 1987:51)

The use of activity theory, therefore, takes this study beyond the continua that appear repeatedly in the literature. It uses the complex interrelationships between many elements of a system as a basis for its analysis.

2.4.3. Defining transformative engagement

One of the distinguishing features of activity theory is that it is, "... primarily concerned with understanding and transforming practice" (Roth, Lee et al. 2009). There is also an increasing divide between those studies that use activity theory as a descriptive and/or analytical research tool and those which

also use it as a tool for enabling transformation. Drawing on Daniels (Daniels 2001:84-6), Jaworski suggests that an activity:-

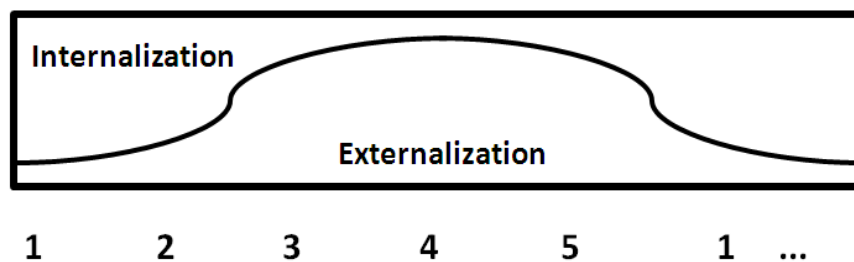
... has some developmental function, is characterized by constant transformation and change, is guided by motive, and is a collective and systemic formation that has a complex mediational structure. (Jaworski and Potari 2009:222)

The transformative dimension is evident throughout Engeström's work, particularly in the criteria he identified for transformative or expansive change:-

- "... reflective analysis of the existing activity structure – one must learn to know and understand what one wants to transcend"; and
- "... reflective appropriation of existing culturally advanced models and tools offer ways out of the internal contradictions." (Engeström 1999a:33)

Engeström's notion of transformation requires what he calls externalization, in which the existing culture is transformed through the creation of new artefacts (Engeström 1999c:10).

Figure 2.9: Expansive cycles in eCompetence training



(Engeström 1999a:33)

Internalisation involves introducing the artefacts created by others into one's own practice. It, therefore, involves some engagement with the communities

developing e-learning within the institution. In moving beyond the private and individual space of the innovator, they are likely to become involved in temporary communities which meet specific needs. These are likely to enable them to introduce e-learning artefacts in their own context. Such engagement is, however, largely reactive - a response to issues that emerge from experimentation rather than a conscious effort to transform. For transformation to take place there needs to be a continuing cycle with innovation initially internalized, then externalised as a basis for a further cycle of internalisation by others (see Figure 2.9, p.91).

2.4.4. Conclusions on the relationship between media, communities and conceptual frameworks

Activity theory was identified, therefore, as a means of analysing the innovative activities derived from interviews with practitioners. It not only provides a suitable basis for comparison but also enables consideration of the communities created and the barriers (or contradictions) experienced. This is achieved through providing a means of considering the impact of practitioners' conceptual frameworks and the communities within which they operate from multiple perspectives.

Various writers have noted the potentially "transformative nature" (Hiltz et al. 2007:55) of online collaboration and reflection (Kim and Lee 2002; McNeil et al. 2006; McDrury and Alterio 2003; Martin and Double 1998; Mumtaz 2000). For the student, "...the academic situation is typically new and strange, its languages and practices frequently unfamiliar and mysterious, even exotic and bizarre ... (*leading to a*) ... host of uneven relationships and concerns ..." (Light and Cox 2001:29). In many respects this describes many academics' first

engagement with e-learning with many concerned that power relationships will be reversed. The practitioners become the disorientated party, unfamiliar with the medium whereas their students – or at least those in the 18 to 24 age range - are perceived as accomplished users of such technology (Veen and Vrakking 2006; Prensky 2001).

Activity theory provides a basis to analyse the systems that both students and practitioners enter. It also provides a framework to introduce such concepts as learning communities and conceptual frameworks. This is done in the context of the wider institution and the interrelationships – such as professional development – within it. An indicator of the success of this thesis is whether it not only uses activity theory to analyse such systems but also develops its potential to enable transformation in this context.

2.5. Conclusions

The reality is that delivery of learning and teaching in the sector has not been transformed. Although e-learning innovations with positive effects are widely reported, few would claim that they have had a transformative impact on HE. Over a decade ago Mayes likened the repeated cycle of innovation without transformation to the film 'Groundhog Day' in which actor Bill Murray constantly relived the same day. Whatever the innovation, there was no fundamental change or transformation of the outcome (Mayes 1995). There may well be a willingness to embrace a constructivist discourse, but we have yet to reach the 'tipping point' for the transformation of teaching and learning in the sector from teacher-centred imparting of knowledge to student-centred learning of knowledge (hereinafter transformation). The focus of this thesis is to explore

the role (if any) that the introduction of e-learning can play in enabling such a transformation. More specifically, can e-learning enable teachers to adopt student-centred approaches? Some of the contradictions outlined above suggest that a traditional staff development approach will be insufficient to achieve the tipping point.

The increasing emphasis on learning (rather than teaching) not only places increasing demands on support staff as students engage with a new concept of learning (Dearing 1997:14.10). The operational responses of HE institutions to meet these demands for change have been heterogenous. The common factor has been greater equality of emphasis between the three pillars of academic practice – learning and teaching, research and administration. The outcome for training in the sector has been:-

- The formalisation of IPD requirements for the sector; and
- Increased emphasis on CPD in the sector

The transformation of individual teaching practice is also seen as the extension of the notion of scholarship to encompass teaching (Boyer 1990). This notion was incorporated in the UK professional body's values which, "... may, indeed, be the most significant factor in bringing about real change in practice" (Light and Cox 2001:29). The strategic direction for transformation within an institution can emanate from the top-down (from its senior management, often influenced by government policy), the bottom-up (from its innovators) or from the middle-out (partnerships of staff at various levels). Strategy was driven from the bottom-up during the pioneering and practice stages and from the top-down in the policy and pedagogy stages. As the sector moves towards the

partnership stage, then strategy is driven from the middle out through communities of practice. For successful transformation all levels of the organisation need to play a significant part in driving (or at least feel they have ownership of) the strategy (Littlejohn and Peacock 2003). Whatever the relationship between the pedagogic and e-learning staff development functions, they are crucial if transformation is to achieve the 'tipping point'. Only once the tipping point has been reached can mainstream delivery be said to be transformed.

A specific area of consideration for this thesis was the extent to which the transformation of learning and teaching in HE can be achieved through the introduction of collaborative TEL. The following derivative categorisation of uses of TEL was based on the wide ranging literature on the subject (Laurillard 2002; Bain 2000; Mayes 1995):-

- **Supporting learning** – where TEL is used to supplement the traditional course elements. This recognises the potential of the web both as a source of information and a storage medium, with ease of access compensating for moderate increases in staff and student workloads;
- **Enhancing learning** - where the potential of the medium supplements, or even substitutes for, elements of the 'traditional' workload. Discussion boards can replace e-mails for course queries whilst multiple-choice questions can provide instant feedback on progress and direct students to development resources; and

- **Transforming learning** - rather than supporting existing modes of delivery, TEL becomes an integral part of course planning. The transformed 'blend' of the course uses e-learning and traditional elements where they are fit purpose.

There was little about either supporting or enhancing that directs learning towards a constructivist paradigm. It is unlikely that staff workloads will be reduced by such measures, although their time may be used differently (and more effectively). Transformation involves moving beyond the 'tipping point' for the change from an HE sector that is teacher-centred, imparting knowledge to one that is engaged in the student-centred learning of knowledge.

For this to be established, the basic research problem was to establish two conditions. First, that there were a significant number of verifiable examples where HE teachers involved in TEL had transformed their practice. Second, and more difficult to establish, was that their engagement in TEL was a causal mechanism – rather than an incidental factor – in that transformation. In particular, could engagement with TEL provide the tipping point in a move to embrace not only the constructivist discourse but constructivist practice?

3. Methodology

3.1. Introduction

At the heart of this thesis are epistemological questions regarding the nature of knowledge. Can practitioners acquire the knowledge they need to engage with e-learning from a template (invented by others) or does it have to be a personally experienced discovery (including invention by the learners)? Can engagement with e-learning influence (or even cause) the transformation of practitioners' teaching practice? The reason that e-learning might contribute to transformation is not clear from the literature. The methodology adopted, therefore, has to be capable of identifying possible causation paths.

This thesis is an exploration of the conceptual frameworks of practitioners and the impact of e-learning on their beliefs and practices. It is, therefore, broadly phenomenographic, exploring the conceptions that people have of the world and how this influences how they learn (Trigwell and Richardson 2003). To achieve this, a methodology was required that collects, "...rich, descriptive, contextually situated data in order to seek understanding of human experiences or relationships within a system or culture" (Silverman 1999). Given the diverse and complex questions posed, no single method of data collection was likely to provide a satisfactory answer.

This thesis also seeks to capture Activities – examples of e-learning innovation – and this chapter considers the use of activity theory as a means of not only describing but analysing them. This chapter, therefore, considers the strategy used for selecting, planning, implementing and reviewing the range of methods used. For each method, consideration is given to the validity and reliability of

the data collected. In addition to the ethical dimension of the methodology, the role of the researcher in the process being studied is also addressed.

3.2. Rationale for research methodology

The consideration of possible approaches was based on a categorisation of assumptions underlying research methodologies:-

- **Ontological assumptions** - the nature of the phenomenon observed;
- **Epistemological assumptions** - the nature of knowledge;
- **Human nature assumptions** - the way in which the subjects of the study respond to external stimuli; and
- **Methodological assumptions** – whether the approach is reproducible and captures the data it set out to acquire efficiently and effectively.

(Burrell and Morgan 1979).

Each of these assumptions can be represented as a continuum of approaches between objectivist and subjectivist. Objectivist approaches to research reflect the “scientific paradigm” which, “... rests upon the creation of theoretical frameworks that can be tested by experimentation, replication and refinement” (Cohen, Manion et al. 2000). Subjectivist approaches recognise the importance of the subjective accounts of individuals, seeking to explore and, where appropriate, validate their understanding.

In many respects, the methodological gestation of this thesis reflected many of the debates in the relevant literature in the second half of the twentieth century.

For this thesis, consideration was initially given to addressing the research questions using such traditional methods as survey and observation. Such an approach would have involved a representative survey of teachers engaged in e-learning innovation across the sector, identifying a sample frame of practitioners likely to produce statistically significant results. The phenomenographic approach adopted makes fundamentally different assumptions in all four areas outlined above. As will be explored below, the approach was adopted for pragmatic reasons in the context of this specific research rather than a doctrinaire position for subjectivist (or against positivist) research. It should be noted that the proposals for further research in the conclusions of this thesis (see 9 'Conclusions', p.318) proposes a 'mixed' approach to exploring the relevance of the findings beyond the single institution of this study.

3.2.1. *Ontology*

In terms of ontology, adopting an objectivist approach would suggest that there was an independent or objective truth waiting to be discovered rather than it being, "... a product of individual consciousness" (Cohen, Manion et al. 2000:5). The methodology chosen for this study needed to establish whether engagement in e-learning by practitioners could influence their wider practice. This involved both description and analysis of the nature and impact of such engagements.

Given that practitioners' conceptual frameworks were at the heart of this study, a subjectivist phenomenographic approach provided an appropriate basis for data collection and analysis. In terms of ontology, this involved researching the

experience of the phenomenon rather than the nature of the phenomenon itself (Marton 1997:unpaginated). Phenomenographic researchers seek to identify and account for the concepts of individuals that enable them to understand phenomena in the world around them. As Cousin notes, such approaches are, “... underpinned by the constructivist principle that we construct meanings of phenomena from an array of social and personal influences” (Cousin 2009:184). Such research starts by deriving categories of description of individuals’ experience of phenomena - second order reality - rather than the phenomena themselves – first order reality (Marton 1997:unpaginated). Such studies, “... reveal the experiential constraints”, on individuals (Marton 1997:unpaginated), emphasising what, “... people perceive to be true since this perception has practical consequences” (Cousin 2009:185). One of the originators of the approach suggests:-

Every phenomenon can be seen, experienced, understood,
in a finite number of qualitatively different ways ... (at) a
particular point in time (Marton 1997:unpaginated)

Having described the experience, the object of such research is to establish the variation between them – the, “... logical relations to be found between the categories of description” (Marton 1994:unpaginated). This involves identifying the, “... qualitatively different ways of experiencing ... phenomena” (Marton 1997:unpaginated). In doing so phenomenography goes, “... beyond the description of categories to the detection of underlying meaning” (Entwistle 1997:127). Each practitioner’s understanding of the complex human interactions leading to learning depends on their conceptual framework. Phenomenographers suggest that such conceptions are based on human

interactions with phenomena and responses can be derived from the language that subjects use to describe them (Svensson 1997). Indeed, Dortins regards phenomenographic interviews, "... as communications in which language and meaning (*are*) inseparable" (Dortins 2002:209).

3.2.2. *Epistemology*

An objectivist epistemology implies that knowledge is, "hard, objective and tangible" (Cohen, Manion et al. 2000). At the other end of the spectrum, a subjectivist approach to such research would suggest knowledge, "... is based on experience and insight of a unique and essentially personal nature" (Burrell and Morgan 1979:2). Cohen suggests that, "...objects of thought are merely words and that there is no independently accessible thing constituting the meaning of a word" (Cohen, Manion et al. 2000:5). Since this thesis dealt with the beliefs and practices of individuals, this suggested a subjectivist approach.

The, "verification and cumulation of educational knowledge", is a problem at the heart of all such pedagogic research (Cohen, Manion et al. 2000:181) resulting in extensive use of qualitative, subjectivist approaches. Even if an objectivist approach were practical, it is debateable whether a survey could have captured the 'stories' of teachers at all stages of engagement with e-learning, including (or perhaps especially) those at the earliest stages. Answering the research questions posed necessitated acquiring narratives or stories rather than collating specific 'facts' or identifying a sequence of events. Adopting a subjectivist, narrative approach can capture other dimensions of individuals' engagement with e-learning. The language used by practitioners, for example,

can provide insights into the cultural context in which they operate or even such basic factors as how they feel about the Activities they were engaged in.

3.2.3. *Human nature*

The aspect of ‘human nature’ that this research explored is the way in which the practitioners responded to external stimuli that sought to encourage them to adopt social constructivist approaches to their teaching. An objectivist approach would have suggested that, “... human beings and their experiences should be regarded as products of the environment” (Burrell and Morgan 1979:2). A subjectivist approach suggests that humans should be regarded as, “... the creator of (*his/her*) environment, the controller as opposed to the controlled” (Burrell and Morgan 1979:3).

If there were a simple relationship to be discovered – such as the notion of e-learning as a ‘Trojan horse’ for transformation – then this would have suggested an objectivist methodology for this research. The literature review suggested that the inter-relationships were relatively complex and that academics in the UK HE sector retained a degree of independence in course delivery. This suggested that their e-learning innovations were likely to be influenced (rather than controlled) by their environment.

A problem with such pedagogical research is the complex range of such stimuli. For example, in pilot interviews for this thesis apparently similar Activities had significantly different outcomes with different practitioners and cohorts of students. This indicated a degree of control by the actors or (in this instance) practitioners that presented potential problems in terms of reproducibility of the research that had to be addressed.

3.2.4. Methodological

The twin notions of reliability and validity have long been regarded as the canons of quantitative research. The former establishes that the results are reproducible whilst the latter confirms that the research, "... accurately represents the ... phenomena to which it refers" (Hammersley 1991:57). The contention that, "... reliability is the sole preserve of quantitative research", is increasingly under challenge (Cohen, Manion et al. 2000; Brock-Utne 1996:612). For any quantitative research to be considered reliable it must be able to demonstrate, "...consistency and replicability over time, over instruments and over groups of respondents" (Cohen, Manion et al. 2000:117). The concept of dependability is frequently used as an alternative to replicability in qualitative research in which:-

... the researcher attempts to account for changing conditions in the phenomenon chosen for study and changes in the design created by an increasingly refined understanding of the setting (Marshall and Rossman 2006:203).

Merely showing that the methodology is reliable is necessary, but not sufficient, to establish validity. It is also necessary to show that the research measures what it purports to measure which is problematic in qualitative research because of, "...the subjectivity of respondents, their opinions, attitudes and perspectives together contributes to a degree of bias" (Cohen, Manion et al. 2000:117).

The two broad dimensions of validity – internal and external – are addressed by qualitative researchers through two alternative concepts:-

- **Internal validity** – the ‘credibility’ of the research is determined by the researcher’s rigorous methods in collecting data, their individual standing (including their credibility to interviewees) and their, “... fundamental appreciation of naturalistic inquiry, qualitative methods, inductive analysis, purposeful sampling, and holistic thinking” (Patton 2002:552-3); and
- **External validity** – the applicability of findings to other contexts is addressed by ‘transferability’. The qualitative researcher is responsible for stating, “... the theoretical parameters of the research. Then those who make policy or design research studies within those same ... parameters can determine whether the cases described can be generalized” (Marshall and Rossman 2006:202).

The ability of other researchers to reproduce the results has long been considered essential if the validity of their findings is to be established. Qualitative researchers conclude that validity is, “... a matter of degree rather than ... an absolute state” (Cohen, Manion et al. 2000:117).

3.2.5. *Conclusions on rationale*

Perhaps the most important concern regarding a positivist approach to this study was that a large scale survey would give a misplaced, quasi-scientific validity to what was essentially qualitative research. Whilst undeniably providing a breadth of data, such methods could not provide the depth of data required to explore this topic. Phenomenographic researchers do not make assumptions about the nature of reality nor claim their research results

represent truth. This is because it is very difficult to establish whether an individual's account accurately reflects their actual experience of the phenomenon (however convinced the individual is of its veracity). Nevertheless, phenomenographers suggest that their findings provide an insight into conceptions of the phenomena under investigation.

In quantitative research obstacles to credibility are addressed in discrete stages – data collection, analysis and interpretation. The iterative nature of qualitative research means that such obstacles must be addressed throughout the process both in theoretical and operational terms (Onwuegbuzie and Leech 2007). As will be explored below, the qualitative methodology selected for this study does much to address the obstacles identified in theoretical terms. Researcher reflexivity – involving, "... an interaction between the practitioner and their environment that influences the form of the reflexive process" (Darling 1998) - throughout the iterative process is essential to ensure that this is achieved once the methodology is implemented.

3.3. Data collection

Whether quantitative or qualitative, the scope of a study presents a number of problems, particularly with regard to the sample frame:-

- **Single institution** – whilst manageable this raised questions regarding whether any institution could be seen as representative of the whole sector;

- **Multiple institutions** – at what was still a relatively early stage of e-learning adoption, its uses differed significantly from institution to institution producing contrasting results;
- **All institutions** – whilst this appeared to achieve reliability and validity, there would have been problems in identifying appropriate samples of practitioners within each institution. As noted in the literature review, in 2005/6 the professionalisation of the UK HE sector was in its early stages with no accessible list of all practitioners.

The decision to opt for one institution was made on four bases. First, whilst opting for multiple institutions would mean greater breadth of data, the depth of data gathered would be less than if one institution were selected. Second, the author was employed within the selected institution and, therefore, had considerable access to (and some capacity to influence) its engagement with e-learning. The nature of phenomenographic research means that such awareness is important in selecting appropriate subjects. As will be explored below (see 3.5 'The practitioner as researcher', p.133), such close involvement was a source of both potential strength and weakness of the study. Third, any attempt to extend the scope of this study beyond a single institution would introduce a degree of self-selection. Since the researcher would not have the same in-depth knowledge of institutions other than their own, it would have been necessary to seek volunteers (or recommendations of appropriate subjects). This would have risked distorting the sample since those likely to respond, or be identified, were those who already had a clear interest in e-learning. Those just embarking on the path might have considered it

inappropriate for them to commit their views just yet. Similar distortions would have been introduced by asking institutions to distribute questionnaires since they were likely to approach those already known for their e-learning engagement – the innovators – rather than the early adopters and early majority who were the subject of this study. Finally, focussing on a narrow range of institutions (e.g. two or three) would have necessarily introduced an element of comparative research which was not the purpose of this study.

Based on the above analysis it was decided to adopt a broadly subjectivist research plan focussing on one institution. Qualitative research is inherently multi-method (Flick 2002) and triangulation between methods, “...reflects an attempt to secure an in-depth understanding of the phenomenon in question” (Denzin and Lincoln 2005:5). This implies that it is not possible to capture objective reality in itself, we can only hope, “... to know it through its representations” (ibid:6). It is important to distinguish triangulation as an alternative to (rather than tool of) validation (Flick 2002). Both due to the need to establish the theoretical parameters for transferability and triangulation, no research stands alone. The literature review is, therefore, an even more important part of any qualitative study.

In phenomenographic research the process of data collection is, “... of key importance in determining whether the outcomes are ontologically defensible and epistemologically valid” (Ashworth and Lucas 2000:296). The three methods of data collection used for this research were interviews, mind-mapping exercises and supporting data provided by interviewees (see Table 3.1, p.111). These were respectively intended to identify the practitioners’

beliefs and practices, the influences on their engagement with e-learning and the development activities they had been involved in. Whilst these were the primary purposes of each of the methods, they all provided data which added to the richness of the examples of Activities collated. The research methods employed to gather the data were diverse in terms of the nature, timescale and scope. When considered in the context of the literature review, these provide a range of triangulating information regarding the practitioners' engagement with e-learning (see Table 3.1, p.111).

The reflexivity of the researcher in such a study – both in terms of the dynamic of the interview and the methodological approach adopted - is crucial to addressing such concerns. The need for such reflexivity is addressed by both the data collection and coding methods used, along with the exploration of the 'role of practitioner as researcher' (see 3.5, p.133). This will also be explicitly addressed in the conclusions of this thesis.

3.3.1. Identifying subjects

The phenomenographic analysis of data generated by this study was intended to lead to the identification of qualitatively different categories of the concepts underpinning different individuals' engagement with a given phenomena (see 3.4 'Data analysis', p.120). The sample, therefore, needed to be:-

...selected to maximise the potential variation in academics' experiences ... rather than to provide a representative sample of academics (*within the institution*) (Ashwin 2006:654)

To achieve this the selection of the interviewees for this study needed to be purposive, identifying a range of experiences of engagement with e-learning

and the institution's IPD support for such innovation. Although the experiences of the four subjects selected for pilot interviews were varied, it was apparent that their roles and engagement with professional development were similar. All were participants in the institution's IPD programme, three of whom were new lecturers and one a member of support staff with a significant teaching role. An analysis of the participants in the full range of the institution's development programmes relating to e-learning suggested four broad categories of participants - 'newbies', 'enthusiastic support', 'established practitioners' and 'pedagogic managers' (see 4.2 'Interviewees', p.141). Due to the restrictions on, and limitations of, the institution's management information systems it was not possible to acquire data to compare the make-up of the sample of practitioners with the institution as a whole.

A decision was made to ensure all four groups were represented in the sample for the main study. Whilst it was not intended to fully replicate the proportions in that wider population, it was evident that a significant proportion of those engaging in e-learning innovation participated in the IPD programme and this was reflected in the sample. The sample for this study was, therefore, purposive rather than fully representative. The sampling methods adopted for this study targeted potential interviewees using the following criteria:-

- **Involved in e-learning innovation** – the nature of the innovation (or even whether it succeeded) were not considered important. Indeed, it was felt that a range of innovations and degrees of success were desirable in order to achieve a 'real world' picture from the sample;

- **Mainstream practitioners** – the work of e-learning innovators had been widely studied. It was, therefore, felt that in order to analyse the possible transformation of learning and teaching (or the embedding of change in the social system) the study should focus on early adopters and particularly early majority of those using e-learning;
- **Representative** – the sample should represent the broad make-up of the institution in terms of gender, role, level and mode of teaching (see Table 4.1, p.143). It should also represent the four categories of practitioner identified (see 4.2 ‘Interviewees’, p.141); and
- **Supported** – the sample interviewed should have experienced the range of support for e-learning innovation offered by the institution.

3.3.2. Mind-mapping exercise

Mind-mapping was used as an additional data collection method, enabling interviewees to express the influences on their engagement with e-learning in their own terms. This provided valuable triangulating data to compare with the output of the interview process. As Tattersall notes:-

A mind-map starts life as a single blank sheet of paper. A question, title or central concept as an image or diagram is then placed in the centre of the page, with sub-headings or related themes branching off ... with each branch having an associated image or word on it. These branches can then be subdivided or related to other branches. (Tattersall, Watt et al. 2007:32)

At the start of the interview process interviewees were presented with an unrelated example of a mind-map (see Dataset 7.9.1). The subject of this example – the interviewer’s reasons for supporting a particular football team –

T Churchill Page 110

was deliberately trivial, with strong links between both positive and negative factors. Whether the interviewee was interested in football or not, the common reaction was both amusement and recognition of both the format and what was required of them.

Table 3.1: Range of research methods used

Research method	Outline	Scale
Interviews to establish beliefs and practices of HE practitioners	Data on the impact on interviewees' framework of beliefs and practices was collected through semi-structured interviews. This was analysed through the structured coding of the data using dimensions of beliefs and practices (as identified in 2 'Theoretical framework', p.30 above).	18 interviews, fully transcribed, ranging from 40 to 70 minutes (see Appendix 3)
Issues influencing engagement with e-learning	Data on the influences on their introduction of e-learning was collected through a mind-mapping exercise. Further information was provided by the semi-structured interviews and triangulating data provided by interviewees. This was analysed through the unstructured coding of the data to establish emergent themes.	Mind-mapping exercise undertaken by 16 interviewees as part of their semi-structured interviews (see above). (see Dataset 7.9)
Details of development activities undertaken	Data on the extent to which development activities (both online and face-to-face) contributed to their engagement with the medium was collected through the range of triangulating data provided by the interviewees. Further data was collected through the semi-structured interviews and the associated mind-mapping exercise.	Triangulating data provided by 18 interviewees (see Appendix 3)

Interviewees were then asked to use the format to record the positive and negative influences on their personal engagement with e-learning on a blank sheet of paper placing, “e-learning” at the centre with the, “Issues influencing your engagement with e-learning”, branching from it (see Dataset 7.9). They were also asked to describe their mind-map. The only clarification sought by interviewees was whether they were expected to give this description as a commentary as they developed it or once they had completed it. They were given the choice, with all except one interviewee opting for the former approach.

The use of mind-mapping as an introduction helped overcome any personal preconceptions held by both interviewer and interviewee. In at least two instances the content of the mind-map drawn and its description challenged interviewer preconceptions of the nature and success of the innovations that were the subject of the interview. This reemphasised the measures outlined below to ensure that the questioning in the interview section did not prejudice such issues.

The use of mind-maps also encouraged interviewees to move away from linear thinking where they create hierarchical lists of issues (Kokotovich 2008). This was illustrated by the way that most – but not all – of the practitioners engaged in this exercise began to make links between the issues they identified on their mind-maps. It enabled the interview to start in a structured way whilst ensuring the interviewees felt they had a degree of control over the process.

Since the interviewees’ descriptions of the content of their mind-maps were recorded, it was possible to incorporate the content derived from this in the coding of interview data. The source of quotations used in this study is noted

(ie the note 'mind-map' to the reference was added where the evidence was collected in this way). No significant differences were observed between the data coded from the mind-map and semi-structured interviews.

In the first pilot interview (Angela) the mind-mapping exercise was not conducted. This necessitated a brief follow-up interview in this instance to fill gaps in the information regarding the context of and motivations for her innovations in order that her evidence could be considered equivalent to the subsequent pilot and main study interviews.

3.3.3. Interviews

The most commonly used method for phenomenographic research is interviews that are both open in structure and deep, enabling interviewees to reflect in detail on their experiences (Booth 1997:138). Data on the nature of the e-learning innovations and the conceptual frameworks of practitioners was collected through such face-to-face interviews (see Appendices 3 and 5). The format used was semi-structured with the intention of broadening the range of responses likely to be derived from more structured interviews. Cousin notes concerns regarding the influence of the interview process itself, although she stresses Marton's view that it should be a reflective event and Bowden's developmental phenomenology approach in which the interview process becomes, "... an occasion in which learners can advance their understandings" (Cousin 2009).

These potential problems are widely recognised by phenomenographic researchers who seek to act as facilitators rather than participants in conversations in order to avoid them. This involves "bracketing" or discounting

of the researcher's own knowledge of existing theories and their preconceived notions of what is "right" when collecting and analysing data (Ashworth and Lucas 1998:419-20). In part such bracketing was provided by the structure of the interview that sought to minimise the impact of practitioner preconceptions. The format used for all interviews followed the initial mind-mapping exercise with open questions regarding:-

- Contextual information (including permission for use of data);
- Nature of e-learning innovations;
- Intended learning outcomes;
- Student activities and workload;
- Practitioner activities and workload; and
- Plans for future developments.

(see Dataset 7.10)

The primary questions were deliberately open, encouraging interviewees to explore these broad aspects of the topic. A common introduction and primary set of questions were used with supplementary questions asked where clarification was thought necessary. These were tested and developed through the four pilot interviews (see Dataset 7.10). The circumstances in which supplementary questions were asked can be categorised as:-

- Clarifying where the interviewee required further information on what was being asked;
- Seeking further information where the initial response was limited;

- Seeking confirmation and/or contrary evidence to clarify the nature of the interviewee's engagement with e-learning; and
- Probing a particular example of e-learning innovation.

Only in the case of Angela was a brief follow-up interview necessary in order to be able to include this pilot interview in the main study. In some instances the interviewee sought to change the nature of the interview by seeking advice in a particular area of the interviewer's expertise. Any such issues were deliberately 'parked' by adding them to a list for discussion after the research interview. In the five interviews where this occurred, the recording continued into the advice session (with the interviewee's permission) in case further data was provided. Reviews of the largely practical nature of these five discussions suggested they were quite different in nature from the research interviews and the decision was made not to transcribe and code them.

Bailey's work on interviews and observations considers the degree of structure imposed on two dimensions – that imposed by the researcher and by the setting (Bailey 2007). The methodology adopted involved limited structuring through the researcher's questioning due to the mind-mapping exercise and open questions asked. In order to minimise the distorting impact of the setting, the interviews were conducted in the interviewees own office or in a meeting room within their department. This ensured that the interviewees were as comfortable as possible with the interview context.

A sample of 20 practitioners was interviewed with two interviewees discounted – one because it was clear from the interview that s/he was an innovator whilst

another's role in a linked institution (and lack of e-learning implementation experience) meant that s/he did not meet the criteria set for selecting interviewees. Despite concerns regarding the circumstances of James' interview – the only occasion in which a second interviewer was present - it was decided that the transcript should be used as part of the coding exercise (see 6.9 'Conclusions on beliefs and practices', p.235). The final sample, therefore, consisted of 18 practitioners - 15 lecturers (three of whom were in managerial positions) and three support staff (see Dataset 7.1). Since the study was seeking to identify factors that influenced their frameworks of belief and practice, the majority selected for interview had also engaged in programmes designed to modify concepts of teaching (see Dataset 7.1). The nature of these programmes included secondary level teacher training (to teach 11 to 18 year old school pupils), and the institution's own e-learning and pedagogic development programmes. These programmes included extended events (beyond the day or half-day training familiar in staff development) intended to develop eCompetence and an Academic Practice award (with a growing eCompetence focus).

3.3.4. *Transcription*

As Cohen notes, the transcription of interviews changes an informal, oral format to a formal, written one (Cohen, Manion et al. 2000). Transcription provides data in a format that not only provides an appropriate record of the interview but can also be processed using qualitative data analysis software. Transcription has also been described as a process of "self-transformation" for the researcher:-

... reconstituting the socially and temporally situated interviews into something much more familiar to me: a group of text ... that could be read with or without reference to the original conversations, or to the speakers. (Dortins 2002:208)

Transcription, therefore, decreases the emphasis on the social context of the interview whilst emphasizing its content. A concern expressed by Cousin is that in attempting to bring such detachment, researchers tend to marginalise the emotional aspects of learning. This is an area of increasing research interest, although there is no intrinsic reason in the phenomenographic approach that precludes such considerations (Cousin 2009). Recent developments in such research emphasise the importance of the researcher fully explaining their context whilst others are beginning to explore reflexive phenomenography, which embraces researcher preconceptions as an alternative to 'bracketing' (see 3.4 'Data analysis', p.120) (Orgill 2008:unpaginated).

In order to minimise any distortion caused by interpretation by the researcher, all interviews (after the first four pilots) were transcribed by an employed transcriber with a background in dealing with confidential information. In order to assure the quality of transcription, one interview was transcribed by both researcher and transcriber. This led to agreed protocols for transcription which were developed as issues arose from subsequent interviews. Each transcription was also reviewed by the researcher before coding the data.

3.3.5. *Other sources of data*

The interview data was supplemented by a range of contextual information (e.g. reports and papers on e-learning innovations) provided by the interviewees. Data from the interviewees' professional development engagements also

provided valuable context, particularly regarding the nature of those engagements (see Dataset 7.3). The additional sources of data included:-

- **Online reflections** – through IPD activities (interviewee 1);
- **Published paper** – either for conferences or journals (interviewees 1, 8 and 13);
- **Portfolio** – for the institution's academic practice award (interviewees 1, 2, 3, 4, 9, 11, 12 and 17);
- **VLE course** – access to the online courses created (all interviewees);
- **Project report** – the final report of projects supported by the institution's teaching innovation fund (interviewees 2, 3, 13, 14 and 15);
- **Presentation** – made to the VLE support group (interviewees 4 and 16); and
- **Website** – created to support course (interviewees 15 and 18).

(see Dataset 7.3)

Although few specific references were made in the findings to such additional sources, they were used to provide triangulation of data.

3.3.6. Conclusions on data collection

Bracketing was provided by the approaches to the collection and analysis of data for this study. The inclusion of the mind-mapping exercise at the start of interviews was designed to minimise the influence of interviewer preconceptions

on the data collected (see 3.3.2 'Mind-mapping exercise', p.110). The potential for such preconceptions to influence the data through the transcription process was reduced through the use of a transcriber (see 3.3.4 'Transcription', p.116). Furthermore, whether data was derived from the mind-mapping exercise or the semi-structured interview, possible preconceptions were challenged through seeking contrary evidence either from further data from the interview or the additional evidence collated (see 3.3.5 'Other sources of data', p.117).

The approach to interviews was designed to minimise distortion due to interviewer preconceptions. As noted above, reliability and validity are key issues of any research. In qualitative research the former is represented by dependability whilst the latter is represented by credibility (internal validity) and transferability (external validity). The reliability of the study will be determined by the extent to which it demonstrates an understanding of the setting in order to account for the phenomena observed. One criticism of phenomenography is that it encourages researchers to accept experiences reported at "face value", rather than, "... adopt a sceptical attitude towards the statements that are made by their interviewees", (Richardson 1999:59). The quotations used in the findings of this report were only used where evidence was provided from more than one source.

The credibility of this thesis was demonstrated in part by the willingness of interviewees to participate (with none of those invited refusing to take part) and their willingness to share private insights into the influences – both positive and negative – on their practice. Further evidence of its credibility was provided by the triangulation of data at a number of levels. Methodological triangulation was

achieved both through repeated use of the same method with practitioners in different contexts and the use of alternative methods. Whilst semi-structured interviews with practitioners formed the basis of the Activities identified for this research, this was not relied upon as the sole method of collecting data. Each of these approaches was intended to collect data for a range of purposes (see Table 3.1, p.111).

Transferability looks beyond the immediate research results to assess the extent to which they, "... can be generalized to the wider population, cases or situations" (Cohen, Manion et al. 2000). One of the key methods through which this was achieved was by theoretical triangulation based on the literature review. Interviewing practitioners in a number of contexts (across a range of departments and levels of courses) and roles (lecturers, managers and support roles) helped achieve the 'combined levels triangulation' (see Dataset 7.1).

3.4. Data analysis

One of the key criticisms of phenomenography is that it is largely descriptive (Richardson 1999:57), producing simple categorisations such as the categories of participants identified above (see 3.3.1 'Identifying subjects', p.108).

Phenomenographic analysis of such data is intended to do more than describe or categorise. It aims to establish the meaning behind what was actually said so that:-

Whatever phenomenon or situation people encounter, we can identify a limited number of qualitatively different and logically inter-related ways in which the phenomenon or the situation is experienced and understood (Marton 1994:34)

Once the interviews were transcribed, they were coded to establish categories of description. Having derived the 'categories of description', the qualitatively different experiences between them need to be considered - the 'dimensions of variation' - which define the outcome space (Marton 1994).

A number of the models analysed by Kember (see Appendix 2) were based on phenomenographic research. One of the objectives identified in the literature review is the need to formulate a model of conceptual frameworks that goes beyond the two-dimensional teacher- to student-centred approaches continuum in the models reviewed by Kember. This would provide a basis for locating practitioner beliefs and practices within Mayes and de Freitas' multi-dimensional framework of approaches (see Figure 2.2, p.38).

3.4.1. Strategic approach to data analysis

The analytical approach adopted for this study needed to address a significant area of criticism of phenomenographic research - the potential for the researchers' own conceptual frameworks to interfere with their findings. This brings into question their role as neutral sounding boards, lacking both the required, "... observational and interpretive neutrality of the (*objective*) researcher", due to their own social and historical background (Webb 1997:195).

Another important concern is that, "... the (*phenomenographic*) researcher needs to guard against the conservatism inherent in its classificatory drive" (Cousin 2009:186). For example, the researcher's existing knowledge of pedagogic theory might lead to the emergence of categories reflecting such theories rather than those indicating a new paradigm. This is a particular issue

in this study where Samuelowicz and Bain's model has been identified as a useful – if two-dimensional - means for considering conceptual frameworks (see 2.2.3 'Practitioner conceptual frameworks', p.44). This required further efforts to achieve bracketing not only in data collection (see 3.3 'Data collection', p.105), but also in data analysis. This was achieved in the latter by incorporating a number of steps to further reduce the influence of interviewer preconceptions:-

- **Familiarisation** – the review of the transcriptions focussed researcher attention on the content rather than the context. This included revisiting the recording and comparing it with the transcription in order to ensure nuances had been captured;
- **Identification** – the selection of transcribed elements of relevance to the study used multiple coding methods in order to minimise the influence of preconceptions (see 3.4.2 'Data coding', p.123);
- **Comparison** – the comparison of elements identified as of interest that betoken conceptions of significant aspects of the studied phenomenon was based on emergent coding. This was used to establish 'categories of description' rather than deriving them from the literature review;
- **Classification** – the consideration of the 'dimensions of variation' between the categories of description used multiple methods. The emergent dimensions were compared with those identified in the literature review (see 2.2.3 'Practitioner conceptual frameworks', p.44). This led to the definition of the outcome space incorporating the collaborative dimension.

As Marton notes, working through identification, comparison and classification can be an iterative process with a decreasing rate of change until the whole system is stabilized (Marton 1994). Cousin advises researchers that:-

... for various groups, you will be adjusting, reducing and shifting around until you are satisfied that you have fairly represented the variation (Cousin 2009:194)

Establishing the dimensions of variation between the categories of description gives rise to the 'outcome space'. This is a set of conceptions that are not only clearly related to the phenomenon being investigated, but are in a logical (frequently hierarchical) relationship with each other (Marton 1994).

3.4.2. Data coding

A number of approaches to coding and analyzing the data were used to provide triangulation for the study. In order to identify factors influencing interviewees' frameworks of belief and practice, transcriptions of the semi-structured interviews were coded using the following approaches:-

- **Unstructured coding** – Data for each instance of using e-learning in the interviews was collated and presented as an individual Activity. Emergent themes were coded in order to highlight indicators of practitioners' conceptual frameworks and factors influencing their engagement with e-learning (see Dataset 7.2);
- **Semi-structured coding** – The extent of engagement with collaborative approaches to e-learning by interviewees was established by coding specific references. Emergent categories were then used for recoding (see Datasets 7.3 and 7.6); and

- **Structured coding** - interviewees' beliefs and practices were also identified using Samuelowicz and Bain's framework outlined above (see 2.2.3 'Practitioner conceptual frameworks', p.44 and Appendix 5);

As will be explored further below, the nature of practitioners' engagement with e-learning was also considered by structuring and analyzing Activities using Engeström's approach to activity theory (see 3.4.4 'Activity theory', p.126).

The initial phenomenographic analysis of the data was conducted using qualitative data analysis software. Having transcribed the recordings (see 3.3.4 'Transcription', p.116), the data was entered into QSR's NVivo 6 qualitative data analysis software. This process provided significant scope for familiarisation with the content. One advantage of using such software was that it enabled simple coding or tagging of the transcribed data identified as relevant to the study. It also facilitated the comparison of the tagged elements, combining them as appropriate to establish the 'categories of description' detailed in the findings. It also allows the production of tables of data that formed the basis of data classification establishing the 'dimensions of variation' between the categories of description (see Datasets 7.1, 7.2, 7.4, 7.5 and 7.6).

In order to code the data, a decision had to be made between using a line, sentence or paragraph of text as the basic unit of analysis. Titscher suggests that such text units should be theoretically justified, unambiguously defined and should not overlap (Titscher and Jenner 2000:34). Whilst a line represents a uniform length, it is arbitrary, does not necessarily contain a particular thought and could contain overlapping thoughts in separate sentences. A paragraph

could contain more complex thoughts that address a particular issue but could vary greatly in length and not focus on the specific ideas that contribute to the wider belief or practice. It was, therefore, decided to use sentences as the text unit for coding. Although there is a similar issue with variability of length this was addressed by careful consideration of punctuation. Where several ideas were strung together by the interviewee in one sentence, punctuation was used to separate the ideas where possible and appropriate. In the example used in the coding exercise, the third and fourth sentences - one sentence in the original transcription – were separated despite starting the latter with a grammatically questionable, “But ...” (see Figure 3.1, p.127). As the multiple ‘categories of description’ were considered and the ‘dimensions of variation’ between them established, this could lead to a series of sequential sentences being coded in the same way. This is highlighted in the dataset where most of the examples provided consist of multiple sentences (see Datasets 7.7 and 7.8).

Researchers seeking to replicate this methodology should be aware that the current version of QSR’s software (December 2010 - NVivo Version 8) facilitates direct tagging or coding of the recording. This represents a significant time and/or cost saving (with only text tagged for incorporation in the finished thesis needing to be transcribed), although this does reduce the familiarisation with data implicit in the transcription process. Any time saving would be reduced, therefore, by implementing alternative means of familiarisation.

3.4.3. Efficacy of coding

Further evidence of transferability was provided by an exercise intended to establish the quality of the coding. Colleagues - three who were familiar with such coding and three who were not - were asked to code passages of text using the framework provided (see Figure 3.1, p.127). This produced over 80% transferability which rose to over 90% following a brief discussion of the coding over which there was disagreement. This suggested that the coding techniques were eminently transferable as demonstrated by the examples of coding (see Datasets 7.7 and 7.8). The wider transferability of the study will be determined by the extent to which the reader feels the need and ability to reproduce the methodology elsewhere.

3.4.4. Activity theory

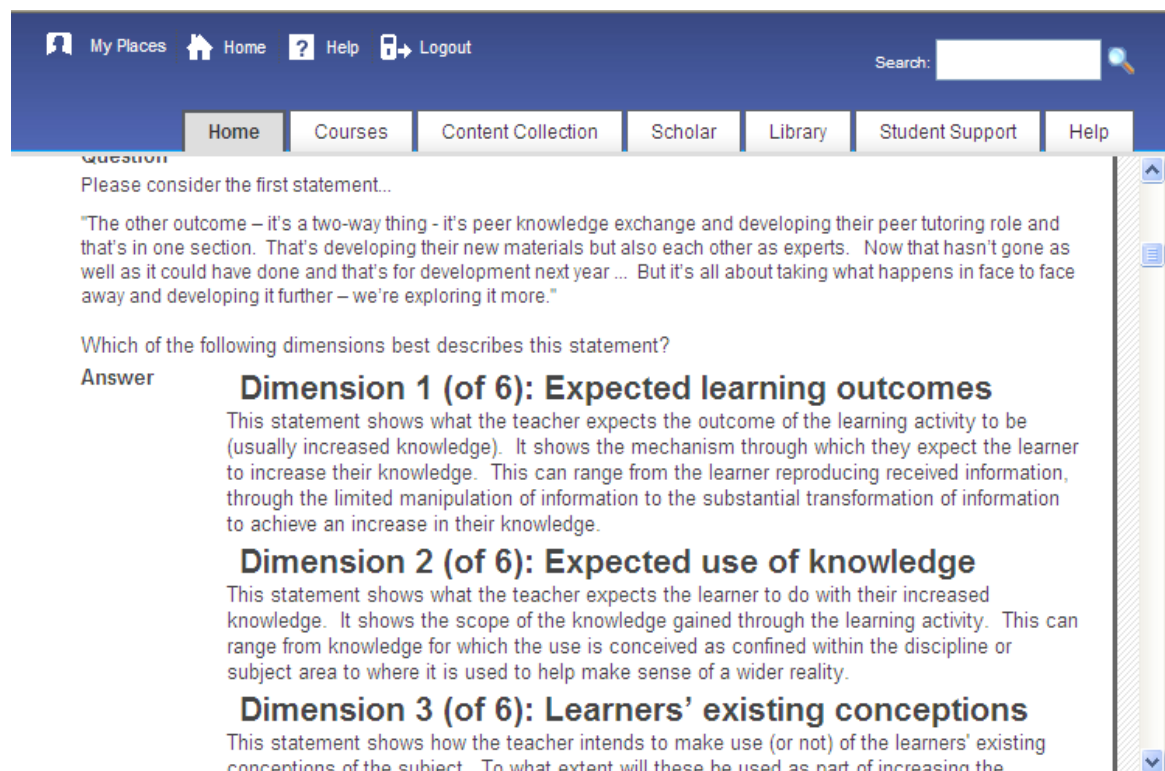
The interviewees' engagement with e-learning was considered by structuring and analysing examples of the Activities based on Engeström's approach to activity theory (see 2.4.2 'Social mediation in activity systems', p.82). The nature of their use of e-learning was established by considering the extent to which:-

1. Their use of e-learning was qualitatively different from that of other interviewees (see Dataset 7.3); and
2. The drivers of their use of e-learning were different from those of other interviewees (see Dataset 7.2).

The first step in recording the Activities was identifying examples of e-learning innovation from the interviews. These ranged from spur of the moment

decisions to try out a new idea using e-learning to developments funded under the Teaching Initiatives scheme and run as formal projects (see Dataset 7.3). Other terms – such as project or initiative - were considered although it was felt that the term Activity was appropriate to address the wide-ranging uses of e-learning that formed a part of the reflective development of practice that this study is intended to capture.

Figure 3.1: Screenshot from exercise to establish efficacy of coding



(see Datasets 7.7 and 7.8)

The institution that was the focus of this study has a high proportion of postgraduate level students, the majority of whom study on a distance learning basis. Postgraduate Activities were over-represented in the study, although this indicates the importance of e-learning innovations to distance learning courses (see Dataset 7.3). The impact of context – institutional, national and even

international – on the interviewees' practice was also addressed with relevant institutional and government policies and programmes considered.

The framework of activity theory provides:-

... a way to address complexity in the activity of teaching and its development based on recognition of central social factors (Jaworski and Potari 2009:219)

In the 18 interviews conducted for this study, 64 Activities or examples of e-learning were identified, representing 62 specific e-learning innovations (see Appendix 3). In one instance of a substantial innovation in which three interviewees were involved it was decided to allocate Activity numbers for each of the practitioners involved. This was intended to reflect the substantial contribution of each practitioner to the innovation and capture their different perceptions of it. In other Activities where more than one interviewee was involved a view was taken (from the evidence provided) of who was the lead practitioner for the innovation. The statements of the other interviewees on the innovation were treated as additional or triangulating data.

For most Activities additional sources of data were also identified. These included references to them in the portfolios of those participating in the institution's academic practice award and final reports where the practitioner's work was supported by learning and teaching innovation grants (see Dataset 7.3). A key element of the methodology of this study was to develop detailed examples of Activities in order to analyse the engagement with e-learning of the practitioner responsible for each innovation. Just as with the interviews, the selection of the subject of each Activity was purposive. A number of criteria for

identifying Activities to be developed as more detailed examples were identified including:-

- **Media used** – In order to consider whether the media chosen impacted on the innovation and/or the conceptual framework of the practitioner, a spread of Laurillard's media types were chosen. Although no examples of Adaptive media were identified, this was not considered to be a significant issue (see 1.4.1 'The nature of e-learning tools', p.9). The only members of staff engaged in adaptive Activities at the time of the interviews (2006/7) were clearly innovators. Given the increasing availability of 'off-the-shelf' adaptive tools at the time of writing (December 2010), there would now be potential interviewees using them in most institutions (see Appendix 4);
- **Sufficient data collected** – the 'quantity' of data collected for each Activity varied from 1 to 88 text units (i.e. transcribed sentences, which can vary significantly in terms of words per unit). This was supplemented by a range of additional sources to provide a basis for the description and analysis of specific examples using activity theory. Activity selection, therefore, focussed on examples with at least 25 text units, with preference given to Activities with both quantity and quality of supplementary data available (see Dataset 7.3);
- **Different outcomes from apparently similar innovations** – from the pilot interviews it was clear that apparently similar Activities not only produced significantly different results but seemed to have different effects on the conceptual frameworks of practitioners. Activity selection,

therefore, sought to include examples of similar innovations with different outcomes (see Dataset 7.3);

Table 3.2: Areas of work of Activities observed

Subjects	Number of Activities		
	Campus-based	Distance learning (or remote users)	Total
Undergraduate	21	0	21
Postgraduate	25	24	49
Others	3	8	11
Total	49	32	81

NB Total greater than the 64 Activities because some apply to more than one subject.

(see Appendix 3 and Dataset 7.3)

- **Apparently contradictory media and conceptual frameworks** – the notion of e-learning acting as a ‘Trojan horse’ for transformation suggests that the media selected reflects the conceptual framework of the practitioner. Use of teacher-centred media could reflect (and promote) a broadly associationist conceptual framework whilst student-centred media and constructivist approaches could be similarly linked. Activity selection, therefore, sought to include examples of apparent contradictions between media and conceptual frameworks (see Appendices 4 and 5) ; and
- **Transformation** – there are a range of possible implications for a practitioner’s conceptual framework from involvement in e-learning innovation (see Dataset 7.4). This can range from reinforcing existing

frameworks (whether associationist or constructivist) to transforming approaches (from associationist to constructivist). Activity selection, therefore, reflected a range of these possibilities, whilst ensuring that examples of apparent transformation were explored further.

3.4.5. Representation of activity systems

As outlined in the Theoretical Framework (see 2.4 'The relationship between media, communities and conceptual frameworks', p. 72), activity theory was used both to describe and analyse the data in the detailed examples selected. Each instance was treated as an individual activity system with the elements of such systems used as headings for descriptive purposes:-

- **Subject** - usually the practitioner engaging a group of students - or, in some cases, groups of colleagues within the institution or beyond – in e-learning (see Dataset 7.3);
- **Object** - the immediate learning objective of the intervention such as improving student knowledge or skills in a particular area (see Dataset 7.3);
- **Outcome** - the wider outcome to which the object was intended to contribute. Examples included developing students with reflective approaches to their discipline and recognition of such development by the award of an academic qualification;
- **Mediating artefact** - the intervention intended to achieve the object of the activity system. In all the cases identified in this thesis the mediating artefacts or tools were e-learning innovations (see Appendix 4);

- **Control in learning community** - this refers to both formal and informal control within the immediate learning community involved with the innovation (e.g. the students, the course team and those they interacted with regarding the innovation). Formal control referred to the rules and procedures, the organisational restrictions and conventions within which the subjects and their students were expected to operate. Informal control reflects the decision making involved in interactions within the learning environment (e.g. the classroom or VLE) between the practitioners and other participants such as students ;
- **Context of learning community** - the group (or groups) that influenced the activity system and its participants – the subject and their students. In an HE context, community is increasingly seen as relating to Wenger's notion of community of practice (see 2.4.1 'The nature of learning communities', p.75);
- **Workflow in learning community** – this related to the division of labour evident in the institution and the compartmentalization within the organisation between disciplines (e.g. faculties and schools), between roles (e.g. students and practitioner) and staff groupings (e.g. academic and support). Specific indicators identified were the diverse communication flows that constitute the division of labour in HE.

(after Engeström 1987; Sharples, Taylor et al. 2007)

Any contradictions within the activity system were used for analysis using Engeström's four-level typology (see Figure 2.8, p.90).

3.5. The practitioner as researcher

The respective positions of researcher and practitioner have been widely portrayed as bi-polar (Merton 1972; Olson 1977; Kauffman 1994) – between insider (researching the context in which they practice) and outsider (researching the context of others). The position of the outsider as dispassionate researcher has been presented as the ‘gold standard’ of research efficacy. Shah countered this by emphasising the advantages of being on the inside of a social system being studied (Shah 2004). Both Labaree and Hammersley suggest that the respective advantages and disadvantages of these perspectives depend entirely on context (Labaree 2002; Hammersley 1993). This led many to suggest that the relationship between insider and outsider was a continuum (Surra and Ridley 1991; Mercer 2006). Mercer examines such continua in terms of access, intrusiveness, familiarity and rapport (Mercer 2006:6).

The experience of this study also suggests that there is a series of continua on insider/outsider issues:-

- **Personal** – reflecting on the researchers own position, practice and motivation;
- **Political** – reflecting on the practice of influential individuals within the organisation;
- **Paradigmatic** – reflecting on the paradigm of the organisation.

In the early stages of this study these were overcome through awareness of the potential problems and study design. The use of mind-mapping as an introduction helped overcome any personal preconceptions of the interviewer (both for interviewer and interviewee). In the latter stages of the study, the change of role of researcher from insider to outsider made political issues easier to address.

It was evident that throughout the study the paradigm of the organisation was in flux, particularly in the area of e-learning. The potential for such issues to act as a barrier to effective research is reported in the coverage of James' interview. The second interviewer present for that interview responded in an almost confrontational way to the paradigm underpinning her research being challenged (see 6.9 Conclusions on beliefs and practices, p.235).

As Mercer suggests, categorising the researcher as either insider or outsider misses the nuances of the relationship (Mercer 2006). This is perhaps best illustrated by the instance of James' interview. The researcher for this study was both an:-

- **Insider** – both in working for the same organisation as James and having a preference (in terms of personal practice) for approaches that underpinned the emerging paradigm. In this latter respect James would probably categorise himself as an outsider; and
- **Outsider** – in a position which was at least 'semi-detached' from the e-learning research arm of the organisation which was responsible for driving forward the new paradigm. This was also reflected in a job role

which emphasised exploration of pedagogy at least as much as technology.

Such overlaps of roles lead Christen and Dahl to question the value of the apparent insider/outsider dichotomy (Christensen and Dahl 1997:273).

Certainly the experiences of this study would seem to reinforce Hammersley's contention that context is all important in considering the respective advantages and disadvantages of being an insider or outsider (Hammersley 1993).

3.6. Wider ethical considerations

In addition to the practical dimensions of insider research explored above, the ethical dimension must also be considered. These broader questions reflect the, "...complexities of combining professional practice with research obligations" (McGinn and Bosacki 2004, p.2) and reconciling the, "...varying relationships and corresponding responsibilities", of the 'research practitioner' (Gorman 2007, p.15). In the institution's 'paper ethics' procedure – the consideration of the research ethics necessary to secure approval to proceed (McGinn and Bosacki 2004, p.4) – only one area was identified where interviewees might face, "...more than a minimal risk ... of harm" (University of Leicester 2009, p.20). If their confidentiality was not fully respected, divulging their opinions could impact upon the standing of the interviewees' or their departments within the institution. In order to address this ethical imperative the practical steps taken to ensure confidentiality – restricted access to data, protecting anonymity in the use of data (including the use of pseudonyms) - were emphasised both in the consent forms used and in the introduction to the interviews. The confidence in this key ethical dimension of this research is

reflected in the comments by a number of interviewees who felt able to be highly critical of the approach to e-learning promoted within the institution.

Any such research, however, requires, “...more than a mechanistic application of ethical codes of practice throughout the life of a research project” (Busher and James, 2007, p.108). This includes consideration of both professional and individual ethical standards (McGinn and Bosacki 2004, p.4). The volume of literature on insider researchers in education does not reflect the:-

...exponential rise (*since the mid-1980s*) in the amount of small-scale practitioner research in education ... (*where the researcher's*) own school or college often becomes their research site. (Mercer, 2006, p.2)

Many aspects of the professional standards expected of insider researchers are, therefore, still subject of debate. For example, many interviewees were aware not only of my work encouraging the use of TEL within the institution but also its emphasis on collaboration. Whilst instinctively supporting the ethical contention that interviewees should be, “fully informed” regarding the nature of the research and the use of the data (Powney and Watts 1987, p.173), experience of interviewing peers in other contexts led me to modify this position. As Platt suggests, whilst full disclosure seems appropriate with peers:-

...it is difficult to do this without inviting discussion of the study rather than getting on with the interview, and without providing so much information that it may bias the course of the interview. (Platt 1981, p.80)

This led to a general statement regarding the nature of this research in the consent form and the introduction to interviews rather than sharing the explicit research questions. This satisfied the researchers’, “...duty of care to ensure

that they do not deliberately mislead participants as to the nature of the researcher or the research” (Busher and James 2007, p.112) without biasing the interview through detailed consideration of the research itself.

Other ethical considerations concerned my personal ethical standards as a researcher regarding, “...personal moral commitments about ‘respectful’ and ‘just’ practices” (McGinn and Bosacki 2004, p.4). A reconsideration of the likely nature of interviewees’ contributions led to a change in the way I conducted this research. In earlier research I considered there to be an ethical obligation to ensure that my interpretation of the content accorded with that of the interviewee. This was attempted by such methods as sharing the transcript with interviewees or discussing my interpretation with them. Based on both the literature and her own experience, Mercer contends that:-

The same person can have multiple understandings of reality, depending on the situation, and their verbal descriptions of these various understandings (be they ‘genuine’ or consciously contrived) will be different at different times and with different people. (Mercer 2006, p.12)

As a result, this research pays greater attention to establishing the context of the interviewees’ work. Rather than test consensus with follow up interviews, the questions asked and additional evidence sought were chosen to explore the interviewees understanding from multiple perspectives.

A further ethical dilemma identified by Mercer is the use of the ‘incidental’ data that arises from the insider researcher’s interactions with the interviewees beyond the research project (Mercer 2006, p.13). Opinions differ in the literature about whether the use of such data is acceptable (Mercer 2006, p.13).

For this research, no data was used from informal contacts with interviewees. More formal, written sources of incidental data were used with specific permission sought for their use in the relevant interview. This avoided the problems encountered by an insider researcher in using, "...information for research that was originally collected for other purposes" (Busher and James 2007, p.112).

3.7. Conclusions on methodology

With such a purposive approach to sampling interviewees, selecting the 'right' people was important - even more so given the small sample size. The depth of qualitative research typically leads to a much smaller sample than quantitative research. It was hoped that the multi-method, subjectivist approach adopted would provide valuable insights into these issues. The solutions identified sought to address the subjectivity (of respondents and the researcher) through:-

...the honesty, depth, richness and scope of the data achieved, the participants approached, the extent of triangulation and the disinterestedness or objectivity of the researcher. (Cohen, Manion et al. 2000)

The initial methodology was adopted in the expectation that some links would emerge, particularly between the nature of the Activities and the individual's conceptual framework. The outcomes of the pilot interviews suggested that there were no clear correlations between them. Indeed, the scale of the discrepancies emerging (even between remarkably similar Activities) suggested that an alternative means of analysis was needed. This resulted in the incorporation of activity theory into the methodology. As explored in the Theoretical Framework (see 2.4 'The relationship between media, communities

and conceptual frameworks' p.72), this provided a tool both for the description and analysis of the Activities. As will be demonstrated in the Findings, this also accounted for the unexpected results obtained in the data.

4. Findings: Technological, pedagogical and user influences on e-learning innovations

4.1. Introduction

The following chapters report and analyse the data gathered using the research methods outlined above. This involves analysing the factors influencing e-learning innovation, the nature of the innovations themselves and the conceptual frameworks of the practitioners involved. These findings form the basis for a consideration of the implications for professional development intended to promote the transformation of UK HE.

These chapters, therefore, consider:-

- The broad themes and specific influences on practitioners' engaged in e-learning innovation. Issues related to technology, pedagogy and users were addressed (this Chapter) along with institutional issues (Chapter 5);
- The beliefs and practices of practitioners engaged in e-learning innovation (Chapter 6); and
- The nature of the e-learning innovations in the Activities drawn from practitioners' experiences (Chapters 7 and 8).

Throughout the term 'practitioners' is used for the interviewees collectively, with pseudonyms used when referring to individuals. These names are allocated alphabetically, reflecting the gender of the practitioner. There is no other significance, cultural or otherwise, to the names allocated.

4.2. Interviewees

The interviewees broadly reflect the composition of the institution although the restrictions on, and limitations of, the institution's management information systems meant it was not possible to make a detailed comparison (see Table 4.1, p.143). As detailed above (see 3.3.1 Identifying subjects, p.108), the interviewees selected were not intended to be fully representative of practitioners in the institution but were identified from four broad groups of staff within the institution identified for this research:-

- **Newbies** (Angela, Beverley, Carl, Gurmit, Ian, Korin, Linda, Ruth) – this group consists of new lecturers who (with the exception of Angela and Gurmit) were required to undertake the institution's Academic Practice award as part of their probation requirements. This meant that as a group they were subject to a structured introduction to pedagogy (with a constructivist flavour) and introduced to the potential of e-learning whilst embarking on their first significant teaching in HE. With the exception of three entering teaching after working outside HE (Angela, Gurmit, Ian), the Newbies were under 35. Most Newbies engaged in further training on the concepts they had been introduced to – particularly e-learning;
- **Enthusiastic support** (Duncan, Frances, Heather) – this group consists of support staff who engaged enthusiastically with professional development (particularly on e-learning but also on broader pedagogic issues). In general this was because it supported their training work with academics both directly (by enhancing delivery) and indirectly (by enabling them to empathise with the pedagogic demands on academics).

Although not an integral part of his role, Duncan also undertook teaching postgraduate students and engaged with the Academic Practice award;

- **Established practitioners** (Edward, Nevin, Olivia, Sheetal) – this group were more established in the institution in terms of both experience and age. Their degree of enthusiasm for professional development in the areas of pedagogy and e-learning varied significantly. Edward shared the enthusiasm of many of the ‘Newbies’ group for such developments, whilst others recognised them as areas necessary for their careers (and students) or were required by their departmental managers. Edward could also be counted as part of the ‘Pedagogic managers’ group although he did not have specific line management responsibility for any staff; and
- **Pedagogic managers** (James, Maurice, Pritesh) – this group had line and strategic management responsibilities for significant areas of the institution. They all recognised that this included responsibility for pedagogic and e-learning development of their staff. Both Maurice and Pritesh were particularly enthusiastic about the potential for e-learning developments in their areas. James recognised the potential but had a number of pragmatic concerns – particularly on resource issues - that meant he opted for a cautious approach to implementation. In Maurice’s case the responsibilities were cross-institution.

(see Dataset 7.1)

Table 4.1: Interviewees by gender and role

	Gender		Lecturer		Manager	Administrator	
	Male	Female	Full-time	Part-time	Head of Department or above	Department	Central Administration
Number of interviewees	9	9	11	1	3	1	2

(see Dataset 7.1)

4.3. Issues

The themes influencing e-learning innovation were derived from the unstructured coding of data gathered in interviews conducted for this study. Much of the data was gathered through a mind-mapping exercise undertaken at the start of the interviews. The following emergent themes were identified that had a direct influence on practitioners and their students:-

- **Technology** – the tools used by practitioners and their students;
- **Pedagogic development** – the learning and teaching issues identified by practitioners;
- **Assessment** – both formative (i.e. promoting learning) and summative (i.e. contributing to overall grades) assessments conducted through (or influenced by) the Activities; and
- **Student feedback and support** – the feedback from students referred to and the student support needs identified by practitioners.

(see Dataset 7.2)

Having identified the themes, a distinction was then made between aspects regarded by the practitioner as positive and those that were concerns. This enabled the study to focus on the specific issues influencing e-learning innovation (see Dataset 7.2). The instructions for the mind-mapping exercise guided the participants to make this distinction (see Dataset 7.9). For data gathered in the interviews the distinction was made as part of the coding process. As in all subsequent chapters, the quotations are derived from the semi-structured portion of the interviews unless otherwise stated.

4.4. Technology

Summary

The issues identified from the data regarding technology centred on confidence of practitioners and students with it. Distinct issues emerged in terms of:-

- **Confidence with technology** – the degree of comfort that practitioners have in their skills (and those of their students) to engage with the technology being considered;
- **Confidence in technology** – the degree of confidence of practitioners that the technology would be able to deliver what was expected; and
- **Confidence with the learning tool** – the degree of confidence with the learning tool that the technology enables them to create.

The total number of references to technology was relatively high with 408 text units. It was referred to by the highest number of interviewees of all the issues, with 16 of the 18 referring to it. The references were strongly negative, with

83.3% of the sub-coded units coded negative. The former were drawn from the transcripts of 13 interviews whilst the latter were referred to in 10 (see Dataset 7.2).

4.4.1. Confidence with technology

There was widespread recognition that undergraduates were already proficient and feel at home with the use of ICT (Edward and Maurice). In addition to e-mails and discussion boards they, "...use mobile phones and texting each other a huge amount – much more than I ever text my friends and colleagues!" (Edward). As a result it was, "... hardly necessary", to produce guidance for students on how to use VLE features (Maurice, Activity 42: Appendix 3), although there was concern that some Masters-level students were not used to reading substantial quantities of data on screen (James: mind-map). Whilst, "... for 18 to 21 year olds e-learning may be a preferred learning option", there was some doubt whether this would be the case for, "... a Chief Executive ... towards the end of their career, (*who's*) not really got that much experience ... beyond e-mail" (James).

Other distance learning practitioners felt that their students should have access to the Internet (Ian, Korin, Nevin, Sheetal). Indeed Frances and Heather created innovations which used e-learning to reduce the need for professionals to participate in face-to-face training. Few doubted that, "... (*lecturers*) perception ... of our use of technology versus (*students*) is actually quite different" (Edward).

4.4.2. Confidence in technology

Communicative tools used included asynchronous podcasting (Maurice, Sheetal) and synchronous video conferencing for online meetings with researchers in 10 locations and managing research projects (Frances, Activity 19 and Olivia, Activity 51: Appendix 3). Campus-based students were noticed, "... sitting down and watching videos, often in groups" (Maurice).

For campus-based undergraduates, evidence of access as a barrier is limited with over 75% of new students having web access through personal ICT equipment whilst at University (Ipsos MORI 2008). Even enthusiastic e-learning users recognised that, "... computers can let us down" (Pritesh) which presented particular problems if it affected the face-to-face launch of distance learning courses, "... because if we lose (*the opportunity for engagement with e-learning*) there, it's virtually impossible to get it back again" (Ian).

Concerns regarding a 'digital divide' were rapidly declining due to 24 hour web access on-campus and improved access for distance learning students. For example, Nevin felt able to require Internet access for a Distance Learning course with many students in 'less-developed' countries from 2007 (Nevin, Activity 46: Appendix 3). Some practitioners reported, "little glitches" (James: mind-map), in delivery of online resources (James, Ruth: mind-maps).

Technical barriers encountered by Sheetal in using campus-based equipment when creating online resources meant he resorted to, "... buying a decent computer and doing it at home" (Sheetal). This resulted from this practitioner's frustration in the obstacles – both technical and support - to installing the elements required to make a podcast which were not easily accessible within

the institution. The limited availability of ICT support - Monday to Friday, 9am to 5pm UK time - was an issue for distance learning departments (James: mind-map). One practitioner questioned whether the VLE offered anything fundamentally different or, “Are we simply transferring something we do already on to (*the VLE*) for the sake of it?” (James).

4.4.3. Confidence with the learning tool

As will be explored below (see 8.2.2 ‘Communicative media’, p.282), effective uses were made of discussion boards engaging students (Angela, Duncan, Gurmit, Korin, Maurice, Pritesh, Ruth) and staff (Heather) in collaborative Activities (see Appendix 4). This significantly improved the administration of a research ethics committee whilst the use of discussion boards failed to promote online discussion amongst staff regarding a key administrative function (Heather, Activities 25 and 27 respectively: Appendix 3). Such frustrations with less structured uses of discussion boards led some practitioners to seek alternative uses of the technology as a learning tool (Duncan, Edward, Ian).

Wikis generated significant interest (Edward, Gurmit, Sheetal), although at the time of the interviews (2006/7) only one practitioner had completed an Activity using Wikis with a student group (Pritesh, Activity 56: Appendix 3). This successful use of a standalone Wiki involved the practitioner being taken down the path of the innovator. When interviewed three months after implementing the innovation he was clear that, “I can’t remember for the life of me how that was incorporated” (Pritesh, Activity 56: Appendix 3). Much of the interest indicated above was generated by the integration of a third-party Wiki as part of the VLE. Such transparency generated considerable interest among

participants in the institution's Academic Practice award reflecting the greater transparency – or lower perceived technical barriers – of the VLE-related product. Planned uses of the Wiki included sharing information to support fieldtrips (Edward, Activity 15: Appendix 3) and creating a glossary of discipline-specific terms and sources as part of an assessment (Gurmit, Activity 24: Appendix 3).

Sheetal felt strongly that if he, "... synchronised interaction with distance learners, in all parts of the world ... (*it*) would take up too much of my time". Concerns regarding the difficulty for some students in, "... changing from traditional modes of communication" (Nevin: mind-map), were more widespread with some practitioners commenting negatively on how they would react to such technology as learners (Duncan, Korin, Nevin: mind-maps). Nevin's concerns were possible factors in her having signed up for, but not completed, a number of online courses.

Possible negative reactions from students were anticipated because, "(*Students*) say to us, 'We come to University to talk to you guys actually!'" (Edward). Potential barriers for distance learning students were identified as, "... partly cultural and partly about business sensitivities" (James). The former refers to the reluctance of some cultures to divulge information whilst the latter refers to the confidential nature of work based on real business situations.

In some instances, limited student engagement challenged practitioners', "...confidence in the media" (Duncan: mind-map). Much of Duncan's work was informed by Salmon's model (Salmon 2004) which he described as, "... the kind of perspective that I'm very attracted to" (Duncan: mind-map). Although he felt

that, "... blends of it work reasonably well but ... I don't feel that I've really made that work in a pure form" (Duncan: mind-map). One practitioner pondered the difference between gaming and learning technology (Ian), pointing to the potential for immersive environments, such as Second Life, to open up games or simulations to more mainstream uses.

Conclusions

Some practitioners explicitly referred to the technology as a motivating factor for innovation (Duncan, Edward, Pritesh, Ruth: mind-maps) that could be, "... positive, both for myself and ... the students" (Pritesh: mind-map). For some, replicating the technology that students would use in the workplace was a specific motivating factor (Edward, Activity 15 and Maurice, Activity 42: Appendix 3).

The contrast between the confidence with ICT of campus-based students and that of their lecturers was widely recognised. There were concerns, however, that older distance learning students might not have such confidence.

Concerns that the technology would not be accessible proved largely unfounded although the institution's support arrangements remained an issue. Confidence in collaborative learning showed the greatest diversity of opinion of any of the issues discussed with some practitioners feeling it represented the key to transformation whilst for others it was both impractical and undesirable (see 4.6.3 'Collaborative assessment', p.161 and 8 'Findings: Examples of uses of student-focussed media', p.280).

4.5. Pedagogic development

Summary

The issues identified from the data focussed on aspects of the transformation envisaged in the learning approaches of students. These were categorised as:-

- **Independence** – encouraging students to develop as autonomous learners;
- **Relevance** – ranging from meeting the needs of the strategic learners, engaging students' interest through real world content and relating the course to what students will do in the world of work;
- **Paradigm shift** – moving from content delivery to collaboration and problem solving; and
- **Pedagogic restrictions** – whilst interviewees were overwhelmingly positive about the potential of e-learning to support the changes listed above, a minority expressed concerns about the pedagogical implications of using the medium.

Pedagogic development was the most widely coded issue with 509 text units which was referred to by 15 of the 18 interviewees. The references were strongly positive, with 70.1% of the sub-coded units coded positive, with such references in 14 interviews and negative references in 9 (see Dataset 7.2).

4.5.1. Independence

One of the key advantages identified for e-learning was its flexibility, "... creating autonomous learning, they can do ... anytime or anywhere. The (*students*

benefit because) they are not dependant on us in the classroom” (Ruth, Activity 6: mind-map). As noted below (see 8.2.2 Communicative media, p.282), this involved a, “... shift for (*students*) taking responsibility in doing something ... outside (*assessment*)” (Olivia: mind-map). Students taking greater responsibility for their learning (see 4.7.2 Structured engagement, p.167) was seen as a fundamental pedagogic change enabled by e-learning (Angela, Duncan, Maurice).

E-learning went beyond meeting institutional obligations to disabled students, enabling all students to revisit content and check their understanding. The opportunity for self-assessment of progress provided students with the chance to evaluate their understanding without waiting for direct feedback from the lecturer. For practitioners, this enabled them to monitor the progress of students and to be clear whether they understood the content delivered (Beverley, Carl, Maurice, Pritesh, Ruth).

Whilst many students, “... like to share the data they’re working on and they’ll communicate with each other”, a significant minority were reluctant, “... to get involved in some sort of discussion forum, particularly one that (*their lecturer*) can see” (Edward). For staff, such concerns were more than outweighed by the substantial reductions in travelling time and the increases in collaboration this enabled (Frances).

4.5.2. Relevance

Flexibility of delivery provided by e-learning ensured students could, “...access (*information*) at their pace, (*and*) it’ll fit in with their style of learning”, avoiding the risk of being, “... overwhelmed with information”, particularly during induction

(Frances). A number of practitioners felt e-learning enabled them to draw on the experiences of mature, distance learning students. Some also felt that discussion boards offered a more reflective space overcoming the reticence of campus-based students to collaborate (Duncan, Pritesh).

Podcasting enabled practitioners to deliver greater information and advice that was both topical and relevant to student needs. In addition to providing narrative content with, "... a sort of general interest, newsy item", students were told, "... what they should've done and what they're supposed to be doing in the following week", responding to student feedback (Maurice, Activities 42 and 44: Appendix 3). Over time Maurice noticed that students made greater use in their assessments of the content addressed in the podcasts.

Two practitioners (Nevin, Sheetal) were particularly critical of the social constructivist approaches, emphasising the need for narrative input as a basis for student critique because, "You've got to have an understanding of what other people have done first and what the discipline is about" (Sheetal).

Sheetal did, however, see collaboration as, "... a real world (*necessity because*) ... because we don't see the mistakes in our own (*work*)" (Sheetal, Activity 62: Appendix 3). The need for relevance can lead practitioners to look beyond the constraints of course and cohorts, "... with a view to creating a community between ... groups whilst keeping them distinct" (Nevin, Activity 47: Appendix 3).

4.5.3. Paradigm shift

A key element of the transformation at the heart of this thesis is to change, "...the way we traditionally teach" (Edward). A shift from content-delivery to

problem-solving is fundamental to the constructivist paradigm. For practitioners working with distance learning students the use of e-learning enabled them to:-

- Deliver content to students in an alternative way to the 'traditional' readings, texts and workbooks; and/or
- Engage students in collaborative activities that had not previously been possible.

Whilst for one practitioner, reducing contact time was a motivating factor for innovation (Carl, Activity 8: mind-map), most saw innovation as enabling them to:-

- Refocus their face-to-face time on pedagogically more satisfying activities that encourage deeper learning; and/or
- Enable them to continue student engagement beyond face-to-face time.

Whatever the mode of delivery, practitioners valued the ability to provide a more structured student experience. Working more consistently meant that students, "...cannot leave everything until the last minute ... (*and they*) have to keep revising, keep studying every week" (Ruth, Activity 6: Appendix 3). Practitioner workload remained manageable because their time was concentrated on monitoring (rather than marking) the continuously assessed work. This did mean, however, that practitioners had, "... to be more structured and often ... more precise" (Ruth).

Some welcomed the opportunity to focus on course design provided by the intensive course design workshop (Edward), enabling (or even forcing) the course team, "... to go back to the starting point ... and think, 'Why did we do that?'" (Ian). The examples of Activity Systems below demonstrate the significant curriculum changes this can result in (see Chapters 7 and 8).

4.5.4. Pedagogic restrictions

Preferred learning styles were widely recognised as important in pedagogic development both in terms of student and practitioner preferences. One practitioner rejected:-

... interactive, clickable tutorials ... (*because*) they don't fit with my learning style very well. (*Since*) I personally don't enjoy doing them that much ... it tends to lead to a lack of enthusiasm to create those kinds of things. (Duncan)

Increasingly research suggests that preferred learning styles are modifiable (Coffield, Moseley et al. 2004), strongly influenced by the individual's learning experience. The fact that none of the practitioners had experienced e-learning prior to their IPD or CPD suggests this represents a significant obstacle to the adoption of such innovations.

Even the most experienced users of, and enthusiasts for, e-learning recognised a number of advantages of face-to-face delivery and recognised personal preferences for such approaches. Despite such concerns, they remained committed to experimenting with e-learning because, "... when it does work it's really interesting in terms of results" (Duncan). Examples of innovations had been motivated by concerns with the nature of face-to-face delivery caused by

both course resources and other demands on their time (Duncan, Activity System 4; Maurice, Activity System 2).

The institution's delivery of distance learning was almost completely separate from delivery of campus-based courses, with separate course teams in many instances. There was increasing awareness, however, among interviewees of the potential links between different modes of delivery because, "... what we're doing now (*for distance learning*) is having a huge impact on what we do on the taught course" (Ian, Activity 28: Appendix 3). One practitioner emphasised that he did not regard e-learning as an alternative pedagogy removing face-to-face contact because, "... I wouldn't want that anyway, but I felt that we got something (*with e-learning*) that ... actually worked first time" (Edward).

Innovation based on an existing course could prove problematic, "... because everything's already in place and it just gets up-dated. There's never any time or resources for a thorough review" (Korin). The pedagogy underpinning traditional delivery modes can act, "... almost like a magnet ... trying to pull you back to the (*original*) taught course all the time" (Ian). It was only when such restrictions were considered that the potential of e-learning was realised, resulting in delivery that, "... changed dramatically" (Ian).

Conclusions

For one practitioner heavily involved in distance learning it was an issue that, "...within the University that we talk about pedagogy but we don't talk about andragogy ... which is the theory of adult learning" (James). The assumptions underpinning Knowles' concept of andragogy reflect the pedagogic issues raised by the practitioners interviewed – independence (self-direction and

experience); relevance (need for relevance) and paradigm shift (problem orientation). These include that, “as a person matures”, they develop:-

- **Self-direction** – Their, “self-concept moves from one of being a dependent personality towards one of being a self-directing human being”. In this study various uses of e-learning both provided flexibility for students work in the short-term whilst structuring their engagement for the duration of the module. Although some examples provided elements of self-direction (particularly in terms of assessment) throughout a module, constraints remained in terms of the learning outcomes, assessment frameworks and practitioner input;
- **Experience** - Students accumulated, “a growing reservoir of experience that becomes an increasing resource for learning”. There was some reluctance, particularly among distance learning practitioners, to draw extensively on students’ experience. Although the potential was recognised, concerns were expressed regarding the confidentiality of such students’ work;
- **Need for relevance** - Students’, “... readiness to learn becomes oriented increasingly to the developmental tasks of (*their*) social roles”. Activities were identified where practitioners had used e-learning with greater relevance to the students’ learning and wider roles; and
- **Problem orientation** - Students’, “... time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly (*their*) orientation toward learning shifts from one of subject-centredness to one of problem-centredness”. A number of practitioners

identified, and some implemented, Activities which shifted learning from applying the teachers input in order to produce abstract essays to the students applying it to real-world problems or their own context.

(Knowles 1983:55)

Many lecturers in HE would question the extent of the difference between andragogy and the pedagogy the sector aspires to. Among the other pedagogic issues recognised was the persistence of traditional forms of teaching. The potential of e-learning to enable a range of learning approaches to be accommodated and developed was also recognised.

4.6. Assessment

Summary

The issues identified from the data concerned alternative forms of assessment including:-

- **Objective tests** – various question formats (including multiple choice questions) which have a clearly defined answer;
- **Subjective tests** – formats for which evaluation of the answers given involves value judgements;
- **Collaborative assessment** – group work was used by a number of practitioners to assess both content knowledge and transferable skills; and
- **Plagiarism detection and avoidance** – at the time of the interviews (2006/7) practitioners made limited use of the Turnitin UK software

(initially provided through JISC) but were increasingly aware of the need to address plagiarism.

Assessment was the second most widely coded issue with 488 text units. This was not, however, an area where it was possible to readily sub-code the issue as either positive or negative (see Dataset 7.2).

4.6.1. Objective tests

A number of practitioners used objective tests or multiple-choice questions (MCQs) for both formative and summative assessment (Beverley, Carl, Maurice, Ruth, Sheetal) (see Dataset 7.3). One practitioner in particular felt that running such assessments for summative purposes, "... was a bit of a logistic nightmare" (Carl, Activity 9: mind-map) due to problems such as:-

- **Lack of facilities** - "We do not have a suite in which students can be prevented from communicating with one another and cheating by talking online" (Carl: mind-map);
- **Invigilation** – "We do not have arrangements for invigilation and so I had to get post-grads in" (Carl: mind-map);
- **Problems during assessment** – "While I was busy sorting out the little gremlins on the VLE environment there was only one invigilator monitoring what else was happening in that room" (Carl: mind-map);
- **Guessing** – when using multiple-choice questions with three or four distractors the students have a 20% or 25% chance (respectively) to, "...get it right by a fluke" (Maurice, Activity 42: Appendix 3).

A particular attraction was the potential of online objective tests to, "... reduce our marking load a little bit" (Nevin, Activity 50: Appendix 3) although this was not always fully realised because, "... automatic marking doesn't lend itself 100% to marking ... scripts (*in the discipline*)" (Carl: mind-map). In one instance the cohort's average, "... came up a little bit higher than the previous year average ... (*as a result of*) a 'tail-lifting' of the 30 or 40% students", which the practitioner attributed to the repetition of the format in three tests (Carl, Activity 9: Appendix 3). In this case the scores of the most able students were, "... generally lower than the equivalent cohort a year before". This led the practitioner to question the value of such assessments as summative tests because, "Regurgitating acquired material may not be the best testing of the ability (*in this discipline*) in terms of knowledge" (Carl). Concerns regarding students guessing the correct answer, were addressed by using, "... a fairly large number of distractors in the summative (*assessment*) ... typically ... 12 or 16 so they're not going to be able to guess very easily" (Maurice, Activity 42: Appendix 3).

Those practitioners persevering with online assessment saw advantages both in terms of marking time saved and the quantity and timeliness of feedback to students. As one practitioner noted:-

It has saved us ... a lot of time ... and probably students ... (*are getting quicker*) feedback. They don't have to wait until the next semester (*for it*) (Ruth: mind-map).

4.6.2. Subjective tests

As noted below (see 5.4 'Staff motivation and support', p.187), the opportunity to introduce alternative assessment methods was viewed as a significant

advantage of introducing e-learning. The use of essays for summative assessment may be the default option in UK HE, “but it’s not necessarily the best way of assessing a student” (Korin). Among the possible alternatives identified to essays were reports, e-portfolios, group work, presentations, Wikis and seminar performance. The motivator for such change is, “... that students would be encouraged to actually engage with what they’re doing (*on the course*)” (Korin).

Concerns of “glitches” with the VLE – and particularly with online submission – inhibited its use by some (James: mind-map). For example, one course team deferred implementation of an e-tivity-based assessment because whilst one VLE element enabled students to discuss the development of their work, another had to be used for submission, preventing the, “seamless submission” they sought (James, Activity 36: Appendix 3). Whilst one practitioner marked online, the reluctance of most practitioners to do so was emphasised by an internal report (2008) concluding that practitioners and/or the technology were not yet ready for widespread online marking.

The more even student workload identified below (see 4.7.3 Impact on workload, p.170) seems to be replicated in assessment. One practitioner, delivering a largely online course for campus-based students, noted, “I do get one or two moans from other lecturers who say that when my assignments are due, (*the students*) don’t do much else” (Maurice, Activity 42: Appendix 3).

4.6.3. Collaborative assessment

One area of assessment enabled by collaborative media was group work, although a number of concerns were expressed by practitioners embarking on such assessment including:-

- **Evaluation** – although the output could be considered in much the same way as individual work, there was concern about how to assess the less tangible transferable skills involved in the group work process;
- **Differentiation** – opinions were divided over whether differential grades should be awarded. Whilst there was difficulty in recognising the differing contributions of group members, it was perceived as unfair that for all to receive the same grade regardless of input;
- **Group failure** – the possibility that groups may not ‘gel’ resulting in the practitioner having to become involved in substantial remedial work; and
- **‘Free loading’ or individual opt-out** – consideration needed to be given to how to deal with individual group members who chose not to participate. Ian suggested that this problem was exacerbated in a distance learning context.

Such concerns led to group work being replaced by individual assessment in adapting an existing part-time course for online delivery (Ian). Another innovation for campus-based students replaced two essays with group work, resulting in a significant reduction in marking volume whilst enabling the course team, “... to assess things that we couldn’t assess through essays” (Duncan,

Activity 14: Appendix 3). In addition to a wide range of transferable skills, there was greater depth of coverage of the research methods in this group exploration.

In the one instance of apparent free-loading identified by Maurice, "... it was quite clear (*other group members*) weren't going to give people credit for not doing anything" (Maurice, Activity 42: Appendix 3). At the time of writing (December 2010), tools were being developed to reduce the administrative burden of such peer- and self-assessment including University of Dundee's tool integrated in Blackboard VLE v9.0 and Loughborough University's WebPA. These provide a means, "... to peer assess group work, (*enabling practitioners to allocate*) each student ... an adjusted mark" (Loughborough University 2009). Such tools provide anonymity and calculate the marks, addressing concerns regarding, "... the complexity of the maths you ended up with" (Duncan). Approaches leading to differential grades for individual participants in such assessment included:-

- **Report content** - they were required to indicate in their report, "... who was responsible for which bit and how they actually put it together" (Maurice);
- **Discussion boards** – "... where they'd used discussion boards a lot it was clear who hadn't contributed very much and who had" (Maurice); and
- **Anonymous survey** – participants were asked to rate themselves and other group members on a scale, "... no work; did less; did very little; less

than average; average; more than average; a great deal ... (T)hen they could add free text comment at the end.” (Maurice)

Whilst Maurice only used such evidence to refer or fail a student who had made no contribution to the group effort, such approaches could also provide sufficient data to provide reliable differential grades.

Other approaches included the requirement of an online “group log” on a discussion board that provided an audit trail of individual engagement with the group project (Duncan). Duncan used the information provided to, “... give them a little prod (*based on their progress*) ... and that’s quite useful because that’s invisible otherwise without a lot of questioning” (Duncan). Ruth used similar approaches to generate feedback whilst monitoring individual interactions with online resources (Ruth, Activity 6: Appendix 3).

4.6.4. *Plagiarism detection and avoidance*

Submission of work was increasingly being dealt with electronically using either the built-in feature of the institution’s VLE or the Turnitin UK plagiarism detection software available in many UK HE institutions (December 2010). In a number of cases, however, the inertia of existing assessment administration procedures meant that some established courses had not implemented it at the time of the interviews (2006/7).

One barrier to adopting plagiarism detection was that it forces academic departments to have systematic approaches to both dealing with and preventing plagiarism. Colleagues within departments, “... have different attitudes towards how to deal with plagiarism”, causing delays whilst the course team address

these long standing (but hidden) differences in approach (Linda). Further obstacles included agreements with international agents involving collection of assignments and the workload involved where plagiarism was detected (Linda).

Conclusions

A significant minority of practitioners expressed a desire to move beyond essays (whether as course work or under examination conditions) which they felt had a number of flaws as a means of assessing deeper learning. The key advantage perceived of the various alternatives identified was an element of continuous assessment, encouraging student engagement with the content and developing transferable skills.

Provided the link to summative assessed work was clear, practitioners found that students would participate in formative assessment. Using objective tests as a form of self-assessment helped ensure timely feedback without imposing substantial workload demands on practitioners. This assisted with the pacing of students' engagement with the module content (see 4.7.2 'Structured engagement', p.167). Using objective tests for 'high stakes' summative assessments presented a number of logistical problems although these were not insurmountable. Objective tests were used to check the range of understanding of students, whilst other summative assessments focussed on assessing deeper understanding.

Collaborative assessment was widely seen as an approach which encouraged engagement with the module content and developed transferable skills.

Differential grades were also increasingly being used, addressing some of the concerns regarding collaborative assessment. All the instances of assessed

group work reported were for campus-based modules. Student workload and the need for flexibility of engagement were cited as reasons for not introducing group work for distance learning courses. At the time of the interviews (2007) there was growing awareness of plagiarism as an important issue and increased take-up of the institution's preferred online detection tool.

4.7. Student feedback and support

Summary

The issues identified from the data concerned a number of aspects of student engagement with the medium including:-

- **Access and accessibility** – whether (and when) students are able to access content and whether it provides the 'reasonable adjustments' required by law to support disabled students;
- **Structured engagement** – moving feedback and support beyond the passive provision of content; and
- **Impact on workload** – implications of such changes for overall student (and staff) workload.

Student feedback and support was another widely coded area with 435 text units referred to by 15 of the 18 interviewees. The majority of references were positive with 66.2% of the sub-coded units. The number of interviewees making such references was more evenly spread with 10 interviewees making positive comments and 10 negative (see Dataset 7.2).

4.7.1. Access and accessibility

The production of online learning materials provided flexibility in terms of delivery with students able to begin and continue interaction with the resources at a time of their choosing. Attitudes differed to providing materials online from lectures and seminars such as handouts and problem solutions. For some these provided, "... a tangible record of what was said", both for revision purposes and the realistic expectation of less than 100% student attendance (Edward: mind-map). Others were, "... quite cynical about putting everything on-line", as it encouraged non-attendance at lectures (Linda). Such attitudes were held by practitioners with broadly constructivist and associationist approaches respectively.

Distance learning students were regarded as, "... still quite keen ... to have paper-based stuff to take away with them", whilst campus-based students increasingly expected materials to be available through the VLE (Linda). Whilst, "... on a good day you hope (*a lecture inspires*) and on a bad day they walk away thinking, 'What on earth was that about?' and rapidly forget it" (Edward: mind-map). Some expressed concerns that text-based online documents were, "... quite static and not particularly interesting" (Heather), neither engaging participants nor taking advantage of the features of the technology (Edward, Heather).

Some practitioners felt students were, "... slightly overwhelmed with the amount of material that was available for them" (Edward, Activity 15: Appendix 3). Edward felt, however, "... by that stage they ought to be sitting down and doing

the reading”. Linda noted, “... we know (*students*) don’t read what we send them”, for their distance learning course.

As noted above (4.4.2 ‘Confidence in technology’, p.146), residual concerns regarding a digital divide were increasingly addressed. Even for students in ‘less-developed’ countries, the only significant concerns were of intermittent access for those engaged in development, disaster relief and military roles (Korin, Activity 35: Appendix 3). Concerns regarding the difficulty for some students in, “... changing from traditional modes of communication”, were more widespread, although the practitioner who most emphasised this point included, “... one to one e-mail” in such ‘traditional modes’ (Nevin: mind-map). Such concerns were attributed to students’, “... almost psychological reluctance to change” (Nevin: mind-map).

One widely perceived advantage of e-learning innovation is that it enables institutions to make ‘reasonable adjustments’ required by UK law to meet the needs of students with disabilities. Providing electronic versions of handouts, for example, enables students with dyslexia who need specific fonts or colour combinations to amend the documents to meet their own needs. One practitioner did find, however, that a dyslexic student achieved lower than expected grades in an objective test format and intended to research this further (Carl, Activity 8: Appendix 3).

4.7.2. Structured engagement

The potential to go beyond e-learning as a repository for resources was widely recognised due to the opportunity, “... to design routes to send (*students*) off in different directions in which to learn and explore the subject” (Edward: mind-

map). The degree of structuring of these “learning paths” varied from lecturer determined routes through the content to providing a framework to, “... go and explore” (Edward: mind-map).

The medium enabled practitioners to address, “... spatial and temporal issues with our students”, particularly for international distance learning students (James: mind-map). Practitioners recognised the importance of modelling the academic practice they wish to encourage from the outset. Engagement rapidly declined, however, where this was not maintained beyond induction (Linda, Activities 39 and 40: Appendix 3). There was limited success with unstructured attempts to engage such as providing a virtual space, “... to get the students to discuss (*contentious*) issues amongst themselves” (Olivia: mind-map).

Whatever the type of media used, Laurillard suggests using ICT is particularly appropriate for, “aspects of (*any*) discipline that are traditionally difficult for students” (Laurillard 2002). This study identified at least one Activity from each interviewee where such difficulties were a motivating factor in e-learning innovations. Maurice achieved a substantial reduction in the high referral rate of a science discipline module – initially over 25% in each of the three years before the change to only one re-sit in three subsequent iterations (Maurice, Activity 42: Appendix 3). He suggested that:-

... the success of the course is not so much ... the e-learning nature of it, I think it's the fact that the students are paced quite carefully through the course ... Now in a standard lecture environment, that doesn't necessarily happen. (Maurice, Activity 42: Appendix 3)

Although sharing the widespread perception that students would not participate in non-assessed activities, Pritesh was surprised to find that his pilot group responded much more enthusiastically to such activities online compared with paper-based activities on other modules (Pritesh, Activity 56: Appendix 3). This suggested it had, "... something to do with the medium", although he also recognised that the extent of structuring such interactions was crucial (Pritesh) (see 8.2.2 'Communicative media', p.282). Reflecting the findings of CLEX (see 1.4.3 'Student expectations', p.14), the apparent student reluctance to engage with unstructured online resources was attributed to, "... student culture ... (*where they*) don't seem to be really engaging with it as a learning tool" (Olivia: mind-map). This was supported by the limited online engagement of campus-based students in a number of less-structured Activities (Nevin, Olivia, Sheetal). In the context of campus-based undergraduates, whilst most, "... like to share the data they're working on and they'll communicate with each other", a significant minority were initially, "... a little reluctant ... to get involved in some sort of discussion forum, particularly one that I can see as a member of staff" (Edward).

Engagement was seen as a means of enhancing student retention for all courses with e-learning being explored as a means of supporting students. For distance-learning students at risk of deferring, or even non-completion, developing online communities and alternative assessments to the default essay were considered as options (James, Korin, Linda). With student numbers in certain distance learning markets declining, e-learning was also seen as a means of maintaining student engagement without expensive tutor visits (James, Activity 33: Appendix 3). Whatever the mode of attendance, students

benefitted from online support in problematic areas such as developing research methods and dissertation proposals (James, Activity 32: Appendix 3). Options explored to address this included student engagement with tutors and peers (James and Duncan respectively).

A further factor in embracing e-learning innovation was that, "... students enjoy it", (Maurice), something confirmed by Linda's work with distance learning students. One aspect of group work identified by some users was the way in which it was possible to mirror what students could expect in the workplace (Edward, Activity 15: Appendix 3). In one course this involved peer support whilst on placement (Angela, Activity 4: Appendix 3) while others (Duncan, Edward, Gurmit, Maurice) used assessed group work to give the opportunity to work with, "...different individuals doing different tasks and communicating to produce the final report as a team" (Edward, Activity 15: Appendix 3). Further experimentation was planned by Pritesh in ways students could share their feelings on a topic (e.g. by voting on it) in order to encourage, "... them to be a bit more reflective about what they're doing" (Maurice).

4.7.3. *Impact on workload*

Whilst, "(Students) might think they're working ... quite hard ... for a particular module ... in fact that's what they're supposed to be doing" (Maurice, Activity 42: Appendix 3). Feedback for a module with a significant online element indicated between 6 and 12 hours work per week outside contact hours, matching the department's expectation (although exceeding the norm for its modules) (Edward).

There was a concern that for part-time students there was a reluctance to engage with e-learning because of work and family commitments beyond their course (Linda). Such students were considered strategic learners, predominantly, "... interested in learning what they need to know to pass the course" (Linda), with e-learning seen as an 'optional extra' (James, Korin, Linda). It was also recognised that this could be attributed to the limited engagement of many distance learning course teams' with e-learning (James, Korin, Linda). A further concern was that such Activities might not engage distance learners because, "... they're doing distance learning because they want the freedom and they want flexibility" (Sheetal). A counter point was that through 'pacing' the workload, e-learning, "... might be more suitable for somebody who's got regular working commitments" (Gurmit). The general view was that the benefits of introducing 'pacing' outweighed the potential workload problems for students.

Both student support and staff development in HE has been influenced by various writers on the emergence of a "knowledge economy" (after Drucker) including the expectation that workers become skilled in problem solving, collaboration and learning (Dearing 1997). The increasing flexibility required of HE staff makes it more difficult for them to be released for traditional courses that require long term engagement with a topic or area. Emphasis in training has increasingly been placed on short-courses or courses where both engagement and assessment are flexible, fitting well with their other workplace commitments. The impact of e-learning on staff workload is explored below in relation to the creation and management of innovations (see 5.3 'Resources', p.180).

Conclusions

Where engagement was largely unstructured, practitioners questioned the willingness and commitment of students to be involved, leading some to abandon such Activities. Those who structured the content effectively observed significant improvements in both engagement and success rates. Perhaps surprisingly the instances of such apparent transformation were largely restricted to face-to-face courses with many distance learning practitioners questioning the capacity (both of the technology and course teams) to deliver such change. Some practitioners also identified the capacity of e-learning to replicate what their students would encounter in the world of work, providing the opportunity to develop key transferable skills.

Where such pacing of engagement was built in to a course, students spent more time engaging with the course materials. Although identified by a number of practitioners, two had explored this phenomenon in detail through course evaluation questionnaires (see 4.7.1 'Access and accessibility', p.166). The total time spent by students engaging with structured e-learning proved to be equal to the expectation of the course team as detailed in the course handbooks. For more 'traditional' modules the total time spent was rather less than the course team's expectation.

4.8. Conclusions on broad influences on e-learning innovation

The technology itself featured among the motivating factors for engaging in innovation with access (even in less-developed countries) not widely regarded as a barrier (see Dataset 7.2). Practitioners recognised they could not match

their students' competence and confidence in using technology. This deficit was particularly significant in the use of collaborative technologies.

A majority of those interviewed had the perception that learning and teaching in the sector needed to be transformed. Relatively few were comfortable discussing this change in pedagogic terms although it was evident that many potentially transformative practices were being explored. A minority of practitioners fully embraced the engagement of students - through self-direction, drawing deeply on their experience, establishing relevance and giving courses a problem orientation. Nevertheless, a majority demonstrated elements of these concepts in their innovations (see Appendix 4). As noted above, the most significant divide in practice concerned collaborative practice with only a minority of practitioners engaging in it.

Practitioners seemed most comfortable focussing on assessment as a means of achieving transformation with e-learning using two broad approaches. First, objective assessments were used both formatively (guiding students' engagement with content), and summatively (producing a significant reduction in marking time). Both this study and the literature suggest increases in time for assessment design at least in part balances such savings. Second, the form of subjective assessment that seemed to have the greatest impact was group work with e-learning overcoming many of the traditional concerns regarding such assessments.

The notion of pacing student engagement was widely referred to along with the resultant higher levels of engagement. This appeared to motivate students to spend more time engaging with the course materials than on more 'traditional'

modules because their work was more transparent to their lecturers. It is for other research to establish whether this phenomenon is one that would persist if all modules adopted similar approaches. This effect did, however, prompt many practitioners to seek to identify the most effective means of structuring such engagement in their courses.

5. Findings: Institutional influences on e-learning innovations

5.1. Introduction

This chapter explores the broad institutional issues influencing e-learning innovation. The following emergent themes were identified as institutional issues that had an indirect influence on practitioners and their students:-

- **Organisational imperatives** – the institution’s needs and requirements as perceived by practitioners;
- **Resources** – the resources (including their own time) available to or needed by practitioners; and
- **Staff motivation and support** – the factors influencing practitioners’ willingness to engage with e-learning innovations and the support available to (or needed by) them.

As noted above (4.3 ‘Issues’, p.143), these themes were identified as a result of the unstructured coding of data from both mind-mapping exercises and interviews (see Dataset 7.2).

5.2. Organisational imperatives

Summary

The issues identified from the data focussed on a number of broad institutional agendas:-

- **Student-centred learning** – the institutional response to the national drive to improve ‘the student experience’;

- **Research v teaching** – the conflicting demands of these key aspects of HE practice;
- **Development of distance learning** – the institution’s well-established provision was facing increased competition; and
- **Other organisational imperatives** – including efficient staff training and meeting the institution’s legal obligations.

Although the total number of references to organisational imperatives was relatively small (113 text units), this was the most strongly negatively coded of all issues identified. Of the sub-coded units, 88% were coded negative with 10 of the 18 interviewees making references to it with six making positive references and six negative (see Dataset 7.2).

5.2.1. Student-centred learning

Practitioners with responsibility for promoting learning and teaching innovation within their departments (Edward, Pritesh) and institutionally (Maurice) felt the need to, “... lead from the front”, in terms of e-learning (Maurice: mind-map).

The institution’s e-learning research function had a high profile (both locally and nationally) resulting in, “... a specific push to get involved”, although it was felt that the institution was, “... just following the momentum (*of the wider society*)” (Nevin: mind-map).

Whilst student-centred pedagogy and e-learning were high on the institutional agenda, this was not necessarily the perception within departments. One practitioner in particular was frustrated that her department saw e-learning as a

resource issue with discussions centred on, "... money ... and staff time" (Korin). Distance learning practitioners perceived this as a 'Cinderella service' (Ian, James, Korin) although there was recognition that such courses needed to operate on a larger scale (in terms of student numbers) in order to justify the investment necessary to launch them (Ian, Activity 28: Appendix 3).

5.2.2. *Research v teaching*

Another conflicting organisational imperative was the pressure on 'research-intensive' institutions (and hence practitioners) to deliver research both in terms of quality and quantity. The organisation's commitment to e-learning was perceived neither in terms of resources supporting implementation (see 5.3 'Resources', p.180) nor its reward systems. As one practitioner commented, the:-

"... criteria for promotion (*are*) research based ... (*W*here's the encouragement for people to do innovative things in teaching?" (Olivia).

This suggested that the institution valued research (Korin) and time spent innovating in any aspect of learning and teaching had to be balanced against that (Edward). Distance learning course teams needed, "... to be more proactive", in promoting e-learning (Linda) with negative feedback from half-hearted implementations inhibiting further experimentation (Korin, Activity 35: Appendix 3).

5.2.3. *Development of distance learning*

Increasing distance learning student numbers was an organisational imperative for adopting e-learning. Those starting new courses with a 'clean sheet' (Ian,

Activity 28; Korin, Activity 34: Appendix 3) tended to, "... go the whole hog", introducing a blend with substantial e-learning elements (Ian: mind-map). Those developing successful existing courses adopted a more conservative approach with incremental changes – ranging from minor (James and Linda, Activities 39 and 40: Appendix 3) to substantial changes (Nevin and Sheetal, Activities 46, 47 and 49: Appendix 3). Even when looking at a new programme some course teams did not engage with collaborative e-learning, opting to, "... use (*the VLE*) as an information repository" (Korin: mind-map).

Whilst the institution's distance learning courses had been managed, administered and delivered separately from their face-to-face equivalents, the potential for developing stronger links was increasingly recognised. Designing an online course also gave practitioners the opportunity to review content to the benefit of the face-to-face course (Ian: mind-map). For some, charging the same fees were charged distance learning provision as for face-to-face course, "... shows a lack of understanding that this is different" (Ian). One experienced practitioner questioned whether the investment in e-learning could be justified by research into student demand, suggesting that, "... the mid-career professional group", were pragmatic learners who, "... by and large ... don't want (e-learning)" (James: mind-map). He also suggested that greater returns could be achieved through a local presence in international markets (James). Other organisational imperatives

Some online resources enabled staff to take immediate action to address their own needs and contribute to meeting an institutional legal responsibility (Heather, Activity 26: Appendix 3). Their widespread promotion also raised

awareness regarding the capacity to create such resources with transparent tools readily available within the institution.

Effective use of the VLE enabled the institution to address its legal obligations to make 'reasonable adjustments' for students (and staff) with disabilities (see 4.7 'Student feedback and support', p.165). Reducing costs was also perceived as an organisational imperative achievable through e-learning although it is debateable whether this was realistic (see 5.3 'Resources', p.180).

Conclusions

The institutional emphasis on the student learning experience was evident from practitioners with wide-ranging responsibilities for course design and delivery.

There was some doubt, however, whether this was fully reflected in institutional policies (especially resource allocation) and in the attitudes of many colleagues.

Whilst institutional policy pronouncements aspired to equivalence of value between research and teaching work, the operational reality of this was questioned by practitioners. Instances were cited where colleagues were either disinterested in e-learning or selected approaches maximising research time.

Attitudes to e-learning varied significantly among distance learning practitioners. For some neither the technology nor the institutional support justified significant e-learning innovations. Most, however, saw e-learning as an essential element of developing their courses although the majority of Activities focussed on creating repositories rather than encouraging student engagement and collaboration. Whilst awareness was developing of potential synergies between campus-based and distance learning initiatives, there were few examples that capitalised on these. Multimedia resources had been created for staff training

(Heather, Activity 26: Appendix 3), online discussion of a complex policy issue (Heather, Activity 25: Appendix 3) and a multimedia plagiarism-prevention resource (Linda, Activity 41: Appendix 3).

5.3. Resources

Summary

Resourcing issues identified from the data concerned three broad areas:-

- **Content creation costs** – the workload involved in creating online resources was widely commented on including the additional time-consumed developing the e-Competencies necessary;
- **Resource costs** – once the materials were created, the costs of producing and distributing them were generally seen as substantially lower with e-learning;
- **Course implementation** – consideration of the workload involved in course implementation was divided into two broad areas – content- and collaboration-driven resources.

Although only 376 text units referred to this issue, the references were strongly negative (at 77.1% of the sub-coded units) particularly in terms of staff time and financial support. It was referred to by 14 of the 18 interviewees, with 13 making negative and nine positive comments (see Dataset 7.2).

5.3.1. *Content creation costs*

Workload was a persistent concern in creating online resources, “... because our time is under greater pressure than it’s ever been” (Pritesh: mind-map). It

was recognised that blended delivery takes, "... even more organising and more work to put together, up front", whilst time savings occurred later in the cycle (Heather: mind-map). Although concerned that e-learning increased students' expectations, Nevin recognised that this reflected that, "... we're not using it smartly enough". Unnecessary conflict arose between departments and some support services when the latter, "... couldn't quite appreciate how massively limited academic time is" (Pritesh).

Even when using transparent tools, both content creation and updating were time-consuming (Edward). Creating interactive resources was, "... an investment of time not to take lightly because to produce quality e-lectures is not just a matter of scripting it and reciting it" (Carl, Activity 8: Appendix 3). Although the potential time savings were apparent, 'front-loading' in preparation for the first year meant that it was, "... a long-term investment" (Carl), with time savings in subsequent years (Pritesh). Even with a substantial collaborative element, "...running it doesn't take any more time than an ordinary module takes" (Nevin).

Although the youngest of the 'pedagogic managers', Pritesh alluded to the 'lost idyll' of an elite HE system, when he stated:-

I don't have infinite time, to sit here with an individual student over a glass of sherry discussing the finer points ...
But I can send them off on a journey via the web. (Pritesh: mind-map)

E-learning, therefore, provided economies of scale through enabling collaboration with larger cohorts of students (Pritesh: mind-map).

In some instances the advice given to practitioners increased the scale of front-loading. In one instance, a practitioner (Sheetal) was encouraged (by the institution's e-learning research unit) to behave as an innovator (optimising, using specialist podcasting tools) rather than being part of the early majority (satisficing, using the transparent tool familiar to over half of the practitioners interviewed). Similar frustrations were experienced by another practitioner attempting to incorporate film clips in an online module who had, "... come up against a brick wall ... because of copyright", despite potential exemptions to copyright for assessment purposes (Pritesh, Activity 56: Appendix 3).

When considering online collaboration for distance learning it was apparent that it provided the opportunity to communicate, "... in a very different way (*to face-to-face courses*)" (Ian). The availability of an existing face-to-face course was not necessarily as advantageous in resource terms as might be expected for two reasons. First, practitioners - locked into the pedagogy of the original course – were less likely to consider transformative change (see 4.5.4 'Pedagogic restrictions', p.154). Secondly, traditional modes of delivery, based on a, "... presentation and one or two handouts that generate a couple of discussions", was not necessarily replicable in e-learning (Ian).

Practitioners' lack of familiarity with e-learning led to uncertainty over workload in three broad areas. First, whilst course teams were able to quantify the preparation and delivery time for face-to-face courses, this was not the case with e-learning (Ian). Second, e-learning preparation was perceived to be, "...spaced out over longer periods of time (*and*) more difficult to assess" (Ian). Finally, when considering unfamiliar collaborative Activities it was more difficult

to factor in preparation and delivery time (Duncan, Ian). Overall, experience suggested that the 'pay-back' period for the up-front investment of preparation time was three to four years (Ian).

5.3.2. Resource costs

Once the full life-cycle costs are taken into account, research suggests there is little or no cost difference between traditional and e-learning modes of delivery (see 1.4.2 'Investment in ICT infrastructure', p.13). For some interviewees, savings in printing costs were the driving force behind using the VLE as a repository (Beverley, Activities 6 and 7; Korin, Activity 34: Appendix 3). A further saving in terms of distribution costs was identified for distance learning students although they, "... pretty soon realize you are transferring the printing costs over to them" (James: mind-map).

As noted above (4.7.2 'Structured engagement', p.167), e-learning was seen both as a back-up and an alternative mode of delivery for international distance learning students (James, Activity 33: Appendix 3). This also significantly reduced the marginal cost of entering new markets. Perhaps predictably the academics involved primarily with the delivery of the course were less concerned with this cost than with the quality of the course delivered. Their personal imperative was guided by the rationale that, "I think (*e-learning is*) a much more effective way of (*structuring a course*)" (Korin: mind-map).

The logistics of writing, printing and distributing a traditional paper-based course were an additional timer pressure for distance learning courses. As a result, authors were identified pragmatically, paying internal or external staff capable of

delivering to the required quality and timescale. The scope for continuous updating of materials with e-learning meant that courses could evolve (Edward).

5.3.3. Course implementation

A frequent concern of was the workload generated with time, "... a key factor", for busy academics (James: mind-map). It was recognised that e-learning could save practitioner time once the course was implemented. Where the course was driven by content, the impact on workload of e-learning innovation was seen as overwhelmingly positive, offsetting the substantial time investment of set-up. Where collaboration became a substantial element of the course, its role in the course blend determined the impact on workload. In cases where it was an addition to the existing course blend, collaboration was often seen as a burden (James, Linda, Nevin, Olivia, Sheetal). Where the blend was redesigned so that collaboration drove the production of content by students, then the impact on implementation workload was largely unchanged (although its nature changed significantly). As noted above (see 5.3.1 'Content creation costs', p.180), lack of familiarity with collaborative innovations led to uncertainty regarding delivery workloads. .

For many distance-learning courses, the convenor had little (if any) administrative support available and as a result, "... there simply isn't the time to ... try out (*e-learning innovations*)" (Korin). Practitioners felt that the institution had few central policies or systems to administer distance learning, with particular concern regarding the lack of a workload model (relating distance to the face-to-face delivery which staff contracts were based on). This resulted in significant differences in workloads both between and within departments.

User time constraints were a factor in creating resources, particularly for colleagues who, “Might not want (*or be able*) to take a course but might be happy to do half an hour here, half an hour there” (Heather: mind-map). There was a widely held perception that online collaboration for students was particularly time consuming. The reality of a well designed collaborative activity involved the practitioner in monitoring, “... the responses occasionally in the 2 weeks between giving them the work and eventually discussing it in class” (Pritesh, Activity 56: Appendix 3)

Using objective tests was identified as a significant time saving identified by many practitioners although, “... there are limitations to how far you can use them in education” (Nevin). Thus many practitioners balanced the reduced marking workload by focussing on deeper learning activities - monitoring discussions, recording podcasts (Maurice, Activity System 2) and dealing with the more complex administration and support arrangements for collaborative assessment (Duncan, Activity System 4). Whilst the total time involved in teaching using e-learning was unchanged, it provided the flexibility to fit their teaching around other commitments, such as management responsibilities (Maurice, Activity 42: Appendix 3). This could, however, involve working anti-social hours on occasion. Avoiding innovating in isolation was seen as a means of addressing the time pressures with some involvement of the entire course team (Gurmit: mind-map).

Where such Activities were discretionary, the workload for distance learning practitioners increased because the department was expecting them to, “... moderate on line chats for a small minority of students, but then answer the

same questions via e-mail and draft submissions, for the rest” (James). For Nevin, avoiding this involved working:-

... a bit smarter... (*replacing*) six hours of individual tuition per module, through e-mail, one-to-one ... (*with*) on-line ... discussions, ... blogs or wikis ... for a group rather than individual (*activity*) so we cut our workload a little bit. (Nevin, Activity 49: Appendix 3).

Overall, the time constraint on implementing e-learning innovation was summed up by Olivia who felt that, “... none of it is really onerous ... finding ... the odd hour here or there to do stuff” (Olivia). It was, however, more problematic:-

... finding say two free weeks where I can rethink my module and really think through its learning aims, ... (*just*) having that reflective time to really integrate (*e-learning*) in (Olivia).

Conclusions

The workload involved in creating online resources was widely perceived as having two significant dimensions. First, when innovating there was the significant cost of developing the eCompetence necessary to create and deliver the e-learning. Second, there was the ‘front-loaded’ investment of creating the resource. Where students were encouraged to access resources at their own pace, the entire course had to be prepared in advance. This would clearly accentuate the scale of the perceived investment of time compared with a ‘traditional’ new course that would involve design work throughout the first run of the module.

The marginal costs of producing and distributing materials electronically can be reduced to almost zero. Apart from an institutional computer account (between £30 and £50 - December 2009), the only cost for each student is the

administrative time necessary to add them to the VLE. The latter was expected to be automated with closer integration of the VLE with the institution's Management Information System. This compares with the substantial costs of printing handbooks, handouts and readings which represent a significant proportion of the non-pay budgets of most departments. For distance learning courses, higher costs are experienced in terms of printing (due to higher standards of design and finishing expected) and the distribution costs of reaching each individual student across the globe. Concerns were expressed that students could see this as cost-cutting or even passing printing costs on to them.

Overall, the front-loaded time investment involved in creation was a particular concern for practitioners producing teacher-centred resources. Where access was flexible and students in control of timing their engagement, the resources had to be prepared prior to the module. Those creating student-centred resources had to establish the broad framework and expectation of the student engagement but the detail would be adapted to reflect the student-generated content. This involvement of the students in creating content offset many of the time costs in the design phase.

5.4. Staff motivation and support

Summary

Both the motivation of and training for staff engaged in e-learning were widely discussed by practitioners. The issues raised were:-

- **Motivation to engage** – a variety of reasons were given for wanting to engage with e-learning ranging from a desire to cut contact time to

enabling collaboration which existing levels of contact time did not facilitate;

- **Technical eCompetence** – whilst the level of technical skills was not generally considered an obstacle to posting resources in the VLE, using it to create more interactive content or using other e-learning tools was considered more demanding;
- **Pedagogic eCompetence** – although not generally discussed when considering making material available through the VLE, the need to develop pedagogic skills was widely referred to when considering more collaborative resources;
- **Developing eCompetence** – a range of approaches were used within the institution ranging from straightforward engagements to develop technical eCompetence to two-day team workshops exploring course design; and
- **Team eCompetence** - The emphasis placed on e-pedagogy was further developed by the institution's e-learning research function in a two-day course design workshop for teams.

Despite specific questions on the reasons for introducing e-learning innovations and the staff workload it generated, only 193 text units were coded as referring to staff motivation and support. It was, however, referred to by 13 of the 18 interviewees, with 10 making positive and seven making negative comments. The references were the most evenly split between positive and negative of all

the issues identified, with 45.6% of the sub-coded units positive and 54.4% negative (see Dataset 7.2).

5.4.1. *Motivation to engage*

A feature of innovators and, to a lesser extent, early-adopters is that they find innovation itself and the technology behind it of interest (Rogers 2003). The fact that only two practitioners interviewed indicated a strong interest in the technology itself (Duncan, Maurice), suggested that practitioners in early majority had been successfully targeted. A further practitioner had made a deliberate change in her career path to be more involved in creating online materials because, "... I thought that was the way things were going to go" (Nevin). She recognised that her engagement remained largely, "... content-driven ... rather than communication side of e-learning" and even after completing the institution's e-moderating course she was, "...still sceptical" about the benefits of collaborative e-learning (Nevin).

The attraction of being involved in 'cutting edge' pedagogic developments motivated the majority of interviewees (Angela, Carl, Duncan, Edward, Gurmit, Heather, Ian, Korin, Nevin, Olivia, Pritesh). Being involved in a significant innovation can in itself be a source of pride, both in comparison with colleagues (Carl, Activity 8: Appendix 3) and for the manager responsible (Pritesh, Activity 6: Appendix 3). In his teaching role Pritesh also welcomed both, "... the attractiveness of the medium", and the opportunity to avoid repeated delivery of the same basic content (Pritesh).

Many practitioners felt that the majority of their colleagues were less enthusiastic about e-learning innovation (Angela, Beverley, Edward, Heather,

Ian, Korin, Linda, Nevin, Olivia, Ruth). Such initial reluctance of colleagues was seen to change as a result of the practical experience working with e-learning with one practitioner noting:-

I think their perspective has changed because they can see that the students were really involved ... So I think, every day it gets a bit easier because we have (*built on the*) work in the first year putting the exercises together. (Ruth)

One inhibiting factor was the reluctance of other module leaders to contemplate change because, "... it means more effort ... so things stay the same" (Korin).

When planning the intensive course design workshop (see 5.4.5 'Team eCompetence', p.196) Korin found that:-

... no one else in the department (*beyond her course team*) was interested ... because nobody else wanted to spend that time doing it ... (*As a result they remain unaware*) how relatively simple it is using (*e-learning*). Then they just carry on being quite negative about it without having any actual experience of it. (Korin)

As a result, convincing colleagues - particularly mid-career academics - tended to be seen as, "... a long-term project, (*and it is*) not something I'm expecting all the staff to do" (Edward).

One engagement with e-learning in particular confirmed that such innovation was not a 'one-off inoculation' which inevitably led to permanent change.

Despite limited use of the medium, James' department had, "... a long history with e-learning", including collaborative student engagement despite using the VLE primarily as a repository at the time of the interviews (James, 2007). This was attributed to levels of institutional support and recognition, changes in staff and software developments requiring constant updating (James, Linda). This,

“...lack of ‘corporate zeal’ to pursue innovations” (Ian), was noted by other practitioners (Heather, Ian, Sheetal).

Few of the interviewees were interested in acting as isolated innovators, preferring to bring, “... other people onboard and developing expertise amongst colleagues” (Nevin). Following the departure of one practitioner, only her most successful innovation was continued by colleagues with little interest shown in further developments (Heather, Activity 25: Appendix 3). Negative reactions from colleagues were noted both to e-learning training interventions and to the concept of e-tivities underpinning much of the institution’s central activities (Beverley, Linda).

5.4.2. Technical eCompetence

For younger practitioners using the VLE, “... was the easiest thing to do” (Gurmit) with limited training needs to take advantage of it (Korin). As a result, such practitioners were frequently expected to take responsibility for ICT (Frances, Korin). Older members of the ‘newbie’ group faced a much steeper learning curve in engaging with the VLE, but were motivated by the challenge (Ian). Developing technical eCompetence was recognised as an element of the significant, “... up-front investment in (*e-learning*) ... involving people who don’t have an awful lot of IT exposure” (Pritesh, Activity 56: Appendix 3).

Whilst most practitioners, “... don’t need technical support ... (*when*) just loading material for students to access (*on the VLE*)”, even regular users felt much less confident when using other e-learning tools (Pritesh). The technology remained a concern for practitioners despite the recognition that, “there is support here for us for whatever we want to do” (Korin).

5.4.3. Pedagogic eCompetence

Although direct consideration of pedagogic eCompetence was limited, it underpinned the consideration of aspects of staff motivation and support (see 5.4.4 Developing eCompetence, p.193 and 5.4.5 Team eCompetence, p.196). A number of practitioners received support (up to £5,000 – December 2009) for their e-learning innovations from a fund promoting pedagogic developments (Beverley, Carl, Duncan, Maurice, Nevin, Olivia, Pritesh, Ruth). Nevin received such funds to investigate, "... reusable learning objects", in an effort to avoid colleagues, "... reinventing the wheel ... (*by creating*) a set of templates that I could then pass on to colleagues" (Nevin, Activity 46: Appendix 3).

One significant barrier was that, "... e-learning ... requires a very good understanding not only of the subject itself but how the students approach it" (Carl). Practitioners who had not experienced e-learning as a student were, therefore, more likely to, "... go for a more traditional type of delivery" (Carl). The institution's eCompetence training emphasised e-tivities although some practitioners were still, "... not sure what they ... added versus what we do already" (James). This practitioner questioned the extent that collaborative reflection benefitted practitioners compared with the individual reflections already encouraged. Such benefits were widely recognised by the three interviewees (Angela, Gurmit and Heather) entering HE with teacher-training qualifications from the compulsory sector (5 to 16 year olds). Engagement with Web 2.0 technologies reflected, "... the sort of things that motivated me to teach in the first place" (Gurmit), emphasising, "... education (*rather*) than classical training" (Heather).

5.4.4. Developing eCompetence

Opinions differed as to whether e-learning was intended to reproduce or develop the practitioners' classroom delivery, although the influence of classroom experience on e-learning was recognised (Duncan). Among the support specifically referred to by practitioners were:-

- **Practical training in VLE use** – a series of themed workshops exploring the use of the VLE in course design, content creation, collaboration and assessment with emphasis on e-pedagogy throughout (Angela, Beverley, Carl, Duncan, Frances, Gurmit, Heather, Ian, Korin, Nevin, Olivia, Ruth);
- **Online reflections** – a five to eight week collaborative, online exploration of creating online resources and Activities, drawing on Salmon's five stage model and 'e-tivities' (Angela, Duncan, Frances, Heather, Ian, Korin) (Salmon 2004). For Duncan in particular, this was, "... a substantial influence on the way I do things";
- **Academic Practice award** – completion of half of this 60 M-level credit programme was a requirement of probation for newly appointed lecturers in the institution (Angela, Beverley, Carl, Duncan, Ian, Korin, Ruth). Of those undertaking the course, Angela and Duncan were undertaking it as CPD (an option chosen for personal development) rather than IPD (a requirement of probation);
- **VLE Users' group** – a peer support group sharing examples of effective practice, discussing developments and upgrades of the VLE and themed discussions (Angela, Duncan, Frances, Ian, Korin, Nevin, Pritesh, Ruth);

- **E-moderation** – a two week intensive online programme designed to equip practitioners with the skills necessary to moderate online discussion boards (Nevin); and
- **Intensive course design workshops** – a two-day session considering aspirations for the course, resource design (based on Salmon’s e-tivities model), practical support to create resources and feedback on the resources created from ‘critical friends’ - either students or staff (Edward, Ian, James, Korin, Linda, Nevin, Pritesh, Ruth, Sheetal). These workshops were co-ordinated by the institution’s e-learning research unit.

Such development opportunities were widely recognised as, “... influences on the way I do things and looking at how other people do things” (Duncan). Until January 2009 these development opportunities (with the exception of the ‘Intensive course design workshops’) were co-ordinated by the learning and teaching team of the institution’s staff development function. This resulted in significant emphasis being placed on the pedagogy of e-learning innovation. From January 2009 the team delivering such training was relocated to the institution’s ICT function.

It is important to recognise when planning CPD that Rogers’ notion of innovativeness is not an inherent characteristic but a reflection of the practitioners’ reaction to a specific context (Rogers 2003). One practitioner considered herself, “... an early adopter in terms of using E-Learning for content provision ... (*but*) a fairly late adopter ... in terms of using it as a communications tool”, remaining “sceptical” about the latter despite engaging in CPD training focussing on it. This was one of a number of indications of differential

engagement with innovation which strongly suggests that the notion of e-learning as a 'Trojan horse' ushering in innovation in broader learning and teaching may be fundamentally flawed.

A distinction was recognised between the product and process of the support needed for e-learning innovation (Pritesh). Much support for e-learning concentrates on the product (i.e. the resources produced) rather than the process (i.e. the learning and teaching interventions underpinned by pedagogic theory). Whilst this was seen as positive by most participants, it was contentious with one practitioner concerned that it wasn't, "... just straightforwardly supportive in saying these are the range of tools and (*asking*) what do you want to achieve?" (Sheetal). This reflected his strong views regarding the pedagogic direction of the training interventions with, "... a commitment to constructivist educational philosophies", which he described as a, "... political agenda" (Sheetal). This caused him to react negatively because, "I do not want people pushing educational theory at me, especially when I'm not a constructivist" (Sheetal).

Such development interventions can be placed on a spectrum representing different combinations of emphasis between product (e-learning tools) and process (pedagogy). In the institution that is the subject of this thesis two main sources of e-learning support were available:-

- **Staff development function** – responsible for providing support for the VLE and other transparent tools adopted for mainstream use within the institution. As noted above, the co-location of this team with those responsible for support for learning and teaching (with some overlap of

staff) resulted in considerable emphasis on pedagogy (until reorganisation in January 2009); and

- **E-learning research function** – responsible for exploring new products and approaches for possible future introduction for mainstream uses.

Pritesh had experience of introducing e-learning innovations with both support groups. With the staff development function, “... we’ve agreed something that we’ve wanted”, and felt they would, “... guide us where they know the path” (Pritish). The innovative nature of the research function’s work meant, “... there was a feeling ... they weren’t sure of the path themselves (*and*) we had to quickly get used to the fact that they didn’t have all the answers” (Pritesh). Their focus was on the research process, capturing the engagement of practitioners with the e-learning development, “... because it’s a kind of pioneering project” (Pritesh). The greater time involved was a concern because, “... academics are very pragmatic about what they can do and what they can justify” (Pritesh).

5.4.5. Team eCompetence

Whilst the generic practical training sessions in VLE use were adapted for course teams, each intensive course design workshop was focussed entirely on the work of a specific course team. The value of the extended nature (over two or three days) of the latter is reflected in such comments as:-

The whole thing about not having time, not having resources – it felt like that was taken away from us, we didn’t have to worry about any of that ... Everyone was talking about things - from the IT person to the Head of Department (Linda).

A particular strength of such events was that the course team were, "... looking at what the goals of the programme were and what we wanted to achieve"

(Sheetal), supported by the use of colleagues as 'critical friends' (Ruth).

Despite recognising the value of such team involvement, Linda preferred to have the resources to employ a member of staff to undertake e-learning developments. Ruth welcomed the opportunity to focus on the team's, "... own material ... because we put in practice our own ideas how to create the kind of e-tivities". The problem that remained, however, regarding student motivation to engage with the resources created (Ruth).

Whilst Sheetal valued the team development, ultimately he felt "... frustrated ... (*because*) it was much more valuable for people who had done nothing, (*who*) really didn't know their way around (*the VLE*)". Other frustrations with such workshops included that, "The desire to do things exceeded the capacity to carry them out" (Pritesh), resulting in a limited end product for the time devoted (Linda). This reflected the initial reluctance, and even hostility, to devote two days of course team time being devoted to course design, rapidly changing to frustration that, "... there was so much we wanted to do in too short a space of time" (Linda). Nevertheless, it was recognised that such CPD activity raised awareness, "... that (*e-learning is*) something that's actually worthwhile doing (*as part of a*) long-term project" (Edward).

Lack of time and resources were not the only barriers to transformation. In one instance the ten e-tivities created in an intensive workshop were converted to a paper-based format reflecting concerns regarding the capacity of the VLE, distance-learning students and staff to implement them (James and Linda,

Activity 40: Appendix 3) (see 4.4 'Technology', p.144). Evidence suggested that many staff initially found it difficult to weave the necessary support for e-tivities into their other duties and as a result, "... forget to monitor discussion forums" (Linda). Resourcing was seen as a key barrier to collaborative innovations but largely by those practitioners who had not engaged in it (Beverley, Ian, James, Linda, Nevin, Sheetal).

Conclusions

For some practitioners, particularly those who might be considered e-learning innovators, the technology itself was a motivator. The notion of e-pedagogy was also seen as a motivator at two levels. For some it was a primary motivation because the notion of new approaches to learning and teaching genuinely excited them. For others it was a secondary motivator, stimulated because they were prompted by managers of learning and teaching within the organisation. More often, however, the influence of colleagues and managers was seen as a constraining factor on innovation. In some instances the effort involved in such innovation was also a demotivator when considering subsequent Activities. This included one instance where the initial innovation was widely perceived as successful but was not built upon with subsequent innovations by the person leading the initiative (see Activity System 1, p.250).

The levels of technical eCompetence of practitioners were generally significantly lower than those of their students. This lower level of confidence was a significantly greater barrier to innovation than acquiring the technical skills themselves (see 4.4.1 'Confidence with technology', p.145). The barriers to acquiring such skills were seen as particularly low when using the institution's

VLE to present materials to students. There was, however, less confidence in use of e-learning tools that were not part of the increasingly familiar VLE environment.

Although direct consideration of pedagogic eCompetence was limited, it clearly underpinned the consideration of other issues concerning staff motivation and support (see 5.4.4 Developing eCompetence, p.193 and 5.4.5 Team eCompetence, p.196). For many practitioners the initial step was supporting or even replicating their existing patterns of delivery. Once practitioners had the opportunity to reconsider their approaches to learning and teaching there was increasing awareness of the need to develop pedagogic eCompetence. It was widely recognised that as the technological barriers diminished (due to the availability of transparent tools such as VLEs), the main obstacles to e-learning innovation were pedagogic.

The team-centred approach was particularly emphasised in the intensive course design workshops. Participants reacted extremely positively to the emphasis on planning prior to resource creation and the chance to systematically reflect on team objectives was seen as a refreshing change from the norm for course design in the sector. Two areas of concern were identified. First, some members of one particular course team reacted strongly against the 'constructivist agenda' underpinning it. Secondly, the e-tivities model strongly promoted in the workshops was not always seen as appropriate or sustainable, particularly in distance learning contexts. Despite initial resistance to committing course teams for two days training, the broad model for

engagements to encourage the development of eCompetence was well received.

5.5. Conclusions on institutional influences on e-learning innovation

A number of concerns remained despite clarity regarding the institutional emphasis placed on developments both in learning and teaching and in e-learning. These included that the institution did not value innovation and success equally in the areas of teaching and research. Also developments in e-learning and wider academic practice were not explicitly linked by the majority of practitioners. When the interviews were conducted, most e-learning Activities involved teacher-centred, rather than student-centred, uses of the medium. The potential for synergies between, for example, campus-based and distance learning courses were only just beginning to be considered at the time of writing (December 2010). A number of Activities on the periphery of mainstream learning and teaching did, however, point to such potential. This separation suggested a divide remained between primarily technical and pedagogic developments.

The relationship between workload for set-up and implementation of Activities differed significantly between content- and collaboration-driven courses. The set-up of content-driven Activities was regarded as a substantial ‘front-loaded’ investment of time. This was offset over two or three iterations of most courses by the savings experienced in implementation. Where collaboration was a significant element of the course blend, course set-up was rarely referred to as having a major impact on workload, although it was seen as a design challenge. If the collaboration was in addition to the existing course blend, however, it was

T Churchill

generally seen as significantly increasing workload. When the course was redesigned so that the course assessment focussed on, or was strongly influenced by, collaboration then the response was quite different. Although the workload changed in a way some regarded as more demanding, the volume of work did not change significantly.

Whilst the cost reduction in delivering resources electronically was recognised (particularly for distance learning courses), no reference was made to the marginal costs of delivering such resources being close to zero. In the case of Massachusetts Institute of Technology (MIT) and an increasing number of other institutions (such as the UK's Open University), this has led to the decision to make the resources for many courses freely available over the internet. They have made the decision that this raises the institution's profile without incurring substantial costs. They consider the unique selling proposition (USP) of the institution to be accreditation, demand for which increases as a result of the institution making its resources freely available (Anderson 2009). The practitioners in this study retained a traditional academic attitude to their intellectual property which had to be jealously protected by attempting to keep it within the institution (i.e. the resources are the USP).

Whilst the institution provided courses intended to develop technical eCompetence, from the outset this included a strong pedagogic dimension. In part at least, this reflected the location of the e-learning support team. Much of the specific e-learning provision was taken up by individuals interested in e-learning initiatives – the innovators and early adopters. The involvement of whole course teams in the pedagogic design process was widely perceived as

desirable. One of the key demotivators identified by individual practitioners was the reluctance of the wider course team and indifference of some line managers to e-learning innovation.

6. Findings: Beliefs and practices

6.1. Introduction

This chapter explores the extent to which the conceptual frameworks of the practitioners interviewed reflected a constructivist paradigm. The interviewees made only five explicit references to constructivism (Angela, Duncan, Nevin and two references by Sheetal). Such references were unsurprising for Angela, Nevin and Sheetal since they taught a discipline drawing extensively on the literature of educational psychology. Angela and Duncan were the only participants in the institution's academic practice award (see 5.4.4 'Developing eCompetence', p.193) who referred directly to constructivism.

Since explicit references to such a transformation were limited, a methodology was developed which identified evidence of the beliefs and practices of interviewees through their comments on their Activities (see 3 Methodology, p.97). The results of unstructured coding of statements made by interviewees (see Dataset 7.2) were compared with structured coding using the six dimensions of constructivism identified by Samuelowicz and Bain (as amended by Ho) (after Samuelowicz and Bain 1992; Ho, Watkins et al. 2001:153) (see Appendix 5). Whilst the additional elements identified from the unstructured coding will be explored below, this chapter is organised on the basis of the findings of the structured coding. The number of learning-centred comments for each dimension was taken as an indication of the extent of engagement with transformation in this area. The dimensions were, therefore, considered in descending order of the number of learning-centred comments identified for it:-

- Teacher-student interaction (Dimension Four);

- Main responsibility for transformation of knowledge (Dimension Five);
- Control of content (Dimension Six);
- Expected learning outcomes (Dimension One);
- Expected use of knowledge (Dimension Two); and
- Students' existing conceptions (Dimension Three).

(see Appendix 5)

The dimension numbers referred to above are based on the numbers allocated by the original authors (after Samuelowicz and Bain 1992; Ho, Watkins et al. 2001:153).

6.2. Data coded demonstrating beliefs and practices

Of the 18 interviews conducted, over 25% of the text units were coded as providing evidence of Samuelowicz and Bain's dimensions. The most widely coded dimension was 'Expected Learning Outcomes' with 8.6% of all text units (Dimension 1, Appendix 5). This is unsurprising since interviewees who did not refer to learning outcomes in response to the initial questions posed were probed further on this matter. The least coded units were 'Expected use of knowledge' (0.9%) and 'Students' existing conceptions' (1.0%) (Dimensions 2 and 3 respectively, Appendix 5)

All six dimensions included a categorisation of beliefs and practices as either teacher-centred (A) or learning-centred (B) – broadly seen as betokening associationist and constructivist approaches respectively. Two of Samuelowicz

and Bain's dimensions also featured intermediate dimensions ('A/B') – transition stages between associationist and constructivist approaches (Dimensions 1 and 3, Appendix 5). In the following analysis particular emphasis was given to the extent of learning-centred, or broadly constructivist, beliefs and practices identified. Of all the text units in the interviews, 9.9% were coded as evidencing learning-centred ('B') beliefs (see Appendix 5).

6.3. Teacher-Student Interaction

Summary of evidence

This was the most widely coded of learning-centred beliefs (B) indicating the widespread acceptance of the importance of 'Teacher-student interaction' (see Dimension 4, Appendix 5). The spectrum of beliefs for this dimension ranged from one-way communication from the teacher (A) to both student and teacher being actively involved (B). Evidence that interviewees saw, '...two-way communication with both teacher and students actively involved' (B) as important was present in 4.2% of the content of transcribed interviews with specific references in 16 of the 18 interviews (see Table 6.1, p.206). Around 0.8% of text units (seven practitioners) were coded as being one-way from teacher to student (A).

Of the 16 practitioners offering evidence coded as learning-centred (B), four offered only limited evidence with either four or five text units each (Ian, Olivia, Pritesh, Ruth). The remaining 12 practitioners offered between 10 and 38 text coded as learning-centred. Of those 12 practitioners offering a significant number of units coded as learning-centred, half offered no evidence coded as teacher-centred (Angela, Duncan, Edward, Frances, Gurmit, Heather) and three

offered very few text units coded in that way (James, Korin, Sheetal). In the latter instances, the units coded as learning-centred exceeded those coded as teacher-centred by a ratio of at least 5 to 1 (26:2, 22:2 and 20:4 respectively). The remaining three practitioners – Linda, Maurice and Nevin – offered a more balanced ratio between learning- and teacher-centred coded units (see Datasets 7.4 and 7.5).

Table 6.1: Dimension Four – Teacher-student interaction

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 4: Teacher-Student Interaction	A <i>One-way</i>	7	38.9%	49	0.8%	5.0%
	B <i>Two-way</i>	16	88.9%	249	4.2%	

(see Appendix 5)

Nature of engagement

Two practitioners were clear that their primary role was to impart information to their students as a basis for individual learning rather than to engage them in a community (Nevin, Sheetal). This reflected concerns about:-

... the current (*constructivist*) paradigm that content is less important than interactivity, and ... some feel that content has been put too much on the back burner. (Nevin)

Carl's interview featured only text units coded as teacher-centred (three units – Dataset 7.5) and he welcomed the opportunity to restrict direct communication

with students because he valued, "... anything you can do to reduce contact time" (Carl: mind-map).

The evidence provided in other interviews highlighted the broad spectrum of communication encompassed by 'two-way communication with both teacher and students actively engaged'. Some practitioners recognised the need for wider but tightly controlled communication. Two distance learning practitioners (James, Korin) offered just two units coded as teacher-centred (see Dataset 7.5). In James' case these teacher-centred units highlighted a significant aspect of his conceptual framework emphasising bilateral communications (between teacher and individual students) rather than the multilateral communications generally associated with e-learning. He attributed this pattern of communications to concerns regarding the needs of their international student groups - different time-zones, cultural sensibilities and the commercial sensitivity of some of the work submitted (James, Linda).

The only collaborative e-tivity implemented by this team formed part of their induction and, "... we don't have anything that's compulsory ... (*after that and*) we're not very proactive (*in encouraging collaboration*)" (Linda, Activity 39: Appendix 3). Unstructured attempts to engage students were not generally seen as effective with only a small proportion of students (James, Linda, Olivia) or staff (Heather) participating although staff adopted a more structured engagement enthusiastically (Activity 27 and Activity 25 respectively: Appendix 3). Korin, however, had experienced, "a flurry of activity", on an unstructured discussion where participants realised they were engaged in similar work.

Such bilateral communications were increasingly seen as a potential weakness, isolating distance learners (Nevin). Students commented, “I knew it was distance learning but I never thought it was going to be this distant” (Korin: mind-map). This led to efforts to create a community of students, “... getting them to interact with each other” (Korin: mind-map), including efforts to link courses (Nevin). One of the outcomes was to make non-confidential aspects of the bilateral student support open to peers (Nevin, Maurice). Whilst this could enhance such support and save practitioner time (or at least use it more efficiently), it was debateable the extent to which it developed an online learning community.

A more even balance between teacher- and student-centred evidence was provided by three practitioners – Linda, Maurice and Nevin (7:10, 15:19 and 16:16 respectively: Dataset 7.5). For Nevin and Maurice this represented a deliberate effort to achieve balance between the approaches. As noted above, Linda had strong views about the need for content rather than collaboration to predominate, particularly in the early stages of learning about a subject. In Maurice’s case, the near equality (between teacher- and learning-centred evidence) represented a deliberate balance between bilateral communication and the broader development of a learning community. Maurice used weekly podcasts putting his content in context and offsetting any perception that his extensive use of e-learning was intended to reduce his involvement with students (see Activity System 2, p.262). Sheetal used one-way communication with colleagues creating, “... 10 minute videos introducing specific topics that they’re experts in”. He contemplated supplementing this with synchronous audio- or video-conferencing but felt, “It would take up too much of my time”. In

contrast, others found that such tools enabled the development of learning communities between geographically dispersed researchers with substantial savings in participants' time due to reduced travelling (Frances, Olivia).

Frances' work involved a conscious use of bilateral and multilateral communications for different purposes. The former were used to deliver induction resources whilst the latter were used to build research networks. In subsequent iterations of his course Maurice's podcasts included, "...a bit of class feedback (*on assignments*) rather than individual feedback ... to warn them what they're going to have difficulties with, how they might overcome those difficulties" (Maurice, Activity 44: Appendix 3).

For a number of practitioners two-way communication was an essential element of their conceptual frameworks, where:-

... the bits that interest me are discussion based, social, interactive stuff and it's finding a context where I can really make that work and make it generate learning. (Duncan)

Despite initial problems, one practitioner sought to promote, "professional collaboration online", seeking, "... (a) peer knowledge exchange and ... peer tutoring role ... that's developing ... each other as experts" (Angela, Activity 1: Appendix 3). Encouraging group work online benefitted quieter students who claim, "... they don't get dominated like they do in face-to-face (*discussions*)" (Angela). Where students had the option to participate, the initial contributions tailed-off as, "... other various commitments fill in" (Duncan, Activity 13: Appendix 3). A more successful approach involved allowing students to decide the extent of discussion board use, although they were aware that their postings

could be used as evidence of their contribution to assessed group work (Duncan, Activity 14: Appendix 3). Another practitioner gave students the option of completing an assessment individually or as a group, provided they, "... explicitly acknowledge who did what" (Edward, Activity 15: Appendix 3). This practitioner also structured online tutorials, "... so we can ... give a little bit of help rather than perhaps (*students*) coming to see us" (Edward, Activity 16: Appendix 3). Other practitioners noted deeper conversations using the VLE on work placements when students:-

... want to come away from where they're being assessed to get advice. That's where I can do a lot and (*so can*) other students. (Angela, Activity 4: Appendix 3)

The nature of this support was qualitatively different from previous attempts to generate discussions either by e-mail or even face-to-face (Angela).

Conclusions

Just under a fifth of the evidence betokening two-way communication concerned bilateral communication between the teacher and individual students (0.8% of all text units). Of the five practitioners providing such evidence, four provided little or no evidence of broader communication (Linda, Maurice, Nevin, Olivia: Dataset 7.5). In such cases it is debateable whether the students could be said to be actively involved. For Angela, bilateral communications represented a small proportion of the evidence she provided of two-way communications. Four-fifths of the coded text units represent a learning community-oriented approach to communications (see Datasets 7.5 and 7.6).

Further analysis of the contributions of interviewees led to establishing two sub-categories of 'two-way communication' for the purposes of this study based on the extent of collaboration and learning community development envisaged:-

- **Bilateral communication** – Exchanges between teachers and individual students, with the teacher seen as expert. Although the communication may be shared in discussion boards (e.g. course queries or 'frequently asked questions') this did not fundamentally change the nature of the exchange; and
- **Multilateral communication** – Communications between students are fundamental to the learning process with greater equivalence of status between student and tutor contributions. The purpose of the communication is to develop a learning community in which students and tutors collaboratively explore the topic.

On the basis of this study, 'Multilateral communication' could be defined as a collaboration-centred element (C) of 'Teacher-student interaction'.

6.4. Main Responsibility for Transformation of Knowledge

Summary of evidence

This was the second most widely coded learning-centred belief (B) (Dimension 5, Appendix 5). When considering who has the main responsibility for the transformation of knowledge, the spectrum of beliefs ranged from passive reception of knowledge by the student (A) to active student engagement in the process of transformation (B). In the former the knowledge received is

‘packaged by the teacher’ whilst in the latter the student actively develops their private knowledge through the transformation of information.

The need for active engagement of students and them taking ‘main responsibility for transformation of knowledge’ (B) was recognised by 13 of the 18 interviewees with 2.4% of the content of transcribed interviews with specific references to it (see Table 6.2, p.212 and Appendix 5). Around 0.5% of text units (six practitioners) were coded as students passively receiving knowledge (A).

Four practitioners provided no evidence regarding responsibility for transformation of knowledge (Frances, Ian, James, Nevin). Only one practitioner offered evidence of only passive receipt of knowledge (Sheetal) whilst one offered a majority of such evidence (Heather, 9:4). Of the remaining 12 practitioners, eight offered only learning-centred evidence – six with more than 10 text units (Angela, Duncan, Edward, Olivia, Pritesh, Ruth), two with less (Gurmit, Maurice). Four practitioners offered a majority of learning-centred over teacher-centred evidence – Beverley (2:15), Carl (2:5), Korin (2:5) and Linda (3:11) (see Dataset 7.5).

Nature of engagement

A theme of practitioners offering evidence regarding passive receipt of knowledge was the delivery of what Carl called, “focussed content” (see 6.5 ‘Control of Content’, p.216). Such resources provided an efficient means of imparting information (Heather). When supported by interactive knowledge checks, users could evaluate their own progress providing a building block in the learning process. One example gave students the responsibility to decide

whether they were ready to progress to the online assessment (Beverley, Activity System 1).

A resource addressing work station set-up was intended to prompt action more quickly and efficiently than, “The traditional way (*of attending*) a talk ... (*or*) someone coming and sitting with them individually and going through it” (Heather, Activity 26: Appendix 3). Sheetal in particular felt that students did not engage with materials provided, particularly those, “... in preparation for seminars and it just doesn’t work” (Sheetal).

Those practitioners emphasising student responsibility for the transfer of knowledge were clear that it was the practitioners’ responsibility to provide some structure for this process. Whilst some practitioners felt unstructured discussion boards only, “... attracted computer geeks” (Linda), others had greater success with more structured discussion boards. Angela, for example, found that over 90% of her group regularly posted their thoughts on readings to a discussion board, working through its implications online with other students. Such developments of face-to-face contact contrasted with Beverley’s view that, “I don’t think you could have many courses which were ... e-learning, because I think (*students*) do want human contact”. She was particularly reluctant to include discussion boards on her courses.

Successful structured discussions in practitioners’ Activities were presented in such a way that students were clear on their relationship to their course and their development. They involved a degree of recognition of the role that e-learning can play in developing students as independent learners (Beverley, Carl, Duncan, Edward, Maurice, Pritesh, Ruth), “... creating (*opportunities for*)

autonomous learning, (*that*) they can do ... any time or anywhere” (Ruth). The inclusion of elements of continuous assessment in first year modules resulted in students becoming used to ‘pacing’ their engagement with their course (see 4.7.2 ‘Structured engagement’, p.167) (Beverley, Maurice).

Table 6.2: Dimension Five – Main responsibility for transformation of knowledge

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 5: Main Responsibility for Transformation of Knowledge	A <i>Receive Passively</i>	6	33.3%	31	0.5%	2.9%
	B <i>Self-develop Knowledge</i>	13	72.2%	144	2.4%	

(see Appendix 5)

As explored below, Duncan sought a, “... very open, student-centred, constructivist, social learning kind of model”, for his courses, achieving significant success with a relatively unstructured use of discussion boards (see Activity System 4, p.295). The discussion board became, “... a context for their skills development, as students have to go off and (*apply concepts covered in lectures*) on their own” (Duncan). One way in which e-learning helped achieve this is because:-

... students may be reluctant to contribute something in a face-to-face meeting, either because they’re too timid or they don’t think of it in the 50 minutes of the class ... (*However,*) when they go away and look at the material again they might come up with some really useful things that they can do through e-learning. They’d have missed

their chance forever in the traditional lecture/seminar course. (Pritesh: mind-map)

Holding part of an assessed discussion on-line helped address the problem of separating the transferable skill of presentation from content knowledge because whilst, "... some students are very articulate, others are extremely quiet" (Edward).

Some practitioners suggested that the prevalent format of assessment – the essay – restricted student engagement with knowledge transformation (Duncan, Gurmit, Korin). This resulted in mechanistic student engagement with the literature, restricting their potential development (Gurmit, Activity 24: Appendix 3). Introducing an assessment involving the collaborative creation of a glossary encouraged:-

... students to engage with the academic literature, ... debate, ... express an opinion, (*and*) to offer help to each other. (Gurmit, Activity 24: Appendix 3)

As a result, it was easier for students, "... to deliver their own insights, rather than for me to drag it out of them with a question" (Gurmit). Similarly, a distance-learning practitioner hoped that planned innovations would encourage students to, "... consider theoretically how (*their roles*) can reflect and relate to ... national and international levels" (Korin).

Conclusions

On the basis of this study, it was evident that the learning-centred element of 'self-development of knowledge' represents a wide range of approaches. For many practitioners, the introduction of a degree of choice for students encouraged them to pace their engagement with the topic. This represented a

significant step towards expecting students to, 'transform information and actively develop private knowledge.' Other practitioners, however, sought to introduce a strong collaborative element to taking such responsibility (Angela, Duncan, Gurmit, Maurice, Pritesh). This collaborative element could be defined as:-

C Collective knowledge development - Shared responsibility within a group or wider learning community for the transformation of information and the development of collective knowledge.

This provides a means of differentiating within the spectrum of examples of self-development of knowledge.

6.5. Control of Content

Summary of evidence

The only other learning-centred belief (B) evidenced by a majority of interviewees (10 of 18) was '6: Control of content' (Dimension 6, Appendix 5). The spectrum of beliefs for this dimension ranged from teacher control (A) to student control (B) of content. Evidence regarding control of content was provided by all interviewees, with over 6.6% of coded data relating to this. One contrast with the dimensions outlined above is that there was more evidence of teacher-centred than learning-centred beliefs. This was both in terms of the number of practitioners (12 cf 10) and the number of text units (4.5% cf 2.1%). Nevertheless, 10 of the 18 interviewees and 2.1% of coded data indicated that '...students (should be) in control of the content of teaching/learning' (see Table 6.3, p.219 and Appendix 5).

Of the ten practitioners offering learning-centred evidence, six offered only learning-centred evidence with three offering more than ten text units (Edward, Heather, Maurice) and three less (Angela, Duncan, Pritesh). One practitioner offered a majority of their evidence as learning-centred (Gurmit, 7:15), one offered equal numbers of teacher- and learning centred text units (Ruth, 12:12) and two offered a majority of teacher-centred units (Frances, 15:6; Ian, 40:5).

Of the 12 practitioners providing teacher-centred evidence, eight offered only this type of evidence. The reason for the majority of teacher-centred text units is the large number of such units provided by five of those eight practitioners – James (45), Korin (35), Linda (21), Nevin (37) and Sheetal (42). The remaining four practitioners offered under 10 teacher-centred text units (Beverley, Carl, Gurmit, Olivia).

Nature of engagement

For a majority of the practitioners interviewed, the notion of ceding any control of content was challenging. When considering constructivist approaches that gave students greater control of content and its creation, Sheetal felt that:-

... the underlying philosophy of (*such approaches*), is the view that the material, the content, is almost incidental and that real learning grows out of interaction and communication, and I'm afraid I just do not believe it. There is a body of knowledge which my students have to acquire and the content is incredibly important. And until they know something about the history of the discipline, and until they know basic concepts, then there's very little point in them discussing it because all they're going to do is echo the prejudices that they might come with anyway (Sheetal).

This emphasis on practitioner control of content was also evident in an online module developed to deliver content and skills training, "... that we consider

essential for (*our*) students” (Beverley). Both the novelty of the medium and its potential to accommodate diverse levels of student prior knowledge appealed to practitioners delivering both campus-based and distance learning courses (Beverley and Korin respectively). Students could engage with resources according to their needs, noting the:-

... pragmatic appeal that once you’ve got the course running it could be quite a cheap and easy (*way of*) teaching things that you would otherwise teach over and over again. (Beverley)

Carl felt that converting a familiar set of lectures was manageable although he expressed concern that, “To write afresh ... would be more difficult”.

For many practitioners interviewed their early engagement with e-learning involved the VLE being used, “... simply (*as*) a document delivery mechanism ... (*which*) ... isn’t really in keeping with what it can do” (James). As noted above (see 6.3 ‘Teacher-Student Interaction’, p.205), James wanted, “... students to engage a bit more with the VLE”, but a number of concerns prevented such developments. For James, the most likely area for investment in e-learning was strongly teacher-controlled content areas such as, “... online lecturing and videoing of lectures so students can download (*them*)”.

One of the barriers to a move from teacher- to student-controlled content was a, “... reluctance to change modes of communication” (Nevin: mind-map). This applied to distance learning staff and students with:-

... reticence just to have (*collaboration*) as the prime focus. (*Students*) still want what they see as expert-driven content, so it’s about getting the balance right. (Nevin)

Table 6.3: Dimension Six – Control of content

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 6: Control of Content	A <i>Teacher-controlled</i>	12	66.7%	270	4.5%	6.6%
	B <i>Student-controlled</i>	10	55.6%	128	2.1%	

(see Appendix 5)

Frances emphasised the importance of users being able to control the timing of delivery, if not the content itself, when creating induction resources that, “...capture the training that we do here and have that available online”. In his experiment with the collaborative development of a field trip database, Edward felt the need, “... to keep a little bit of control of its content”, for health and safety reasons. Nevertheless, he saw it as, “... as a resource for students to use that they contribute (*notes*,) photographs (*and*) all sorts of links (*like*) Google earth”.

It was recognised that student engagement with content, “... doesn’t have to be necessarily be linear”, because they could sequence it to reflect their interests, past experiences and perceived needs (Heather: mind-map). This conflicted with Sheetal’s view that he wanted, “... more control over what the learners are doing and where they are in your material”, to prevent students being distracted from the material he wanted them to focus on. He found both interactive resources and online assessment, “... all really very problematic ... (*and have*) more or less given up on that (*because it*) just doesn’t do what I want it to” (Sheetal). One practitioner was cautious about substantial course changes

involving content creation by students stating, “We’ve got to look at the assessment, but it can’t be something that ... overrides the whole module” (Ian). Another dimension of content control was gaining greater control as course leader over the content prepared by module tutors reflecting “some fears” regarding the quality of the materials produced (Ian).

Even where students have an element of control over the timing of their engagement with content, the creation of those resources clearly remains in the hands of the practitioners. Students need to have a role in the creation of content – whether individually or collectively - if they are to have a meaningful degree of control. Despite similar reservations to Sheetal regarding control of content, Ian was considering experimenting using group work. This was intended to be based on, “... a case study they work on in small groups”, with a group presentation and using a discussion board so, “... we can see the evidence of what the individual has done to contribute to that” (Ian). At the time of the interviews (2006/7) some practitioners had completed assessments using discussion board postings and peer assessment questionnaires to evaluate individual contributions (Duncan, Maurice) noting, “... e-learning ... help(s) with the assessment of group work, which you probably can’t have in any other way” (Maurice). At the time of writing (December 2010) tools to enable more sophisticated group work assessment were becoming more widely available (see 4.6.3 ‘Collaborative assessment’, p.161).

Using a series of discussion board tasks, associated with face-to-face sessions, took:-

... a bit more effort ... outside the (*face-to-face*) hour but inside the hour we can have more progress because they have actually done the thinking about it. I didn't say to them, 'What do you think?', and then have to wait for a few minutes while they thought of an answer because they'd done it before they came into the room (Pritesh).

In a more structured (but still unassessed) exercise, Ruth set her students the group task to create a campaign which was posted on the VLE and their respective merits were discussed face-to-face (Ruth, Activity 60: Appendix 3).

Innovations incorporating collaborative content creation included replacing essay-based assessment with contributions to an online glossary developed through peer feedback on the course discussion board (Gurmit, Activity 24: Appendix 3). The final mark was awarded not only for the contributions but, "... for the response to other peoples' comments ... (*and feedback*) about other peoples' work" (Gurmit). This Activity generated positive student reactions and provided a basis for assessment in at least two further iterations of the course. In addition to generating user content through a network of researchers, Frances also used the VLE as a consultative forum influencing the teacher-controlled content. Similarly, Korin intended to move beyond the provision of teacher-controlled online content through e-tivities and structured discussion. For one practitioner, his "e-teaching" was derived from, "... the theoretical, broadly constructivist perspective that comes out of my classroom teaching" (Duncan: mind-map).

Although some practitioners were concerned that such approaches interfered with the volume of content covered, Duncan's incorporation of collaborative assessment was achieved without reducing module coverage (see Activity

System 4, p.295). The positive impact of effective collaboration encouraged the majority of Angela's campus-based postgraduates to voluntarily contribute to online discussions with the following cohort, sharing their experience in the workplace (Angela).

Conclusions

Students seem content to use the medium that is seen to contribute positively to their course or future work. There is, however, a range of evidence suggesting it is more of an issue for practitioners (see 5.4 'Staff motivation and support' p.187) due to concerns regarding ceding control of content to students. Where content was generated by students in these examples, it was largely tightly controlled by the parameters set for the assignment. This not only contributed to the students' development but also to the course resources in a way that could not have been achieved through traditional essays. Whilst Samuelowicz and Bain's notion of student control of content is largely individual (Samuelowicz and Bain 1992), some of the Activities explored above have a strong element of collaborative student control of content.

On the basis of this study, the collaborative element of control of content could be defined as:-

C *Community-controlled* – Students collectively responsible for the content of teaching/learning.

This provides a means of differentiating within the spectrum of examples of student-control.

6.6. Expected Learning Outcomes

Summary of evidence

The HE sector places considerable emphasis in both local and national quality assurance measures on the development of learning outcomes. A decision was made in planning these interviews to explicitly probe on this matter. As a result, more text units were coded regarding 'Dimension 1: Expected learning outcomes' than any other dimension (8.6% cf 6.6% for Dimension 6: Appendix 5 - the next most coded item).

The spectrum of beliefs for this dimension ranges from expecting reproduction of information (A) to developing transformational understanding (B), with the transitional category of developing a basic understanding of the information (A/B). The majority of evidence was coded as broadly teacher-centred – either involving the reproduction of evidence (A) or the development of a basic understanding (A/B). The former was evident in 1.8% of text units and in 12 of the 18 interviews. The latter was evident in 5.7% of text units and in 16 of the 18 interviews (see Table 6.4, p.224 and Appendix 5).

Despite the emphasis placed on this dimension, there was a significant drop in the evidence coded as learning-centred (B) both in terms of:-

1. **Text units** – only 1.1% of text units compared with a range from 2.1% to 3.4% for the above dimensions (Dimensions 4, 5 and 6: Appendix 5); and
2. **Practitioners** – only five interviewees compared with a range of 10 to 14 for the above dimensions (Dimensions 4, 5 and 6: Appendix 5).

Only five practitioners offered evidence coded as learning-centred (Angela, Edward, Gurmit, Heather, Maurice), each offering between 4 and 21 text units. In each case the total of teacher-centred and transitional evidence formed the majority of coded units. The learning-centred evidence formed at least 37% of the coded evidence in four cases and 17% for Maurice although in his case the remaining 83% of evidence was coded as transitional (A/B) with none coded as teacher-centred (A). Of the five practitioners offering learning-centred evidence, two offered no teacher-centred evidence (Angela, Maurice), whilst the remainder offered between one and nine units coded teacher-centred. The transitional evidence they offered ranged from nine to 32 text units (Appendix 5 and Dataset 7.5).

Table 6.4: Dimension One – Expected learning outcomes

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 1: Expected Learning Outcomes	A <i>Reproduction of Information</i>	12	66.7%	110	1.8%	8.6
	AB <i>Basic Understanding</i>	16	88.9%	340	5.7%	
	B <i>Transformational Understanding</i>	5	27.8%	67	1.1%	

(see Appendix 5)

Of the remaining 13 practitioners, Linda, Ruth and Sheetal offered only transitional evidence (from 22, 28 and 25 units respectively). One practitioner offered only teacher-centred evidence (Pritesh), two practitioners offered a

majority of teacher-centred evidence (Beverley, Carl) and six offered a majority of transitional evidence (Duncan, Frances, Ian, James, Korin, Olivia). Only one practitioner provided no evidence coded as expected learning outcomes despite the specific questions and supplementaries asked (Nevin) (see Dataset 7.5).

Nature of engagement

Use of the medium to achieve at least basic understanding was made by most practitioners. Both Beverley and Carl were clear that the purpose of their Activities were to provide a basic understanding which would support their subsequent, face-to-face work. On the basis of his Activity, Carl felt that, "... we can restart normal lectures with this background being assimilated" (Carl: mind-map). The focus of Beverley's main Activity was to develop a basic understanding of study skills and grammar addressing, "... quite repetitive skills where perhaps people need to go through things a number of times" (Beverley, Activity System 1, p.250). This was predominantly an individual, rather than a collaborative, use of the VLE. Whilst there was widespread recognition of the potential for students, "to engage a bit more with (*the VLE*)" (James), specific learning outcomes regarding collaboration were identified by a minority of practitioners.

Much of the evidence pointed to beliefs and practices supporting individual, rather than collaborative, engagement. The value to students of the, "...fantastic range of links they can use to enhance their course" (Ian) was recognised by several practitioners (Ian, Korin, Ruth). There was also recognition of the limitations of the objective testing methods because they tested factual knowledge rather than its application and development (4.6.1

Objective tests, p.158). The preference of some practitioners to convert existing courses rather than, "... starting from scratch" (Carl), suggests that the aim is to replicate existing forms, rather than transformation, of delivery.

This clearly was not the case for the five practitioners providing learning-centred evidence. For Angela, the key expected outcome was that her students should reflect on what was addressed in the face-to-face sessions, encouraging, "professional collaboration online", and developing the students' reflective skills because:-

... it's good to have a predisposition to think something but it's even better if you can change it for good reasons and to say explicitly 'I have been surprised by ...', 'It amazed me that ...', 'So I'm now thinking ...' and 'I have changed my mind'. (Angela)

Other practitioners providing evidence of learning-centred approaches used the VLE as a store of information because this, "... offer(s) students much more easily available support materials for not a lot of effort" (Gurmit). It was clear, however, that such practitioners seeking transformative Activities used narrative media as a building block. Frances used narrative and interactive tools as the basis of an induction programme intended to facilitate subsequent, more collaborative Activities. At the time of the interviews (2006/7), Edward was considering how to develop the one module he delivered that only used e-learning tools for narrative purposes. For him, it was making the link between, "... communication and knowledge" (Edward: mind-map), that betokened transformational understanding. One of the ways e-learning encouraged this was because:-

... it's more than simply communicating knowledge verbally, it's communicating knowledge in a record that's actually there and preserved ... (*It's*) a better way of teaching students (*than traditional lectures ... making it possible*) to design routes to send (*students*) off into different directions in which to learn and explore the subject. (Edward: mind-map)

He emphasised, "I'm not trying to control their learning path - it's a way of saying, go and look at this (*and*) perhaps ... they might, go and explore" (Edward: mind-map).

The practitioners with secondary school level teaching qualifications particularly identified with the transformation agenda (Heather, Gurmit). Heather's use of discussion boards as part of an ethics committee's deliberations transformed the members' engagement with the content, making face-to-face meetings shorter and more effective by focussing them on the remaining principles to be resolved. Gurmit saw e-learning as a means, "... of extending student skills ... by asking them to engage with their course work in different ways by setting them different assignments" (Gurmit: mind-map). As explored above (see 6.5 'Control of Content', p.216), his new assessment required a transformational understanding of the content through the collaborative evaluation and development of the glossary items created.

The shift to developing learning communities was recognised as having potential for transformation. Maurice suggested, "The big shift (*in emphasis*) I think is from teaching to learning", and this was reflected in his decision to make e-learning a significant part of his course blend (see Activity System 2, p.262). As a manager responsible for pedagogic development, he recognised that

within the institution, "... there's an awful lot of teaching going on in some places without very much learning" (Maurice).

Conclusions

For the majority of practitioners their expectations of learning outcomes from e-learning did not go beyond students developing a basic understanding of the information provided (see Appendix 5). There was clearly some discomfort among some practitioners regarding their engagement with e-learning which one called, "... a bit pathetic" (Korin: mind-map). Despite her self-perception of being committed to learning-centred course design through e-learning:-

... we've not actually been learning with it, we're just (*using the VLE*) as an information package and administration tool
... E-Learning is being taken as ... a resource issue, rather than a learning issue. (Korin)

In the previous dimensions (above) it was possible to identify a further, collaboration-centred element. Whilst it was possible to derive a collaborative element of expected learning outcomes - 'Collaborative transformation of understanding' - the utility of doing so was debateable. For the three dimensions explored above such a recategorisation highlighted significant differences between practitioners. The new categories (C) differentiated between those engaged in transformative practice, those who appeared on the verge of doing so and those who were not. In the case of this dimension it seemed that the existing categorisations already achieved that. Only five practitioners appeared to demonstrate transformative beliefs and practices in respect of this dimension and no-one outside this group offered evidence that would be coded in this new category (see Appendix 5 and Dataset 7.6).

6.7. Expected Use of Knowledge

Summary of evidence

This was the least coded of all dimensions with just 51 text units (0.9% of all units: Appendix 5). Only eight practitioners provided evidence regarding 'Dimension 2: Expected use of knowledge' with only five offering evidence coded as learning-centred (B). The spectrum of beliefs for this dimension ranges from use of knowledge which is bound by the curriculum (A), to using knowledge in order to interpret a broader reality (B).

The majority of evidence was coded as broadly learning-centred (B) which was evident in 0.6% of coded text units and in five of the 18 interviews. Teaching-centred beliefs and practices (A) were evident in 0.3% of coded text units and in five of the 18 interviews. Of the eight practitioners offering evidence in this dimension, five practitioners' evidence was coded as learning-centred (Angela, Duncan, Edward, Korin, Maurice), each offering between five and twelve text units. Five practitioners offered evidence coded as teacher-centred (Beverley, Carl, Duncan, Korin, Linda). The two practitioners offering both (Duncan, Korin) had a majority of learning- rather than teaching-centred units, with each offering seven units for the former and two units for the latter (see Appendix 5 and Dataset 7.5).

Nature of engagement

The most common expected use of the knowledge through e-learning was as a basis for other curriculum work because introducing basic knowledge or skills was, "... a stepping stone so they can achieve the learning outcomes of everything else" (Beverley, Activity System 1). Linda also focussed on the

potential of e-learning for the development of skills such as information management. Such approaches can be defined as the, “... first level”, of e-learning engagement, involving, “... building resources that were self-study, with some kind of learning that would be implicit ... if people engaged with them” (Duncan).

Table 6.5: Dimension Two – Expected use of knowledge

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 2: Expected Use of Knowledge	A <i>Curriculum-bound</i>	5	27.8%	15	0.3%	0.9%
	B Interpretation of Reality	5	27.8%	36	0.6%	

(see Appendix 5)

Subsequent engagements with e-learning involved what Duncan called, “extension activities”, involving use of knowledge that was, “... more open-ended, more philosophical” (Beverley). One practitioner felt that e-learning was inappropriate for her languages discipline, although it might work in other disciplines – “... science for example” (Beverley). Whilst a number of practitioners, such as Carl, identified skills development as a concession to reality beyond the course, it was not widely seen as part of a broader interpretation of reality.

Much of the collaborative work set involved students applying curriculum-bound knowledge in the context of their future workplaces (Angela, Edward). To Angela’s surprise, 90% of her group submitted online work set despite the fact

she had made clear it would not be formally assessed. She attributed this to the clear relevance to their future work and the broader course outcomes. Edward sought to replicate such work by giving his students the option of working collaboratively because such work:-

... is often done by teams in the workplace. It actually involves different individuals doing different tasks and communicating to produce the final report as a team. So it's trying to mirror that sort of (*work-related*) exercise, giving them some (*relevant*) experience. (Edward)

Similarly, Maurice felt that his students had, "... probably only produced reports ... by themselves". For Korin, the disciplinary knowledge gained would be placed in a more realistic context for her distance learning students if they engaged in discussions about it – whether synchronous or asynchronous. An aspiration for Maurice was that his students should, "... learn to become better online citizens ... gain(*ing*) confidence online" (Maurice: mind-map).

Conclusions

Once again, although it was possible to identify a collaboration-centred element to add to the categorisation, the utility of doing so was debateable. Based on the data, a collaborative element of use of knowledge could be defined as, 'Sharing of reality'. As in the case of the previous dimension, the existing categorisations differentiated between those engaged in transformative practice, those who appeared on the verge of doing so and those who were not. Again only five practitioners appeared to demonstrate transformative beliefs and practices in this dimension and no-one outside of that group provided evidence that would be coded as, 'Sharing of reality' (see Appendix 5 and Dataset 7.6).

6.8. Students' Existing Conceptions

Summary of evidence

Only the previous dimension ('Expected use of knowledge', 51 units) had fewer coded text units than this dimension (60 coded units, 1.0% of total: Appendix 5). Nine practitioners provided evidence regarding 'Students' existing conceptions', with four offering evidence coded as learning-centred (B). The spectrum of beliefs for this dimension ranges from existing conceptions being ignored (A), through them being an obstacle to be overcome (A/B) to them being considered the starting point for learning and teaching (B).

Whereas the majority of units for Dimension 2 were coded as learning-centred (0.6% cf 0.3%), the majority of units for this dimension were transitional (0.7% cf 0.3%), with none coded as teacher-centred (see Table 6.6, p.233 and Appendix 5). Only nine practitioners offered evidence in this dimension with three offering only learning-centred evidence (Angela, Duncan, Pritesh), five offering only transitional evidence (Beverley, Carl, Ian, Linda, Sheetal) and one offering both with a majority of transitional evidence (James, 20:4). The low number of coded units, was reflected in the ranges for learning-centred (one to 10) and transitional units (two to eight excluding James 20 units) (see Dataset 7.5).

Nature of engagement

For some staff, existing students' perceptions were clearly seen as a difficulty to be overcome (Beverley, Sheetal). Beverley was clear that:-

... students seem to think they can do (*the summative tests*) already so it is good to have a diagnostic Test because it means that then we can prove to them that they don't know everything and it opens their mind we hope to then learning about them. (Beverley)

As a result, Beverley's team produced resources that, "... students can go through as many times as they need", in order to develop understanding (Beverley, Activity Systems 1). In his work with distance learning students, James' recognised that as:-

... adults (*they*) actually come with a whole range of experience and ideas and attitudes ... (*which*) may be wrong, (*they*) are fully formed in their approaches fairly set ... (*In order to address this*) we work away, expose them to ideas, chip away at some of their beliefs and we get them to think about study in different ways. (James)

One means he saw of achieving this was through the use of discussion boards although relatively few of James' students took advantage of the limited opportunities for such collaboration. One of the barriers to achieving this for Korin was that:-

... because (*our students are*) so busy - they're all working full time, they're doing Masters course, they've got families, they've got other commitments - for the most part they're (*only*) interested in learning what they need to know to pass the course. (Linda)

Table 6.6: Dimension Three – Students' existing conceptions

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 3: Students' Existing Conceptions	A <i>Ignored</i>	0	0.0%	0	0.0%	1.0%
	AB <i>Meant as Difficulties</i>	6	33.3%	43	0.7%	
	B <i>Considered</i>	4	22.2%	17	0.3%	

(see Appendix 5)

As noted above (see 6.5 'Control of Content', p.216), Sheetal felt particularly strongly about, "... the underlying (constructivist) philosophy", that underpinned much of the institution's support. He railed against the notion that, "... real learning grows out of interaction and communication", suggesting that unless students had engaged with key concepts of the discipline, "... all they're going to do is echo the prejudices that they might come with anyway" (Sheetal).

Such preconceptions formed the basis of an Activity developed by Pritesh (see Activity System 3, p.286). He used discussion boards to encourage his students to explore their stereotypes of the country they were studying – both positive and negative – and the views that such preconceptions create. This preparation gave the students insights into the subject matter through their conceptions before the face-to-face exploration of the subject matter which went:-

... into a discussion about how stereotypes arise, whether there's any 'smoke without fire', whether they're based on any reality whatsoever, how useful they are, if they are always negative etc. That's one of the learning outcomes of the module. (Pritesh, Activity System 3)

For Angela, the exciting element of using e-learning was the way that students could build on their existing conceptions and – on occasion – change them. Meanwhile, Duncan saw the opportunity for e-learning to support those whose ideas and capacity did not match with the conceptions of 'typical' students. Provision of his 'extension activities' was intended to meet the needs both of those ahead of the rest of the group and those struggling to keep up.

Conclusions

Whilst again it was possible to identify a collaboration-centred element to add to the categorisation - existing conceptions could be defined as 'Collectively developed' - its utility was debateable. Again, for this dimension it would seem that the existing categorisations differentiated between those engaged in transformative practice, those who appeared on the verge of doing so and those who were not. Only four practitioners appear to demonstrate transformative beliefs and practices in respect of this dimension and no-one outside of that group provided evidence that would be coded as, 'Collectively developed' (see Appendix 5 and Dataset 7.6).

6.9. Conclusions on beliefs and practices

One unexpected finding was the extent to which the apparent acceptance of a constructivist discourse is not reflected in the majority of innovations. Far from supporting transformation to a new paradigm, some Activity Systems provide evidence that e-learning is being used as a means of delivering the traditional paradigm on an industrial scale (Activity Systems 1 and Activity 8: Appendix 3). The features of e-learning tools used in such cases enabled effective delivery of courses with cohort sizes that previously proved unsustainable. It is, therefore, possible that far from being a 'Trojan horse' ushering in a new constructivist paradigm, e-learning tools provide a means of perpetuating the traditional paradigm.

The breadth (number of interviewees) and depth (proportion of text units and nature of statements) were used as a means of analysing practitioners' beliefs and practices. Based on the analysis of the interviews it was possible to

differentiate between surface and deeper dimensions of engagement with constructivism through TEL.

Surface engagement with constructivist e-learning was evident in the statements of the majority of interviewees. The dimensions identified as betokening surface engagement with constructivism (see Appendix 5) were:-

- Dimension 4: Teacher-Student Interaction (89% of interviewees);
- Dimension 5: Main Responsibility for Transformation of Knowledge (72% of interviewees); and
- Dimension 6: Control of Content (55% of interviewees).

Other deeper dimensions act as strong indicators of transformative engagement with e-learning, identified in under 30% of those interviewed. The dimensions identified as betokening deeper engagement with constructivism (see Appendix 5) were:-

- Dimension 1: Expected Learning Outcomes (27% of interviewees);
- Dimension 2: Expected Use of Knowledge (27% of interviewees); and
- Dimension 3: Students' Existing Conceptions (22% of interviewees).

The surface engagement dimensions act as strong indicators of effective engagement with e-learning. Whilst this study provided evidence of the evolution of the beliefs and practices of practitioners engaged in e-learning, the case for transformation was less clear cut. There was certainly evidence of widespread acceptance by practitioners of student- or learning-centred approaches in the ways they addressed e-learning.

Based on an analysis of the distribution of surface and deeper dimensions of engagement with e-learning, it was possible to derive a three stage hierarchy of approaches to learning and teaching based on engagement with e-learning:-

1. **Limited engagement / eCompetence** – no or limited evidence of learning-centred beliefs and practices with such evidence in at most one of the six dimensions. The evidence, therefore, suggests predominantly teacher-centred beliefs and practices with a broadly associationist conceptual framework (Beverley, Carl, Nevin, Sheetal);
2. **Transitional engagement / eCompetence** – evidence of learning-centred beliefs and practices in at least two of the surface dimensions but no more than one of the deeper dimensions. The evidence, therefore, suggests some learning-centred beliefs and practices with a conceptual framework with some constructivist elements (Frances, Gurmit, Heather, Ian, James, Korin, Linda, Olivia, Pritesh, Ruth); and
3. **Transformative engagement / eCompetence** – evidence of a transitional approach with further evidence of learning-centred beliefs and practices in at least two of the deeper dimensions. The evidence, therefore, suggests substantial engagement with learning-centred beliefs and practices with a broadly socially constructivist conceptual framework (Angela, Duncan, Edward, Maurice).

The prevalence of transitional engagement with e-learning (with all but four practitioners achieving at least this level) suggests that in discourse at least constructivism is emerging as the prevalent paradigm in the sector. Far fewer

cases provided evidence of contributing to a transformation of learning. The presence of the three surface dimensions is, therefore, not clear evidence of transformative engagement. Rather, they provide evidence of a transitional stepping stone rather than transformative engagement with e-learning itself. They are necessary – but not sufficient – criteria for transformative change.

Based on an analysis of the additional collaboration-centred criteria derived from this study (see Dataset 7.6) it is possible to derive a further category:-

- 2a **Potentially transformative** – evidence of learning-centred beliefs and practices in at least two surface dimensions, one of the deeper dimensions and at least one of the collaboration-centre elements of the surface dimensions (Gurmit, Heather, James, Pritesh).

This category should represent those most likely to move into the ‘Transformative’ category in the near future.

One anomaly is that James is in this group despite making a number of statements in his interview that make clear he had no intention of progressing further with CTCL in the immediate future. Reflection on the interview process led to the identification of a likely reason for this anomaly. James’ was the only interview in which a second interviewer was present (from the institution’s e-learning research team). The atmosphere in this interview was quite different from the others conducted in this study with some relatively aggressive questioning from the other interviewer. James’ attitude throughout appeared defensive and he had clearly considered in depth the rationale for CTCL advocated by the research team. Using information from previous meetings

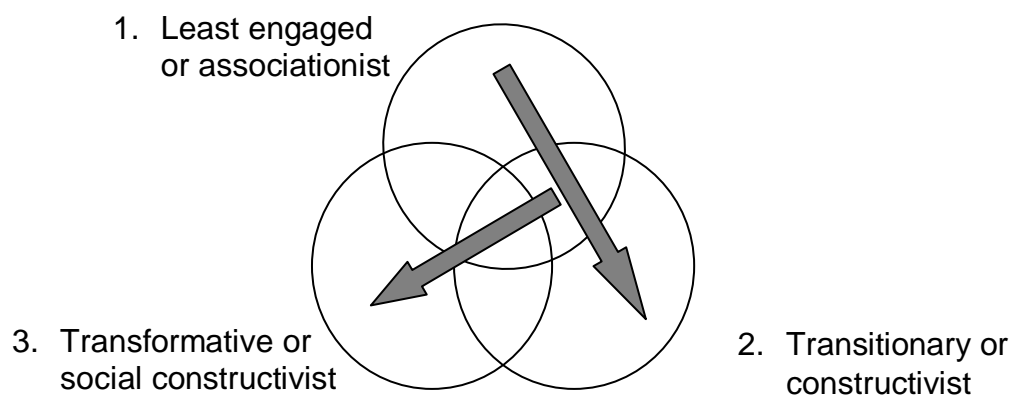
with the other researcher he had developed his own rationale for not engaging at this stage. Despite this possible distortion of the research process, it was decided to include the data collected in this study. James made wide-ranging points regarding his teams' engagement with e-learning many of which were confirmed in the interview of a member of his team (Linda). Detailed analysis of the transcript of James' interview suggests that – without the distorting effect of the previous interviewer – he would still have been within the 'transitional' category but not have been within the potentially transformative category.

The potential relationships between the three approaches can be illustrated with a Venn diagram within which individuals' approaches can be positioned. The data provides both examples of overlap and the obstacles interviewees faced in the transition between the different approaches (see Figure 6.1, p.240). Using such a representation it was possible to position not only the conceptual framework of an individual practitioner but also the mediating artefacts they have used (after Mayes and de Freitas 2004). The cases where the positions of conceptual frameworks and mediating artefacts adopted are most similar generally come from groups one (limited engagement) and three (transformative engagement). This positioning produced unexpected results with significant dissonance in a number of cases between the position of the mediating artefacts used and their individual conceptual frameworks.

This analysis gave a graphic impression of the 'journeys' being undertaken in the transformations of learning and teaching undertaken by interviewees. This emphasised the need for techniques to identify the characteristics of those demonstrating transitional engagement. The potentially transformative

category identified above provides a further insight into such journeys. The following chapters will explore further the relationship between the mediating artefacts used and the conceptual frameworks of the practitioners implementing them.

Figure 6.1: Approaches to, and engagement with, e-learning



7. Findings: Examples of uses of teacher–focussed media

7.1. Introduction

This and the subsequent chapter explore the nature of the e-learning innovations or Activities identified. The analysis of the features of specific initiatives is used as a basis to select those to develop as detailed examples of activity systems. Activity theory is used to identify the nature of the system (and any contradictions within it) in order to both describe and analyse the impact of the innovation identified. Where a specific activity system is referred to, capitals are used to emphasise this (i.e. Activity System). In particular, consideration is given to the role that such innovations can play in the transformation of learning and teaching in the sector. This is used to develop recommendations for professional development interventions to modify practitioners' conceptual frameworks.

These chapters consider:-

- The nature of the activity systems observed as a framework for their description;
- The contradictions within the activity systems as a framework for their analysis;
- The wider network of communities (and activity systems) within which the e-learning innovations and any transformation occurred; and

- The implications of the analysis for the development of eCompetence and professional development programmes.

7.2. The nature of media – from belief, through centredness to focus

The practitioners interviewed in this study used four of the five types of media identified by Laurillard with only adaptive media unrepresented (see Table 7.1, p.242).

Table 7.1: Nature of media used by interviewees

	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of Activities	No. of interviewees
1. Narrative	0	1	1	2	2	2	0	0	1	2	1	1	2	2	2	0	0	3	22	13
2. Interactive	0	1	2	0	1	2	1	1	0	2	0	2	1	1	0	1	3	2	20	13
3. Adaptive	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Communicative	3	0	0	3	1	1	0	1	0	2	1	2	2	2	2	1	0	0	21	12
5. Productive	2	0	0	1	1	0	1	1	1	0	1	0	1	0	0	1	1	1	12	11

(see Appendix 4)

Drawing on the literature review, a distinction was made between teacher- and student-centred resources. Furthermore, an examination of Activities where more than one media type was evident suggested links between:-

- **Narrative and interactive media** – provision of a repository of information underpinned interactions with media to evaluate understanding and progress in five Activities (see Appendix 4); and

- **Communicative and productive media** – a discussion between students underpinned the production of content by them in five Activities (see Appendix 4).

To suggest that particular media were centred on either teachers or students suggests a deterministic relationship between media and approach. In order to avoid prejudging the existence of such a relationship the terms teacher-focussed and student-focussed media were used in this study.

Four further Activities were identified that had different combinations of media. These included examples where narrative media formed the basis of Activities using communicative or even productive media. More often, however, such links were classed as separate Activities because the communication and production could equally have used paper-based resources as the stimulus (see Appendix 4).

Whilst no examples were identified in the interviews of adaptive media, this was considered an example of student-focussed media. As will be explored below (8.2.1 'Adaptive media' p.281), the nature of adaptive media made them the province of the innovator at the time of the interviews (2006/7). The lack of such an example, therefore, was not a significant issue for a study of the conceptual frameworks of the early majority.

7.3. Teacher-focussed media

The two elements of Laurillard's typology defined here as broadly teacher-focussed were narrative and interactive media. The technological change that facilitated the use of such media, beyond their technically proficient early

adopters, was the widespread availability of VLEs in HE. They bring together in one product many of the Internet tools that can support learning. The most commonly used tools making narrative and interactive media available were noticeboards, page creation and file uploading facilities. These features enabled practitioners with basic technical skills to make learning materials available online. Features of specific VLEs – such as Learning Units in Blackboard and Lessons in Moodle – also facilitated this process.

7.3.1. *Narrative media*

Of the 18 practitioners interviewed for this survey, 13 provided information coded as narrative uses of media (see Table 7.1, p.242). These interviewees provided 22 narrative Activities with a modal distribution of seven interviewees with two Activities per interview (Duncan, Edward, Frances, James, Maurice, Nevin, Olivia), five with one Activity (Beverley, Carl, Ian, Korin, Linda) and one with three Activities (Sheetal). Of the remaining five interviewees, four shared Activities using media in a way that had narrative features although they were sufficiently modified to be considered predominantly interactive in nature. This use of VLEs for delivering resources as a starting point for online delivery was widely recognised by interviewees.

Whether such uses can be called TEL depends upon the use of the resources on the course and the extent to which their use is woven into the course design. One concern expressed regarding the use of narrative media was whether, “...simply putting documents up for them to read is really the best use of technology ... because it is very dry” (Edward). For Edward (and others) this was balanced by the belief that, “... some of the information ... is best conveyed

as text ... and they certainly should have to put up with the sheer volume of material that's available" (Edward).

Three practitioners (Carl, Maurice, Pritesh) emphasised the potential benefits of students being able to revisit content, describing this as a "pragmatic" use of the medium responding to student demand (Pritesh). A number of practitioners noted both the strength and weaknesses of traditional lectures in discussing their selection of the media. Presentation slides only provided an outline of the lecture content without the 'value added' by the practitioner's delivery. Further concerns included student ambivalence to the use of PowerPoint slides and that making them available through the VLE created additional preparation work because of copyright issues (Olivia).

Most practitioners used the VLE to provide information links to relevant websites, intended to, "... encourage (*students*) to read a bit more" (Korin: mind-map). Even when using the web as a repository, many practitioners identified its potential as more than just a source of information should the students choose to engage further (Duncan, Edward, Sheetal). Other materials supporting students included, "... oral history (*recordings*), pictures (*and copies of*) original documents" (Duncan, Activity 12: Appendix 3), whilst one practitioner shared a draft of his textbook along with supporting materials that would appear on the publisher's web site (Sheetal, Activity 63: Appendix 3).

Some practitioners questioned whether making such resources promoted deep learning because they encouraged, "a culture of repetition" (Olivia), whilst one questioned whether they warranted the title e-learning (Duncan). Many practitioners sought to address such concerns by developing their narrative

materials using multimedia formats (Beverley, Carl, Duncan, Heather, Ian, Linda, Maurice, Pritesh, Ruth, Sheetal). In many Activities this involved including interactive elements – such as quiz questions – whilst Sheetal opted for, “... videos introducing main topics” (Sheetal, Activity 61: Appendix 3). In addition to using narrative media to support campus-based students, they were also used to support distance learners (Ian, James, Korin, Linda, Nevin, Sheetal) and to provide training opportunities for staff (Frances and Olivia). Podcasts were used as an alternative means of conveying information, particularly for distance learning students (James, Korin, Linda, Maurice, Nevin, Sheetal). The benefits of regular guidance and the students getting to know practitioners were noted, although the two examples of implementation experienced significantly different student responses – both positive and negative (Maurice, Activity 44 and Sheetal, Activity 64 respectively: Appendix 3).

Whilst the potential for increased engagement with narrative media was noted by a number of practitioners, others were clear on their limitations including the time taken to create them and the extent of student engagement with them (Frances). As a result the size of online presentations was restricted to ten or fifteen minutes (Beverley, Frances, Maurice). Others sought to address concerns regarding development time by creating resources shared between campus-based and distance learning students, creating what Ian called, “hybrid courses”. One practitioner was reluctant to create such “clickable” resources because they did not match his own preferred learning style (Duncan, Activity 12: Appendix 3).

7.3.2. *Interactive media*

Of the 18 practitioners interviewed for this survey, 13 provided information coded as representing use of the media in a predominantly interactive way. These interviewees provided 20 Activities with a modal distribution of seven interviewees with one Activity per interview (Beverley, Edward, Gurmit, Heather, Maurice, Nevin, Pritesh), five with two Activities (Carl, Frances, James, Linda, Sheetal) and one with three Activities (Ruth) (see Table 7.1, p.242).

For many practitioners, interaction represents the next stage of developing their use of e-learning beyond storage. The opportunity for interaction was provided using VLE features such as computer-assisted assessment and tools providing differential pathways through multimedia resources. Increasingly, familiar software tools (such as Microsoft Word and PowerPoint) were being supplemented by 'transparent' tools (such as Adobe Presenter, Impatica, Smirk or CourseGenie) to create interactive content. The lower technical hurdles of such tools enabled practitioners beyond innovators and early adopters to create resources moving from a narrative e-repository to interaction. Adding interaction provided a degree of "autonomous learning" through electronic feedback that was both more timely and, "... quite personal" (Ruth: mind-map).

Interaction represented an early development for many practitioners, adding formative assessments to help students evaluate their engagement with narrative media. These took the form of quizzes using a variety of formats - multiple-choice questions, filling the gap, matching and ordering - with the addition of audio adding another dimension in a language discipline (Ruth, Activity 6: Appendix 3). These were generally used as comprehension checks

with feedback directing students to appropriate material (Sheetal, Activity 61: Appendix 3) whilst a number of practitioners saw the reflective potential of, "... (*asking students*) 'How well do you think you understood this?' ... (*encouraging students*) ... to be a bit more reflective about what they're doing" (Maurice). Practitioners' concerns included the testing software (James, Sheetal), the availability of appropriate rooms (Carl) and whether it was 'fair' to use such methods given that they may suit particular preferred learning styles (Nevin). Despite such concerns, welcome benefits for practitioners included a significant reduction in time spent marking (Carl, Ruth). Across disciplines the ability to create resources that were, "... visually stimulating for students" (Pritesh: mind-map), and, "... not simply a dry set of pictures, but ... an animated set of diagrams ... or learning aids" (Edward) was appreciated.

The differences between narrative and interactive media were clearly demonstrated by 'Virtual study skills' that involved, "... a diagnostic test, a micro lecture ... and an assessed test at the end." (Beverley, Activity System 1, p.250). The interactive dimension of this resource is provided by the assessment – diagnostic, formative and summative - that provides a pathway for students through the resource, directing them towards the content relevant to their needs. As noted above, there were examples where interactive resources included a constructivist dimension where the practitioner was:-

... integrating them formally into courses ... where you're teaching in the classroom but providing materials ... (*as*) extension activities. (Duncan, Activity 12: Appendix 3)

Examples that modelled such interactive e-learning included the development of a plagiarism tutorial produced to a high standard but readily adaptable to

disciplinary context (Linda, Activity 41: Appendix 3). A similar Activity was developed to assist the institution's staff set up their work workstations effectively (Heather, Activity 26: Appendix 3). Although primarily an example of narrative media, the use of podcasts can include an interactive or even communicative dimension. The ability to rapidly record, edit and deploy a podcast using most laptops or an increasing number of mobile phones made them more immediate and less formal than virtual lectures. This was used in one instance to support virtual lectures, adding both topical issues and pointers on assessment on a weekly basis (Maurice, Activity 44: Appendix 3). This replicated a technique used in face-to-face lectures by Duncan to inform collaborative online assessment (Duncan, Activity 14: Appendix 3).

Conclusions

One feature of teacher-focussed media is the way they mimic the formal approaches of traditional learning by providing an electronic alternative to the library or the lecture hall. In the following examples of such media use consideration was given to the extent that they focussed on the formal dimension of learning, typifying what has been termed Web 1.0 uses of e-learning. Informal learning may be essential to the success of the formal learning, but remains quite separate from it. Particular attention will be paid to possible contrary evidence in the form of Web 2.0 uses of the medium. Evidence of 'teacher-focussed' media, explicitly combining formal and informal learning, would undermine notions of the type of media determining approaches to teaching.

7.4. Examples of Teacher-focussed media

Using the criteria identified above (see 3.4.4 'Activity theory', p.126) two examples of activity systems were created:-

- **Activity System 1 – Virtual study skills** (Beverley with support from Pritesh and Ruth);
- **Activity System 2 – Virtual lectures I** (Maurice)

All quotations in each example Activity System are from the transcript of the interview of the practitioner responsible for it unless otherwise stated.

7.5. Activity System 1: 'Virtual study skills'

This innovation was developed primarily for first year undergraduates in a linguistic discipline, although the resources were made available to students in subsequent years for revision purposes. The resource took the form of online mini-lectures delivering content supported by diagnostic, formative and summative multiple-choice assessments. Feedback from the interactive elements was designed to guide students to appropriate levels of engagement with the resources. A significant factor in the development of these resources was to enable lecturers to focus their time on students most in need of support.

Reasons for selection

This System is one of three similar uses of narrative media. The reason for its inclusion is the substantial use of interactive media to evaluate the students' prior knowledge and determine their level of engagement with the resources. Although many aspects of the innovation suggest a constructivist approach, this

would appear not to reflect Beverley's conceptual framework. The involvement of Pritesh and Ruth provided an opportunity to focus on any differences between, and changes in, the conceptual frameworks within the project team as well as with the two other practitioners developing similar innovations (Carl, Maurice). In addition to information from Beverley's interview, supplementary information was available from a range of sources as a result of her involvement in the institution's support activities and due to the institution's financial support for the innovation.

Table 7.2: Activities used as a basis for Activity System 1 - 'Virtual study skills'

Activity	Interviewee	Subject	Laurillard's Taxonomy
Activity 6: Virtual study skills	Beverley (02)	Undergraduates	Interactive
Activity 55: Virtual study skills	Pritesh (15)	Undergraduates	Interactive
Activity 58: Virtual study skills	Ruth (17)	Undergraduates	Interactive

(see Appendices 3 and 4; Dataset 7.3)

Sources of information

A total of 85 relevant text units were identified from practitioners' interviews - 48 from Beverley, two from Pritesh and 35 from Ruth. Having secured funding from the institution's teaching innovation grant scheme, the initial proposal and the final report were also available. Both Beverley and Ruth participated in the institution's academic practice award, whilst all three practitioners participated in a range of e-learning support programmes. Pritesh and Ruth provided further information in the form of the mind-maps they completed at their interviews.

There was, therefore, a diversity of sources of triangulating data for this innovation.

Other relevant Activities

Both Pritesh and Ruth were involved in this System. The former inspired it in his managerial role to promote learning and teaching within the department. As a result of their significant contributions to this substantial innovation, it was decided to allocate activity numbers for each of the practitioners involved. Their perceptions of this innovation were treated as additional or triangulating data.

All quotations in the analysis of this System are from the transcript of the interview with Beverley unless otherwise stated.

Subject

Beverley led a team within her department creating resources intended to develop and reinforce underpinning skills and knowledge for first year undergraduates. It also enabled students to address any gaps in their knowledge due to what Beverley called the “ad hoc” coverage of the object of the innovation in previous years.

Beverley was particularly concerned at the way in which the object had been addressed in the past. The module had frustrated new students because of the differential levels of study and grammar skills they brought to the institution. In addition to reflecting the choices made by the students in tertiary education (16 to 18 years old), Beverley also felt this revealed significant differences in the ways languages are taught at that level.

Object

The object of the innovation was to address the underpinning skills for the discipline without unnecessary repetition for the students already competent in them. As Beverley noted:-

... it is giving them the basic skills they will need for all their other (*modules*) so this is really a stepping stone so they can achieve the learning outcomes of everything else.

In addition to providing coverage of grammar it also provided, "...comprehensive study skills training (*which in the past*) we didn't really do". Coverage of the latter, "... was very ... ad hoc and fragmented", and whilst it was addressed, "We used to do just little bits of training ... (*and*) it was left up to individual members of staff whether they taught essay skills or referencing".

Outcome

The broader outcome was to address the problem that first year undergraduates often have in engaging with independent learning. The module that Beverley and her colleagues created was intended to provide a systematic introduction to the skills necessary for independent learning. It also provided an early experience of 'self-paced' engagement with course materials. This fitted with the agenda of, "... widening participation", involving a higher proportion of 18 to 24 year olds entering HE, which was expected to bring a further broadening of the range of pre-existing skills brought to the institution. The innovation, therefore, was a response to the feeling that, "... our students need more systematic training ... (*in order*) ... to produce familiarity with these study skills".

Mediating artefact

Beverley's System was intended to provide, "... a mixture of study skills training and some other things that we consider essential for languages students (*such as*) training on grammatical terminology". The content, "... runs entirely through (*the VLE*) and is divided into two sections (*study skills and grammar*) which are then divided into learning units", which consist of:-

- **A diagnostic test** – This initial knowledge check was identified as one of the key factors in the success of the innovation. By identifying the pre-existing level of competence that individual students had, they could be directed to the relevant part of the course. As noted above, the feedback would guide an already competent student direct to the summative assessment so that they could demonstrate this (see 6.4 'Main Responsibility for Transformation of Knowledge', p.211). Where engagement with the content was considered appropriate, the feedback they received would give an indication of the depth of engagement necessary;
- **A micro-lecture** – these were created through Adobe Presenter producing a linear presentation supported by a voice-over by the lecturer responsible for that area (with an optional transcription). This provided, "A resource which students can go through as many times as they need". Woven into this were a number of formative tests so that the students could check their understanding and experience questions in a format similar to the summative assessment. The impact of engagement with the resources was immediately apparent. Whilst in the past, it was

found that the referencing of first year students was, “very scatty”, now they have either, “... studied this unit and got it or not studied the unit and not got it. I don't think they would have been taught it systematically otherwise”; and

- **An online summative assessment** – having engaged with the content, or having skipped it as suggested by the diagnostic exercise, the students were required to successfully complete an online test in order to progress. This test was conducted through the VLE using the range of objective test questions of its testing facility provided. These were automatically marked, providing immediate feedback. As Ruth noted, the grades achieved through these reflected students’ grades on other parts of the course – “If they are 2.2’s they will have a 2.2 and likewise if they are 1st’s they’re 1st’s on (*the VLE*)”.

Following the initial success of the innovation, Ruth added a further dimension which developed listening skills. This generated:-

... much more positive (*student feedback*) than the grammar. The grammar they find quite boring but they have to do that. (*With*) listening they feel they can use their language so the motivation is there. They really do like those kinds of exercises. (Ruth)

Control in learning community

As with many interactive developments of narrative resources, this innovation exercises a higher degree of informal control over students’ learning than more traditional narrative methods. The term ‘pacing’ was used by a number of practitioners (Beverley, Carl, Frances, Maurice) to describe the way in which

students were required to engage regularly with the resources. In this instance, students were required to complete one resource per fortnight for the duration of the module, evidenced by an 80% pass rate in the online summative test. For Beverley, the key advantage was that this addressed the issue that, "... (*it*) is difficult for first years often ... to learn independently so I do think that although it may not be a comfortable experience ... it is quite good for them". In particular, "It's good for them to leave it to the last minute to find out what it feels like in the first year when it doesn't count towards (*their degrees*)".

Within those controls designed into the resource by the practitioners, "... we leave it up to the students' discretion. We don't check whether they have studied the micro lecture or not". Where students had some familiarity with the subject of the resource:-

We imagine that in that situation they would skim through it looking through any areas they might have trouble with. Then if they want to do the assessed test straight away then that is up to them.

For Beverley, a particular success is the way that it demonstrates to students that, "... they don't know everything and it opens their mind, we hope, to then learning about them" (see 6.8 'Students' Existing Conceptions', p.232).

In the pilot iteration of the module around 30 students were involved, whilst in subsequent years all first year undergraduates were required to complete the 10 credit module. Second and third year students on subsequent years were given the option to register and those who chose to, "... can just dip into bits if they want to (*although*) for them it is not credit bearing".

Lectures and seminars were replaced by the online resources in which students had control over the timing of their interaction within the timescales set by the practitioners. Students did, however, have the option of attending a weekly, “grammar support hour”, where they could get support from a lecturer. Ruth suggested that these sessions were particularly, “For the students who have problems with computers. Some students treat that hour as a compulsory hour and they come to that class so they take the exercises and don’t forget about it”. They could also opt to work together in this session as they worked through the resources. Although this might lead to ‘collusion’ on the summative assessment this was not a great concern because:-

... we don’t ... put too high a percentage on this because they can use any grammar exercise or web pages. We don’t control that. I’m sure that sometimes they do work together ... the only step we take to address this is to randomise the questions. (Ruth)

To a large extent student interaction in this innovation remained controlled by the practitioners’ design of the learning resource. Students had an element of control over both the timing and nature of their engagement with the option to work individually, collaboratively or draw on the support of the lecturer.

Context of learning community

More than any other Activity System studied, this innovation involved a team effort. Beverley was responsible for the design with Pritesh, who had managerial responsibility for this work area. The latter commented that of his various e-learning innovations, this is, “... the one that I’m most proud of for the department” (Pritesh). Both authoring and production involved a team of eight or nine lecturers. As Beverley noted:-

Overall it has involved a lot of work. The effort put in has been quite substantial partly because it took a lot of training for everyone to be able to get up to speed on the different things involved and partly because it does just involve a lot of work. For each part we produced 50 questions to be divided between the diagnostic and assessed tests.
(Beverley)

This had a major impact on workloads in the department during the production phase with the extensive engagement of practitioners to create a learning experience for students at its heart. Although limited, there was some evidence of students having an active role in a community of learners to develop their personal knowledge. As far as students were concerned, Ruth noted that there was an element of learning community building involved in the Activity, suggesting:-

I think it's quite good when they work together. When one has a different answer then maybe the others can sort it. Sometimes they don't agree at all and they present two different answers. I think it's quite good that they work together. They feel they can even work (*together*) in the class. (Ruth)

Workflow in learning community

This was one of a number of innovations funded by the institution's teaching innovation grants fund. Rather than employ someone to create the resources for the team, these resources were created by the team. The funds were used to pay for a series of team workshops, facilitated by colleagues from the staff development function, and to provide cover for staff directly involved. The rationale for this approach was that whilst it was time consuming, the skills developed remained within the team. The VLE was perceived as an appropriate medium for developing such resources:-

... because they are quite repetitive skills where perhaps (*students*) need to go through things a number of times so it's not really a good use of staff time to keep on training people in these things.

Throughout this Activity was informed by feedback from students. Whilst there was no equivalence of status, there was a two-way flow of information between students and practitioners. As noted above, it was also significant that this innovation depended on a team approach to its delivery.

Contradictions in Activity System 1

In analysing this Activity System a number of contradictions were identified at the following levels:-

- **Level 1**- there were no unaddressed tensions within elements of the System (see Figure 7.1, p.261);
- **Level 2** – tensions between elements of the System (see Figure 7.1, p.261, Contradiction 2a and 2b); and
- **Level 3** – tensions between the intended outcome of the Activity System and that of the central activities promoting e-learning (see Figure 7.1, p.261, Contradiction 3a).

The following sections analyse the contradictions in Activity System 1, 'Virtual study skills', in detail.

Level 1 contradictions

Although the lecturers were each responsible for a particular resource, the team approach to content creation meant that most of the primary contradictions were

addressed in the design phase. In the initial feedback from students, “... most of them have said they like learning online rather than by traditional lectures and things”. Some technical issues did arise when trying to add YouTube links for the listening exercises although these were overcome (Ruth).

Level 2 contradictions

One contradiction was experienced regarding the team’s reaction to the innovation. This could be considered as a Level 1 contradiction within the course team – the context of the learning community. Further investigation, however, suggested that it was a Level 2 contradiction – between the context and the mediating artefact – because at the heart of the contradiction were differential attitudes to the nature of the innovation (see Figure 7.1, p.261, Contradiction 2a). As Beverley observed:-

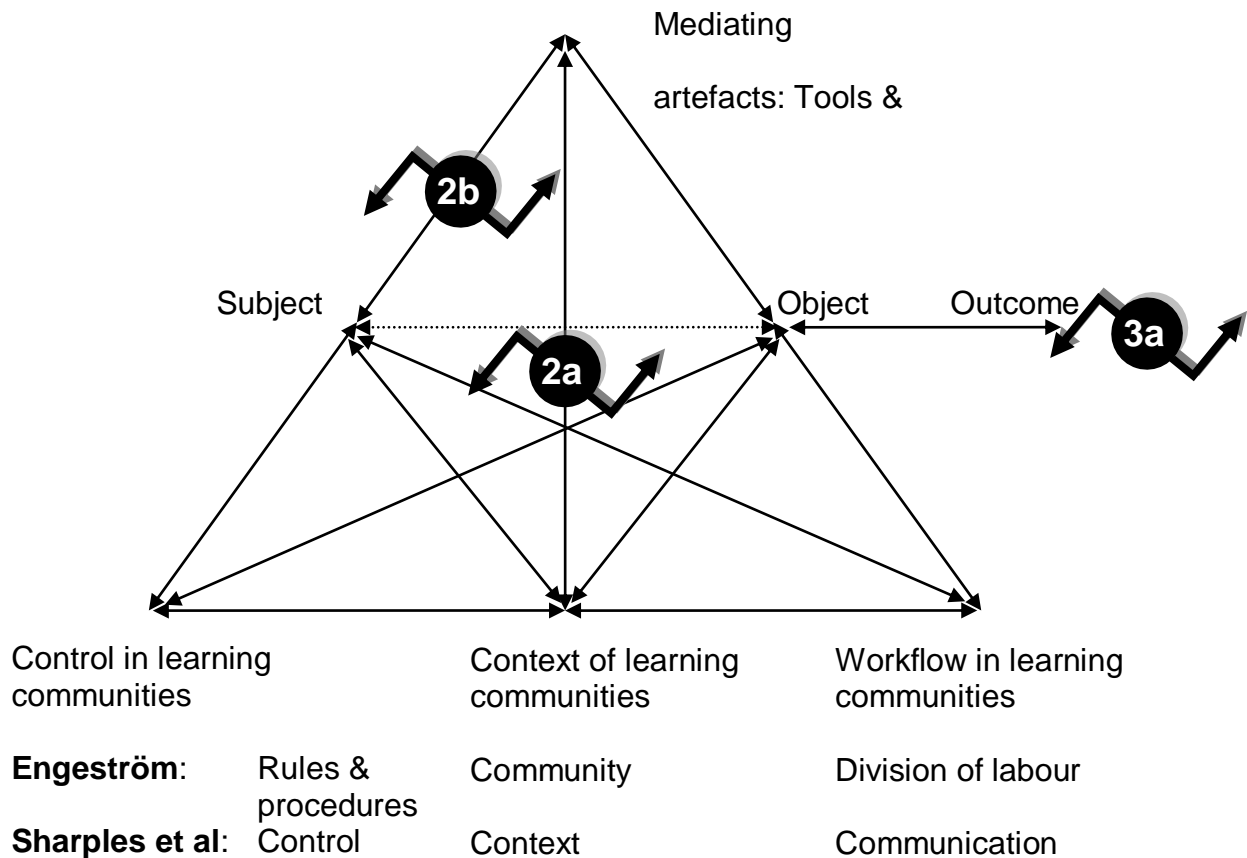
Some found it quite an enriching thing to do because they developed a lot more skills and confidence with computers - useful things like (*the VLE*) and PowerPoint. For others it was just the bane of their term so some found it quite stressful and even threatening. There was quite a lot of distress caused - perhaps because it was a team effort. They were put in a position where they felt uncomfortable being next to colleagues and that's quite a threatening thing to do possibly.

One potential contradiction – between subject and mediating artefact - identified by Beverley was whether students would be happy with reduced contact hours with lecturers (see Figure 7.1, p.261, Contradiction 2b). Although student feedback was generally positive, she:-


... (*didn't*) get the impression that it's a wildly popular course ... I think probably the appeal (*of e-learning*) is limited to ... the first year. They do like to have contact time when they know where to be at a given time and know we are going to be there to help them ... I don't think you could have many

courses which were ... e-learning, because I think they do want human contact.

Figure 7.1: Contradictions within Activity System 1



(after Engeström 1987; Sharples and Taylor et al. 2007)

 = contradiction identified in Activity System (number indicates level of contradiction; letter indicates specific contradiction for reference in the text)

Level 3 contradictions

This Activity System arose primarily from the interview with Beverley conducted in the pilot phase of this study. The initial findings gave rise to a review of the approach taken to this study because of some surprising results. Despite its apparent success, Beverley clearly did not see any value in developing the learning community dimension of her work further. She did not see any

likelihood of applying such ideas elsewhere on undergraduate courses and was very clear that she did not see a role for collaborative approaches in post-graduate programmes. She clearly did not relate to the wider initiatives encouraging e-learning, particularly collaborative e-learning (see Figure 7.1, p.261, Contradiction 3a).

This led to two significant developments in the approach to this study:-

1. A more detailed exploration of conceptual frameworks, adopting Samuelowicz and Bains dimensions of beliefs and practices as a basis for analysis; and
2. The use of activity theory to analyse the complex interactions within innovative projects.

These helped with the analysis of this Activity System particularly because both Beverley's conceptual framework and the dynamics within the System were at odds with the wider initiatives for the transformation of learning and teaching within the institution.

7.6. Activity System 2: 'Virtual lectures I'

Maurice held an influential, institution-wide position responsible for promoting learning and teaching. This gave two strong motives for introducing a significant e-learning innovation. First, he wished to be seen to 'lead by example'. Second, the commitments of his new post left him with, "... with no time for silver, classical presentation of material" (Maurice: Mind-map), in

regular teaching slots although he wished to maintain his learning and teaching role.

The result was a series of Activities which proved influential within his department and beyond. This included the creation of online mini-lectures (both by Maurice and guest lecturers), encouragement to use discussion boards, assessed and unassessed collaborative exercises and podcasts (to maintain a personal dimension and quickly update content).

Reasons for selection

Due to its success - with significant reductions in referral rates (from around 28% to zero) - and Maurice's influential position, this example informed a number of e-learning innovations across the institution. The influence of the innovation was, perhaps, increased by its unusual nature – delivering a module with minimal face-to-face contact to a campus-based group. This gave it relevance both to campus-based practitioners seeking to enhance their course and distance learning practitioners because it provided a model of how a course could be delivered without face-to-face contact. Its comprehensive nature also made it an example worthy of further study.

Sources of information

A total of 207 relevant text units were identified from practitioners' interviews - 57 from the 'Virtual lectures I' Activity and a further 150 from three related Activities. In addition to Maurice's scholarly articles on the innovation, reports (both initial proposal and final) were available as part of his successful bid for funding from the institution's teaching innovation grant scheme. There was, therefore, a diversity of sources of triangulating data for this innovation.

Other relevant Activities

As indicated above, three other Activities conducted by Maurice also developed the approach used in 'Virtual lecture I'. These include structured e-tivities exploring its content, weekly audio podcasts (including course-related and contextual information) and online assessment through a blend of objective tests (multiple choice questions) and group work. Both Beverley and Carl's innovations (Activity System 1 and Activity 8: Appendix 3 respectively) were influenced by Maurice's System.

All quotations in this example Activity System are from the transcript of the interview with Maurice unless otherwise stated.

Subject

Maurice was a 'pedagogic manager' delivering an option module available to both second and third year undergraduates and postgraduates on a Masters programme in a scientific discipline. A significant factor in his decision to innovate was that he wished to continue teaching despite his new management position. Much of the support he gave to the course became asynchronous so he could fit it around the rapidly changing demands on his time.

One issue that delivering the module in this way addressed was supporting the relatively high proportion of dyslexic students and those on the autistic spectrum due to the mathematical nature of the discipline. The institution's reputation also resulted in a diverse student intake with a higher than average proportion of overseas students (the majority of whom had English as a second language). He was not concerned that this would be seen as an inappropriate innovation

by his students because of the relevance of e-learning to the content matter of the module.

The students involved had limited involvement in using the VLE prior to embarking on this module. In 2004 this was one of the first substantial innovations using the VLE which was introduced in mid-2002. The undergraduates had accessed narrative materials and web links through it, whilst many of the post-graduates had not used it previously.

Table 7.3: Activities used as a basis for Activity System 2 - 'Virtual lectures I'

Activity	Interviewee	Subject	Laurillard's Taxonomy
Activity 42: Virtual Lectures I	Maurice (13)	Undergraduates and postgraduates	Narrative/ interactive/ communicative
Activity 43: Virtual seminars	Maurice (13)	Undergraduates and postgraduates	Communicative
Activity 45: Online assessment	Maurice (13)	Undergraduates and postgraduates	Interactive/ productive
Activity 48: Podcasts	Maurice (13)	Undergraduates and postgraduates	Narrative

(see Appendices 3 and 4; Dataset 7.3)

Object

Among the objects Maurice wished to explore were the 'pacing' of students' engagement with the module, enabling a diverse student intake to revisit

materials to underpin their learning, online assessment and the potential for collaboration. He also intended to introduce his students to a medium which was particularly relevant to the content they were considering.

Outcome

Since the broad remit of his role was the development of learning and teaching in the institution, he wished to explore the extent to which e-learning could contribute to transformation. As noted above, the decision to make this an online module reflected both Maurice's enthusiasm for (and need to be seen to promote) e-learning and the practicalities of continuing to teach in his new management role.

Mediating artefact

The innovation was based on a module which Maurice had been delivering, "...in one form or another for almost 20 years as a standard 20 unit lecture course". His initial thoughts when planning the innovation was, "... to put it crudely ... (*reproduce*) the lectures on-line", whilst recognising that, "... in some ways (*page-turning content is*) not necessarily a method that we would think is desirable". In order to achieve this, the artefact included:-

- **Introduction** – a face-to-face introduction to the course and how it would be delivered, repeated, "for people who didn't start (*the module*) in the first week";
- **Learning units** – the course was split into learning units which Maurice defined as, "...a coherent set of learning for a student which normally include one or two on-line lectures". Each lecture lasted between 10 and

15 minutes in which Maurice said, “I don’t flannel very much ... like you do at the front of a lecture theatre”. One concern was that Maurice, “... didn’t think that would be very exciting, if that was all that there was on there”, so he sought to add embellishments such as, “... videos and animations”. Overall, this Activity involved the creation of around 40 mini-lectures using Impatica, a similar transparent tool to Adobe Presenter (adopted by the institution as its preferred tool to create resources from PowerPoint presentations in 2005);

- **Formative assessments** – intended to check and develop students’ understanding of the content, these took, “... the form of quizzes with reasonably good feedback ... and links to other sites to explain it in different ways”;
- **Virtual seminars** – these took the form of structured e-tivities exploring content of ‘Virtual lectures I’ (Activity 42: Appendix 3) and contributing to ‘Online assessment’ (Activity 45: Appendix 3). Other support included ‘frequently-asked questions’, with group and general course discussion boards;
- **Podcasts** - Weekly podcasts of course-related and contextual information. These 10 minute sessions included information to, “... warn (*the students*) what they’re going to have difficulties with, how they might overcome those difficulties. (*Then*) I still put in a bit of humour at the end so I think that does help a bit”;

- **Additional resources** – among the materials provided were the chapter of an e-book, “... although I don’t see a lot of evidence of it being used”, and a related video. Also there were links to a number of relevant web sites;
- **Optional assignment briefings** – Maurice also offered optional face-to-face workshops providing, “...an opportunity for students to see me the week before (*each of three*) on-line assignments ... (*for*) a quick run through and answer any questions that they have”. He observed that, “... about half the class normally turns up”, and so, “... the PowerPoint Presentation ... also appears on-line anyway”; and
- **Summative assessment** – Maurice’s assessment design featured a blend of objective tests (multiple choice questions) and group work. The former followed a similar format to the formative objective tests (see above). Of the, “... four summative assignments during the course of the module, three ... are on-line (*objective tests*) and occur at a quarter of the way through, half the way through and three-quarters of the way through. The last one is a group project – a mini-project really”. The latter involved a mandatory e-tivity (Activity 45: Appendix 3) requiring collaborative research (both online and library-based) resulting in a mini-project. This, “... requires them to go and find out things from the Internet (*although*) some of them do read books and journals as well so they start to do that more than they would in other courses”. Although not a requirement of assessment, most groups opted to use the discussion

boards to work together and record their ideas. The group work included an element of peer assessment.

An aspect of this Activity System which attracted much interest was the significant reduction in referral rates between the last face-to-face iterations of the module (25 to 30%) and the e-learning delivery (8% in 2004 and only one student in the four subsequent years). This was particularly noteworthy in a discipline with, "... probably ... one of the highest re-sit rates".

Control in learning community

As Maurice noted, "... the students progress through these learning units in a linear, structured way". He attributed much of the success of the course in reducing referrals to the pacing of student engagement (4.7.2 'Structured engagement', p.167):-

...I think a lot of students get lost because they don't understand the first part. They haven't put the work in at the beginning, before they progress on and then they try to mug it all up at the end. So if they are having to mug up several times during the course then that's possibly not a bad thing really.

Maurice also noted that the students, "... tend to speak highly of the (*online*) lecture format which they can log-on and do that whenever they like really". They appear to appreciate the flexibility of the model although they suggested that they would, "... take anything up to an hour to work through (*the 15 minute mini-lectures*) - stopping, making notes and so on" (Maurice).

To a large extent Maurice controlled the student interaction with his learning resource through its careful design. The group work provided an element of the

course in which students worked collaboratively to create resources within the broad parameters he set but this was a relatively small proportion of the overall engagement with the course.

Context of learning community

There was limited direct involvement of anyone else within the department, although as noted above, Maurice's innovation was influential in the institution, leading to a similar Activity in the same department (Carl, Activity 8: Appendix 3).

There were a number of aspects of the Activity that encouraged the creation of a learning community amongst the students. The group-work element of the final summative assessment not only required them to conduct such work but also to evaluate it through peer- and self-assessment. One factor which encouraged this was that, "... the students already know each other anyway", reducing (but not entirely removing) the hurdles of the initial stages of community building.

In order to evaluate the contributions to the group work students were asked, "...to indicate on the document ... who was responsible for which bit and how they actually put it together". Maurice also used the discussion boards to establish, "... who hadn't contributed very much and who had", and this was supplemented by, "... an anonymous survey, so that ... they would be asked (to) rate (*each others'*) work". He found that, "... they weren't going to give people credit for not doing anything".

Based on this experience Maurice felt that, "... e-learning offers you opportunity to help with the assessment of group work, which you probably can't have in any other way". Whilst he didn't feel that you could insist that students, "... must post all (*their*) thoughts on the discussion board", you could state that, "... you'll only be marked on what your contribution is on the discussion board".

The main focus of this was to develop students' personal knowledge, although there were elements (such as the group work) which opened up the possibility of collective knowledge development. It was evident from his approach that Maurice was certainly open to the creation of a community of learners in which students had an active role.

Workflow in learning community

This was one of a number of such innovations funded by the institution's teaching innovation grants fund. Maurice opted to employ a post-graduate student to create the resources under his direction, using his original materials from previous face-to-face delivery of the module. As far as students were concerned:-

... they don't have to use the discussion boards and so on to work together in groups, ... (*although*) most of them do at least to record their ideas. (*Meanwhile*) some of the groups work almost seamlessly on-line without any face-to-face meetings at all.

In addition to the assessed group work, interaction was encouraged through online discussion boards. Maurice had a 'No e-mail' rule, requiring students to post any course-related enquiries on the course discussion boards. If a student sent him an enquiry on anything other than a personal matter he would gently remind them that the discussion boards were the place to get a reply. There

was, therefore, an element of learning community building as part of this module.

Maurice saw the time saved by automatic marking as a means of releasing time for supporting learning communities. This enabled him to support online discussions spending, "... about two or three hours a week on average looking at the e-tivities, looking at the discussion boards and so on. I try to log on two or three times a week".

One of the exciting elements of Maurice's innovation was the way in which it emphasised a two-way flow of information between him and his students. This was achieved despite – or perhaps even because of – this senior academic's promotion to an institutional managerial role. The unequal nature of the relationship (and hence the communication) may have remained but by adopting some of the students' preferred means of communications, such as podcasts, Maurice demonstrated a willingness to change this.

Contradictions in the Activity System

In analysing this Activity System contradictions were identified at only one level:-

- **Level 1**– there were no unresolved tensions within elements of the System (see Figure 7.2, p.275);
- **Level 2** – tensions between elements of the System (see Figure 7.2, p.275 Contradictions 2a, 2b and 2c); and

- **Level 3** – there were no unresolved tensions between the intended outcome of the Activity System and that of the central activities promoting e-learning (see Figure 7.2, p.275).

The following sections analyse the contradictions in Activity System 2, ‘Virtual lectures II’, in detail.

Level 1 contradictions

Since this module was approaching its third iteration at the time of the interview (2007), it was perhaps not surprising that any Level 1 contradictions had been addressed. A number of further factors made it less likely that such contradictions would be encountered. First, Maurice’s position ensured that support was readily available to avoid such problems. Secondly, he was unusual in having both technical and pedagogic know-how when embarking on his Activity. Finally, Maurice had close control over the Activity because the only other person involved was the post-graduate student he employed.

Level 2 contradictions

Maurice recognised that his position within the institution to some extent made his innovation atypical. Both the support and the unusual role he assumed meant that it would be different had he been in his substantive role. He felt that:-

... when I go back as a rank and file member of the department I’ll probably get asked to do some other courses. I’m not sure I’d put them all completely on-line. I think the reason I did this was partly because I felt I had to - there wasn’t any other way of doing it.

There was a possible contradiction between Maurice's mediating artefact and his object of greater student engagement (see Figure 7.2, p.275, Contradiction 2a). He recognised the value that his students place on face-to-face contact with him so his use of podcasts could be perceived as adding to the distance between him and them.

A further possible contradiction existed between the mediating artefact and context of the learning community. Whilst the use of e-learning was particularly appropriate to the content of this module, had this approach been more widely adopted he recognised that there might have been a negative reaction to going online because, "... (*if students have*) actually come in to the University campus, then they deserve some face-to-face contact". Nevertheless, he recognised that having had this experience he:-

... would probably change dramatically the way I would teach. Before, I did the standard 20 lectures with some handouts, example sheets and so on (*with an*) exam at the end ... If I was writing a new course, go for a very blended learning type of approach, really cut down the number of lectures.

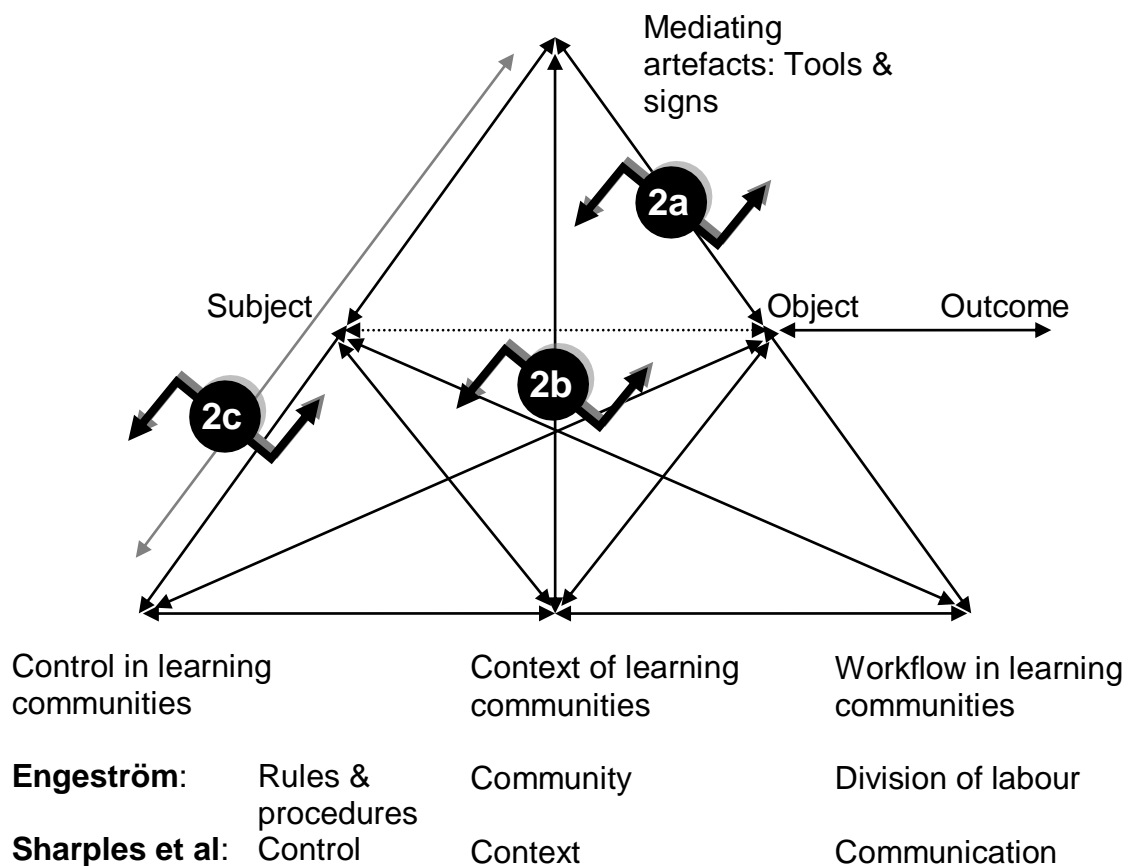
A further concern that Maurice had regarding the Activity System he had created was that:-

... the students are getting embarrassingly high marks in their assignments despite the fact that I compare them with the sort of questions I used to ask in the exam when I still did a lecture course. If anything I've toughened up the questions over the 4 years. I think they just work hard – either that or they're all just cheating and I can't figure out how they're doing it!

Concerns regarding possible 'dumbing-down' have caused considerable concerns at all levels of UK education over the past decade. Given this

potential contradiction between his innovation (the mediating artefact) and the institution's assessment policies and procedures (control of the learning community), Maurice spent some time investigating the possible causes for the change before sharing the outcome.

Figure 7.2: Contradictions within Activity System 2



(after Engeström 1987; Sharples and Taylor et al. 2007)

= contradiction identified in Activity System (number indicates level of contradiction; letter indicates specific contradiction for reference in the text)

One significant factor Maurice attributed for the success of students in this module was the use of quizzes to enable students to constantly monitor their progress. It is not clear whether students valued the quizzes because they reinforced their learning or because they saw them as practice for the

summative assessment because, “The assignment questions are written in the same style as the quizzes”. The questions asked were predominantly – but not exclusively - multiple choice questions using, “... a fairly large number of distracters in the summative (*assessment*) to avoid guessing” (see 4.6.1 ‘Objective tests’, p.158).

From student feedback it was evident that, “... they are generally working quite hard (*on this module*)” (see ‘Control of the learning community’ above). A number of examples where there is evidence that students put more effort into innovative courses were identified by interviewees in this study (see 4.7 ‘Student feedback and support’, p.165).

Level 3 contradictions

Perhaps more than any other innovation in this thesis, this was linked to the intended outcomes of the central initiative. Indeed, Maurice’s experiences to some extent defined those central initiatives.

7.7. Conclusions on teacher-focussed media

Detailed consideration on the impact of media on learning communities will be given at the end of Chapter 8. This will ensure that the conclusions – and recommendations based on them – will be based on an analysis of the full range of Activities undertaken by the practitioners interviewed for this study. There are, however, a number of immediate conclusions that can be drawn regarding the nature of teacher-focussed media.

The uses of teacher-focussed media illustrated in the examples of Activity Systems above, were clearly integrated into the course design rather than being

additions to it. Transparent tools made both narrative and interactive media relatively easy to include in the relevant courses. Both approaches to innovation may add value for participants but they do not necessarily transform a programme even if they are effectively implemented. The scale of these differed with one targeting building a foundation for later work in the course (Activity System 1), whilst the other was a standalone module (Activity System 2). There were, therefore, differential levels of understanding of key concepts to be accommodated by these Systems. A common feature of these Systems was the nature of control in the learning communities created. Whilst students had a degree of control of their engagement with the resources, close practitioner control was retained through the design of the learning resources.

Consideration of the contradictions within the Activity Systems observed provided a means of analysing their effectiveness. Although potential contradictions were apparent in both, it was clear that these did not inhibit effective delivery of further iterations of the courses. The key differences between Activity Systems 1 and 2 were regarding the extent to which the changes could be seen as transformative. The latter was clearly in step with (and to some extent drove) the wider institutional initiative. Both Level 2 and 3 contradictions were apparent in Beverley's System with some resistance within the course team to the nature of the mediating artefact – a Level 2 contradiction. Although this had been resolved to enable the Activity to be delivered effectively, it clearly remained a barrier to further development and dissemination. It also appeared to be a factor in Beverley's reluctance to develop the learning community element of the innovation and to apply it on other courses. It was evident that this represented a Level 3 contradiction

between the outcome of the Activity and the intended outcomes of the institutional drive towards collaborative e-learning.

Comparing the apparently similar 'Virtual Lecture' innovations led to some interesting distinctions (Maurice, Activity System 2 and Carl, Activity 8: Appendix 3). Both examples involved the creation of online mini-lectures, retaining the existing course structure and dividing content into "subject-matter units" (Mayes and de Freitas 2004:24). Although the resulting resources involved an element of interactivity, they were essentially a repository for previously developed material. In both examples the materials were supported by both formative and summative assessments consisting of multiple-choice questions. For Virtual Learning I (Maurice, Activity System 2), the resources were also supported by a degree of interaction in online discussion boards, encouraged through a 'No e-mail' rule. Maurice, the practitioner responsible for Activity System 2, replaced all face-to-face lectures with online resources and activities, providing a basis for significant changes both to the face-to-face seminars and the summative assessment. This took it beyond cognitive constructivism, giving it a social constructivist dimension.

Narrative and interactive media typify what has been called Web 1.0 which provides the ability to replicate traditional delivery in an online environment. Material can meet the student expectation of constant, '24/7' access and the substantial cost of providing materials for a geographically dispersed cohort can be avoided. The presentation of information in narrative or interactive media is primarily linear. They respectively provide an index and alternative pathways through the content provided. It may appeal to certain learning styles but we

need to look elsewhere for resources that encourage deeper learning. Once e-learning has been adopted by an institution, generally through the use of a VLE, its initial steps are likely to lead to the creation of an e-library (or e-repository). The institution then faces the difficult questions of not 'whether?' they should use e-learning but 'how?' and 'why?'.

8. Findings: Examples of uses of student–focussed media

8.1. Introduction

The purpose of this chapter is to explore examples of innovation that focus on the collaborative aspect of TEL. The Activity Systems for this (and the previous) chapter are identified using the criteria identified above (see 3.4.4 ‘Activity theory’, p.126), using activity theory to both describe them and analyse their impact. Much of the analysis in this thesis suggests that these innovations will illuminate aspects of the transformation of learning and teaching envisaged in the sector.

As noted above (see 7 ‘Findings: Examples of uses of teacher–focussed media’, p.241), this chapter considers aspects of such learning-focussed media, addressing:-

- The nature of the Activity Systems observed as a framework for their description;
- The contradictions within the Activity Systems as a framework for their analysis;
- The wider network of communities (and Activity Systems) within which TEL innovations and transformation occurred;
- The implications of the analysis for the development of eCompetence and professional development programmes.

8.2. Student-focussed media

The three elements of Laurillard's typology defined here as broadly student-focussed were:-

- **Adaptive** – The resource changed in response to input from the user.
This could take the form of simulations or role-play 'games';
- **Communicative** – A key element of delivery was the communication between participants; and
- **Productive** – The focus of delivery was on participants creating content.

(Laurillard, 2002)

The Internet tools provided by VLEs that supported the more collaborative aspects of learning included discussion boards and conferencing - or chat – facilities and more recent innovations such as wikis and blogs. Such tools enabled the VLE to not only support formal learning but increasingly enabled informal learning, including the development of communities of practice. The use of social e-learning tools was encouraged through online reflections and similar programmes (see 5.4 'Staff motivation and support', p.187).

8.2.1. *Adaptive media*

Of the 18 practitioners interviewed for this survey, none provided information coded as using media in a predominantly adaptive way. During this study, one example of such use was identified. A practitioner had developed an online iteration of a 'trading card' game to develop the perceived low level of research skills of first year undergraduate students. This involved students earning

points towards their summative mark by solving (and assisting others to solve) different levels of problems. Creating the online version, providing a scalable version of the successful pilot with around 10 students, was a largely technical project requiring a high level of programming skills. Despite the innovative technical and pedagogical aspects, this was clearly the work of an innovator and so this practitioner was not included as an interviewee for this study.

Subsequent innovations that could be considered adaptive involved using the Second-life virtual world, resulting in a number of papers for the institution's e-learning research unit. At the time of writing (December 2010) such innovations still required substantial technical support to implement and were, therefore, clearly the province of innovators.

8.2.2. *Communicative media*

Of the 18 practitioners interviewed for this survey, 12 provided information coded as using the media in a predominantly communicative way. These interviewees provided 21 Activities with communicative use of media with bi-modal distribution of five interviewees for both one (Edward, Frances, Heather, Korin, Pritesh) and two Activities (James, Linda, Maurice, Nevin, Olivia) per interview. Two interviewees shared three Activities that could be considered to be using communicative media (Angela, Duncan) (see Table 7.1, p.242).

Typically, early experiments with communicative media in VLEs tend to be unstructured (Heather, James, Korin, Linda, Nevin, Olivia, Ruth, Sheetal). For example, practitioners who gave students the option of using discussion boards (Linda, Olivia, Nevin) found, "... the usual flurry of activity from a few enthusiasts and then it just goes dead" (Nevin, Activity 47: Appendix 3) with, "... about 10%

(of students) carry on using it" (Linda). Olivia attributed reluctance to participate to the, "...shift (*it required to students*) taking responsibility in doing something that is outside of (*assessment*)" (Olivia: mind-map). One practitioner not only shared this widespread concern that it was difficult to engage students in non-assessed online work, but questioned whether practitioners, "... should be assessing peoples' contributions to a discussion because I think that violates their ... learning styles and learning preferences" (Sheetal). This was seen as, "... an additional pressure on (*students*) time", and to be successful they had to be willing to, "... create (*the community for*) themselves" (Linda). Concerns were also expressed regarding the workload generated by monitoring such collaborative approaches (see 5.4 'Staff motivation and support', p.187).

Whilst distance learning provided an obvious use of communicative media, many practitioners felt it also added value to campus-based courses. The more successful examples of its use involved structured engagement with collaborative e-learning. One approach widely referred to was Salmon's e-tivities which provided a tightly structured format for communicative e-learning (Salmon 2002a), reflecting its extensive use in the institution's e-learning training interventions. One practitioner remodelled his course for campus-based undergraduates on this basis, finding "... most of (*the students*) enjoy the e-tivities", one of which was assessed (Maurice: mind-map), whilst another felt that, "... e-tivities work brilliantly", when developing student skills (Linda).

Despite the widely held view that students only responded to assessment, some practitioners experimenting with group work were surprised by the level of student engagement in optional online components (Duncan, Edward, Maurice).

They found that whilst, “... they don’t have to use the discussion boards ... some of the groups work almost seamlessly online without any face-to-face meetings at all” (Maurice, Activity 43: Appendix 3) with 10 of the 13 students in a small cohort opting to work together online (Edward, Activity 15: Appendix 3). Whilst student anxiety that, “... what they post on (*the VLE*) can be seen by everyone else”, was recognised by one practitioner (James), multiple interviews attributed limited student engagement to practitioner anxieties regarding VLE use. An important element of the success of online collaboration that was not directly assessed was, “... getting (*the students*) to appreciate that is part of the learning outcome” (Pritesh, Activity System 3).

Deeper participation in discussion boards was encouraged by involving ‘guest experts’ for both campus-based and distance learners (Angela and Korin respectively). ‘Imposing’ discussion boards through a ‘No e-mail’ rule (Maurice, Activity System 2) freed up staff time by avoiding duplicate queries although where students were given the option they chose e-mail – the communication tool they’re most familiar with (James). A reluctant user of discussion boards preferred, “... collaborative work with wikis”, and at the time of the interview (2007) was exploring their use as the basis for alternative forms of assessment (Sheetal).

Whilst “student culture” was recognised as a barrier to engagement (Olivia: mind-map), there was widespread recognition that practitioners themselves were, “... not doing it very well ... (*and*) not keeping the students engaged” (Korin). The importance of, “managing student expectations” (Korin, Activity 35:

Appendix 3) was also recognised in ensuring forums attracted all students, not just, “computer geeks” (Linda, Activity 37: Appendix 3).

8.2.3. Productive media

Of the 18 practitioners interviewed for this survey, 11 provided information coded as using the media in a predominantly productive way. These interviewees shared 12 Activities with only one sharing more than a single example (Angela with two Activities) (see Table 7.1, p.242).

Most of the Activities identified as evidencing productive media involved collaborative working within a cohort of students. For example, one practitioner created an e-tivity requiring students, “... to create (*an environmental*) campaign outside the classroom and then put it on (*on a wiki, sharing and discussing*) ... the positive and the negative aspects of each campaign”, then voting for the best campaign in class (Ruth, Activity 60: Appendix 3). Overcoming the timetabling problems involved in implementing this innovation emphasised the need for the development of TEL to be considered in the context of the wider curriculum.

Such approaches reflect Collis and Moonen’s work on co-structured content (Collis and Moonen 2001) with students building on the content generated by previous cohorts (Edward, Activity 15: Appendix 3). The role of learners working together to create content has also been recognised in European Union consultative events where it was suggested:-

...the process of involving content users in creation needs to be formalised and encouraged, for both individuals and groups of users. Not only does this create more and better

content, it also strengthens and enriches the learning process. (EU 2005)

8.3. Examples of use of student-focussed media

Using the criteria identified above (see 3.4.4 'Activity theory', p.126) two further examples of activity systems were created:-

- **Activity System 3 – Engagement** (Pritesh);
- **Activity System 4 – Research skills development** (Duncan)

All quotations in each example System are from the transcript of the interview of the practitioner responsible for the primary Activity unless otherwise stated.

8.4. Activity System 3: 'Engagement'

This innovation involved first year undergraduates in a linguistic discipline. They were already familiar with use of the VLE through their involvement in another Activity (see Activity System 1).

Reasons for selection

The main reason for selecting Pritesh's work as the basis of an Activity System was the extent to which he engaged his students in productive Activities.

Although his Activities were not assessed, his students were actively involved throughout. This contrasts markedly with the experiences of Pritesh's departmental colleagues – both those interviewed for this study and those using such techniques without the online element.

Sources of information

A total of 82 relevant text units were identified from practitioners' interviews - 76 from the 'Engagement' Activity and a further six from a related Activity. In addition to Pritesh's interview, further triangulating data was provided by his presentation to the institution's VLE user group.

Other relevant Activities

As indicated above, only one other Activity provided relevant evidence. All quotations in this example of an Activity System were from the transcript of the interview with Pritesh unless otherwise stated.

Subject

Pritesh was a 'pedagogic manager' who was attracted by the "novelty" of e-learning both in terms of technology and pedagogy (Pritesh: mind-map). Given his responsibilities for the department's budget and the transformation of learning and teaching on its courses, Pritesh also recognised the medium's wider potential advantages. He created a number of Activities that focussed on increasing student engagement with the content through collaboration, redesigning the format of his face-to-face sessions to accommodate this.

Object

The immediate object for Pritesh was to encourage greater engagement by his students with the discipline. The time he had with them was limited and he was seeking a means of using it more effectively.

Outcome

For Pritesh, the "attractiveness of the medium" (Pritesh: mind-map) – both to him and his students – opened a range of possibilities. Although not entirely

clear how, he felt that greater engagement with e-learning would benefit his students. He also disliked the repetitive aspects of traditional lecture delivery (Pritesh: mind-map), preferring to focus the available face-to-face time on interaction rather than didactic delivery.

Mediating artefact

Pritesh created a range of interactive Activities intended to generate engagement in his first year module. The common format he used throughout was:-

1. **Introduction** – the exercise was introduced face-to-face with a discussion of the specific task, its context and the technology being used;
2. **Engagement activity** – these involved sharing (either individually or as a group) preconceptions, ideas, research materials and understanding. Depending on the content and expected outcome of the Activity, students were expected to use either a wiki or discussion board; and
3. **Follow-up** – the 'Engagement' Activity then formed the basis of a face-to-face session exploring the concepts addressed and relating them to the content Pritesh then delivered.

This approach was adopted for a 10 lecture module with engagement activities related to half of the sessions. He provided examples of three such Activities – one involving a discussion board and two using wikis. One example of Pritesh's 'Engagement' Activity underpinned his coverage of devolution and regional identity. Groups of students were required to consider the issue in the context of a region they had been allocated. Having researched it, they were expected

to develop a case for devolution of powers to their region for presentation at a face-to-face meeting two weeks later. The Activity, therefore, addressed a range of transferrable skills in addition to the disciplinary content addressed.

Pritesh achieved this through:-

...getting them to investigate, rather than me telling them the differences between the regions, and then sharing it first with their group (*over a week*) and then the rest of the (*class*) ...

Table 8.1: Activities used as a basis for Activity System 3 - 'Engagement'

Activity	Interviewee	Subject	Laurillard's Taxonomy
Activity 56: Engagement	Pritesh (16)	Undergraduates	Laurillard's Taxonomy – Communicative/ productive
Activity 55: Virtual study skills	Pritesh (15)	Undergraduates	(Activity 6: Virtual study skills)

(see Appendices 3 and 4; Dataset 7.3)

Although not assessed, this led to at least a 90% completion rate in the various iterations of the course. This compared very favourably with the response to previous attempts to get students to complete pre-session work.

Another example of Pritesh's engagement activities was his use of a wiki to explore stereotypes held by students. Following an Activity exploring the students' stereotypes, the face-to-face session could, "... go into a discussion about how stereotypes arise" (see 6.8 'Students' Existing Conceptions', p.232).

Control of learning communities

Pritesh was genuinely surprised by the level of student engagement with his Activities. His past experience with non-assessed Activities suggested that the students were unlikely to participate where this instrument of teacher-control was removed. Possible reasons he identified for the apparent success were both its “novelty” (Pritesh: mind-map) and the more fundamental aspects of the medium that supported learning. Both Pritesh’s and other interviewees’ experiences suggest that structuring the Activities in the design stage is important (see 8.2.2 ‘Communicative media’, p.282). As a result, the dynamic in the classroom changed because the students had developed concepts of the issues being explored. These could then be developed further in discussion with the practitioner. Pritesh clearly valued student interaction to produce resources, setting only broad parameters for these although they were designed to meet specific objectives.

Context of learning communities

Pritesh reformatted his lecture programme in order to facilitate developing a learning community. He opted to only deliver lectures to the whole group in alternate weeks during this 10 week module. In the weeks he wasn’t lecturing, Pritesh, “... split them into two smaller groups (*to*) do the participative stuff ... going through the discussion board things in the (*alternate*) weeks”. Pritesh found that his devolution exercise changed the nature of his relationship with the group. Rather than creating an experience for passive receipt by his students, now, “... they do the work. Then they come more prepared (*to the seminar*) than if I’d given them some written questions.”

Pritesh felt that his use of collaborative media had another positive impact on the development of a learning community among his students. Such media often engaged students who were reluctant contributors to discussions because, "... they're too timid or they don't think of it in the 50 minutes of the class" (Pritesh: mind-map).

Pritesh created a context in which the students were playing an active role in a community of learning. He intended to develop their knowledge collectively in a context which had some relevance to their likely roles beyond their current course.

Workflow in learning communities

Compared with the more traditional approaches to delivering content, Pritesh felt that, "...it means (*the students have*) done more work ... because I haven't taken any assessment away from the module in order for them to do these (*engagement activities*)". He also noted the potential of structured e-learning Activities to compensate students for the other demands on their lecturers' time. Whilst he couldn't justify many individual guidance sessions with students, he could use e-learning to, "... send them off on a journey" (Pritesh: mind-map).

For him, part of the attraction of investing time in such innovations was the reusability of the Activities because, "...once (*the Activity*) was actually ready to go, I didn't find them very time consuming at all". For his students, the benefits of their extra work were apparent because of the way that Pritesh wove their explorations into his face-to-face sessions. He recognised that the up-front investment was "quite significant", particularly for colleagues, "... who don't have an awful lot of IT exposure" (Pritesh: mind-map).

Pritesh considered the workload involved in monitoring student-controlled discussions to have two broad elements:-

- **Moderation** - he only needed to, "...look at the responses occasionally in the two weeks between giving them the work and eventually discussing it in class"; and
- **Preparation** – this involved, "... maybe 15 minutes before the seminar when we were going to discuss it, I had a final look through to see (*whether*) there was enough on there to generate discussion for them or not".

Pritesh regarded the latter as the more onerous of the two tasks, clearly indicating his 'light touch' approach to moderation. He did, however, note the potential risk that, "... the workload could've been considerable if they hadn't responded because I'd have had to quickly dream up something to do in the 50 minutes. (*I suppose*) I could've reverted to what I'd done before". Overall, he considered the additional workload modest compared with the advantages of such Activities.

Although the scope of the Activities is limited, Pritesh routinely used his students' conceptions as the starting point for them. This then formed the basis of further development of their conceptions through transformation of the information obtained.

Contradictions in Activity System 3

In analysing this Activity System a number of contradictions were identified at the following levels:-

- **Level 1** – tensions within elements of the System (see Figure 8.1, p.294, Contradiction 1a);
- **Level 2** – tensions between elements of the System (see Figure 8.1, p.294, Contradiction 2a); and
- **Level 3** – tensions between the intended outcome of the System and that of the central activities promoting e-learning (see Figure 8.1, p.294, Contradiction 3a).

The following sections analyse the potential contradictions addressed in Activity System 3, 'Engagement', in detail.

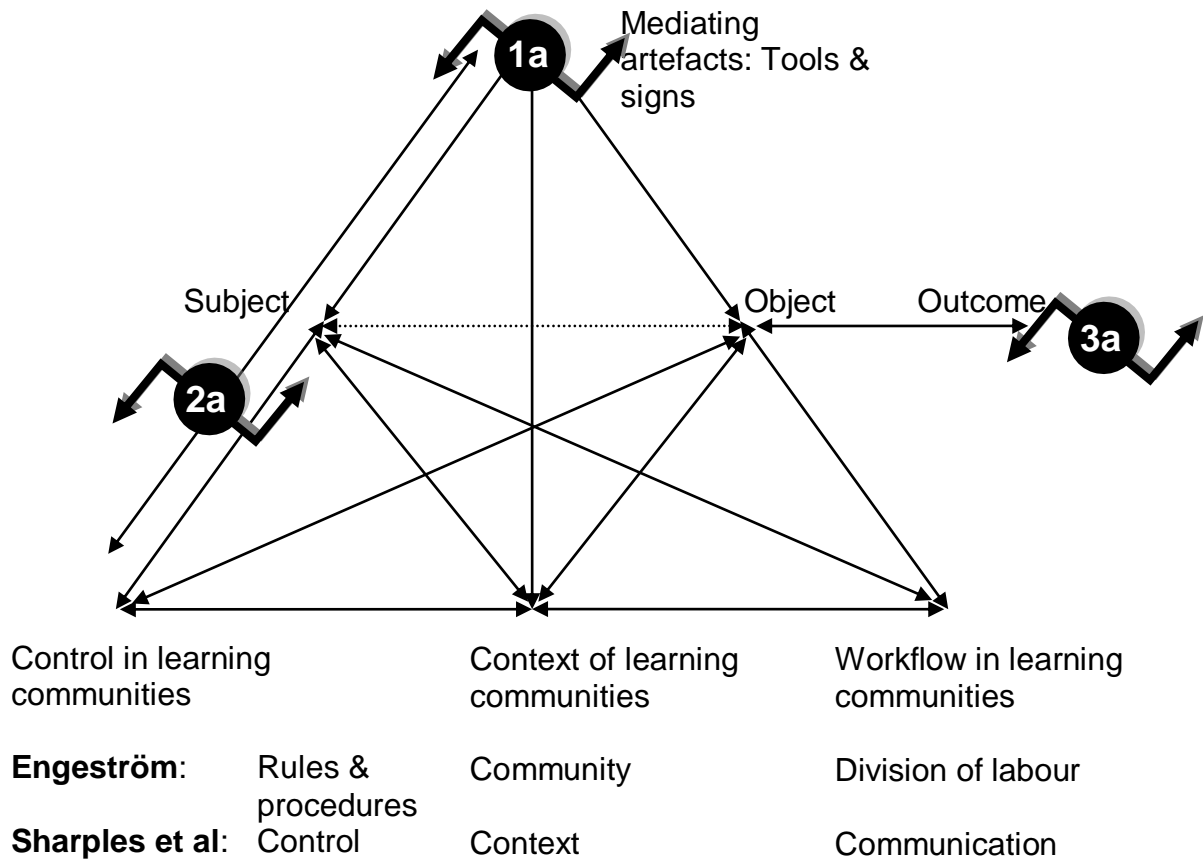
Level 1 contradiction

As noted above (see 4.4.1 'Confidence with technology', p.145), the recommended wiki tool presented a significant technical obstacle to this Activity. Pritesh was very clear that, "I can't remember for the life of me how that was incorporated". Repeated use of this particular mediating artefact necessitated reliance on technical support staff. The subsequent provision of an alternative Wiki product, operating within the VLE, meant that Pritesh felt able to include the artefact himself.


Level 2 contradictions

The range of Activities that Pritesh was able to include was inhibited by copyright issues (or the interpretation of copyright legislation within the institution). In many institutions his proposed use of film clips in the VLE for assessment and review would have fallen within their interpretations of the specific exemptions in UK copyright legislation.

Figure 8.1: Contradictions within Activity System 3



(after Engeström 1987; Sharples and Taylor et al. 2007)

 = contradiction identified in Activity System (number indicates level of contradiction; letter indicates specific contradiction for reference in the text)

Level 3 contradictions

Pritesh was concerned that those involved in central activities promoting e-learning (i.e. the institution's research unit), "... couldn't quite appreciate how massively limited academic time is". As a result he felt some of their expectations of academics were unreasonable given their, "... capacities and limitations". Pritesh noted that, "... academics are very pragmatic about what they can do and what they can justify".

8.5. Activity Systems 4: ‘Research skills development’

This was a required module for postgraduates on a Masters programme in a social science discipline, aiming to develop the research skills of the diverse student intake. The majority of students were full-time but a significant minority were part-timers, resulting in wide variations of experience in using the VLE prior to the module.

Reasons for selection

This Activity System in some ways represented a departure from Duncan’s previous experiments with the e-tivities format. He had enthusiastically adopted that format as a result of his engagement with the institution’s staff development activities (see 5.4.4 ‘Developing eCompetence’, p.193). The limited student engagement with some of his innovations (Activities 11, 12 and 13: Appendix 3) had, “...challenged my confidence in the media” (Duncan: mind-map). This example is of particular interest because of the way that he sought to address such frustrations.

Sources of information

A total of 118 relevant text units were identified from practitioners’ interviews - 70 from the ‘Virtual lectures I’ Activity and a further 48 from three related Activities. In addition to Duncan’s interview, further triangulating data was provided by his submissions for the institution’s academic practice award and his presentation to the institution’s VLE users’ group.

Other relevant Activities

As indicated above, three other Activities conducted by Duncan developed the approach used in 'Research skills development'. These included self study resources (with relevant data, images, oral testimony and source materials), enhancing the blend of a course with e-tivities and a comprehensive online self-study resource with a range of materials supplemented by online mini-lectures and e-tivities.

All quotations in this example Activity System are from the transcript of the interview with Duncan unless otherwise stated.

Subject

Duncan worked for a central-service providing educational support for postgraduate skills development – an 'enthusiastic supporter'. This led to his involvement in a postgraduate research methods course, supporting an academic department's delivery. This was both relevant to his skills enhancement role and enabled him to continue developing his own academic practice.

Duncan could be described as a serial experimenter with e-learning. This Activity System represented his first significant engagement with productive media, although the actual tools he used were familiar from his earlier Activities. He recognised that this represented an adaptation of the e-tivities approach that he had previously closely followed. This development, and his emphasis throughout on pedagogical (rather than technical) innovation, meant that it was particularly appropriate for this study of transformation of learning and teaching.

Table 8.2: Activities used as a basis for Activity System 4 - 'Research skills development'

Activity	Interviewee	Subject	Laurillard's Taxonomy
Activity 14: Research skills development II	Duncan (04)	Postgraduates	Communicative/ productive
Activity 11: Online workbook	Duncan (04)	Undergraduates Postgraduates	Narrative
Activity 12: Richer blend	Duncan (04)	Postgraduates	Communicative
Activity 13: Research skills development I	Duncan (04)	Postgraduates	Narrative/ communicative

(see Appendices 3 and 4; Dataset 7.3)

Object

The aim of this innovation was to develop the students so that:-

At the end of (*the module*) they should be able to write a proper research project, ... a proposal (*and*) undertake a literature review. (*We've added the requirement that they*) should be able to work in groups ... and there's (*also*) outcomes on writing skills, things like that.

Essay assessments were replaced by a group work research project which was seen, "... as a context for their skills innovation ... (*providing*) extension activities", beyond the face-to-face lectures.

Outcome

From his track record of e-learning innovation, Duncan's enthusiasm for such developments was evident and it was likely that the promotion of e-learning was a factor in this innovation. His main intention, however, was to ensure that

students gained more than just knowledge of a series of research techniques. The new assessment required them not only to work collaboratively but also to deliver a group presentation based on their work. Duncan hoped this would provide evidence of both deeper levels of understanding of the subject matter and of a range of transferable skills. This enabled Duncan and his colleagues to assess skills and knowledge that, "... we couldn't assess through essays".

Mediating artefact

Duncan sought to supplement this classroom taught, skills-based course using assessed group work. In order to achieve its objectives, Duncan's innovation included:-

- **Lectures** - the lecture format for this module was well established and, given the range of courses that it supported, substantial change was impractical. It was evident, however, that Duncan and his colleagues were constantly reflecting on and reviewing the content and mode of delivery. One change that they were able to introduce over a number of iterations was a reduction in the number of lecturers involved. Concentrating delivery on a core team (rather than having a different specialist lecturer for each session) meant that it was possible to contemplate (and effectively monitor) this Activity;
- **Research project** - "... allied to (*the lectures, the students*) are given a (*problem-based*) research project to develop as a group". Although Duncan added, "I don't really manage their development of that project very much, we mark it at the end", there was an element of monitoring or progress-chasing (see below) in the way the Activity was run;

- **Group log** - a minimum requirement was set for entries regarding their progress in a “group log”. This took the form of a private discussion board (accessible by the group and tutors), acting as a repository of their discussions and activities contributing to their assessed group work. This provided an audit trail of individual engagement with the group project;
- **Assessment** - in their groups, students were required to prepare a research project (evidenced in a poster) and present their findings. Based on these elements Duncan and his colleagues assessed, “... the sophistication of their research project”. The assessment requirements included the ‘group log’ to help monitor their progress; and
- **Progress chasing** - monitoring the group logs enabled Duncan to, “...give them a little prod ... and that’s quite useful because (*their progress is*) invisible otherwise without a lot of questioning”. These reminders took the form of comments regarding progress in the weekly lectures.

A particular aspect of this approach that appealed to Duncan was that it fitted with his personal preferred learning style. He was clear that he did not like, “... interactive, clickable tutorials”, and moving away from that was one of the attractions of the approach used in this Activity System for him (see 4.5.4 ‘Pedagogic restrictions’, p.154).

Control in learning community

Any inclusion of group work involves a significant devolution of control to students. Part of the purpose of such Activities is to promote discussion and exploration of the topic among the group. In Duncan's example, this devolution of control was enhanced by the way he set out to minimise his direct intervention in the process. His students were set three dates when they were required to post updates on specified aspects of their progress towards completion of their project. The extent that they used the discussion boards beyond that was left entirely to them.

As Duncan noted, this arrangement, "... gives (*students*) flexibility. They can do it how they like". It was evident, therefore, that Duncan was setting broad parameters within which his students were to collaborate to produce broadly specified resources. The parameters he set included the requirements to:-

1. Collaboratively plan a research project in the assignment definition;
2. Post the progress records at set times in their private discussion area;
and
3. Provide specific information and a summative presentation.

Besides setting these parameters, the only element of control that Duncan and his colleagues retained was monitoring progress. As Duncan noted, the lack of regular contact means the practitioners didn't have, "... time to intervene in the groups ... So the online stuff has enabled me to do that with minimal work". He suggested that:-

“The fact that they know they are being watched might have made them – it’s a guess – but it might have made them start the project earlier.”

There was clearly an element of student engagement in the transformation of the information provided in the lectures to achieve the objectives set. These objectives, however, were essentially defined by the programme team rather than being a matter for negotiation between students and practitioners.

Context of learning communities

The students were given considerable flexibility regarding the way they recorded their progress. As Duncan noted, “They can do it entirely offline, collect them as conventional minutes and assemble it onto their log in one post and that would be absolutely fine”. The outcome, however, was that, “They don’t do that, they use the discussion boards”. In the most recent iteration of the course, Duncan estimated that:-

“... over five weeks ... we had 100 plus posts for each group (*which*) consists of four people. None of those posts are from me, I’m not moderating it at all. Then at the end what I then mark it on (*is the individual contribution to the group effort*), what it enables me to see is the group dynamic and the project management.”

A further factor that encouraged students to create an online community was that some participating students were, “... geographically dispersed and ... some of them do their Masters part-time, one day a week. They can continue to contribute and communicate with the group through the week”. Whilst this did retain an element of control for Duncan and his colleagues, it gave considerable flexibility for the groups to define their own learning community.

The students in this Activity System were playing an active role in a community of learning. Their objective was to develop knowledge collectively in a context which had some relevance to their roles beyond their immediate course. The diversity of the courses, and likely career paths of the students, meant that this was restricted to generic transferable skills such as group project work.

Workflow in learning communities

Duncan's main concern when contemplating handing responsibility to students through group work, was that it was, "... difficult to work out and difficult to assess (*the answer to the question*), 'Have they worked effectively as a group?'". He was reluctant to use peer assessment, although online tools such as WebPA (see 4.6.3 'Collaborative assessment', p.161) subsequently addressed his mainly administrative concerns with using this approach. His use of discussion boards enabled him to, "... assess (*the workflow in the group*) and to intervene and record some of those processes that have been difficult to really record". He noted that, "... having that record of interacting was very helpful to me when they asked me to help to sort problems in groups out". He also felt students' awareness of this had encouraged them to address issues within the group themselves.

Duncan felt that his own time was spent more efficiently when he adopted group work assessment, monitoring it online. He commented that, "I only see them two hours a week, it's not always easy ... and it's not always conducive to (*monitor progress in the lecture*)". Duncan was clear that, "... trying to achieve roughly the same sort of thing without e-learning", would have required him to have:-

... cut one or two of the topics or done a couple of topics in a lot thinner detail to give time in the classroom to check how the groups were working and to talk through about it ... It's meant that (*group*) activities have run in parallel, reinforcing what's going on in the classroom, without forcing me to give up the very limited amount of time we have with students.

Overall, Duncan felt that, "I don't think it's taken me longer to mark, it might be slightly shorter". Furthermore, "... the online stuff has enabled me to (*monitor and encourage progress*) with minimal work".

Although the students found this addition, "not ... particularly onerous", Duncan felt that, "In some ways it might have helped them". He felt that, "... it might have made them start the project earlier", because he had the option to go into the group log and refer in broad terms to the volume and quality of postings during lectures.

One advantage of this group work was that from the outset, students' conceptions of the subject matter and how to address it were placed at the heart of the process. The content provided by Duncan and colleagues was presented as expert knowledge but the group work was intended to transform the information provided in the context of the group's own project. There was, therefore, a two-way flow of information between practitioners and students. Both were clearly seen as important elements of the transformation of information through this process.

Contradictions in Activity System 4

In analysing this Activity System, no significant contradictions were identified. It was clear, however, that potential contradictions had been addressed through the approach adopted at the following levels:-

- **Level 1**– there were no unresolved tensions within elements of the System (see Figure 8.2, p.305);
- **Level 2** – potential tensions between elements of the System (see Figure 8.2, p.305, Contradiction 2a); and
- **Level 3** – potential tensions between the intended outcome of the System and that of the central activities promoting e-learning (see Figure 8.2, p.305, Contradiction 3a).

The following sections analyse the potential contradictions addressed in Activity System 4, ‘Research skills development’, in detail.

Level 1 contradictions

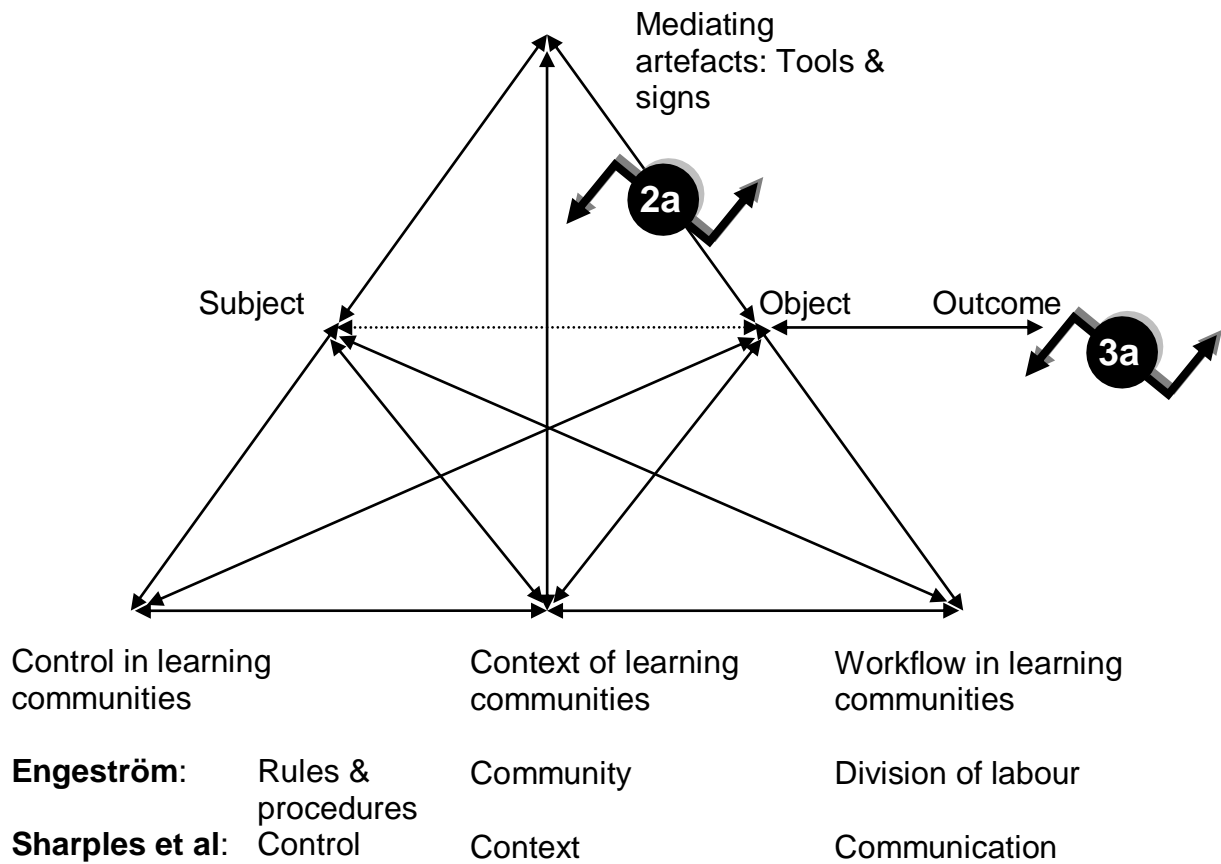
No such contradictions were observed in this System.

Level 2 contradictions

This innovation appeared to address one of the most common contradictions that emerge within group work. Without the e-learning element, “... one of the bones of contention (was) that you got people who take part in the group project and they weren’t pulling their weight”. For Duncan the process was:-

... actually very difficult to get to - because you mark the product. You don’t know whether one very clever person has done it the night before. So they can (*still*) do that and get a good mark for the product, but then when I look at the group dynamic, if it’s apparent to me that it’s one person pushing it and the rest being very lazy we can mark down on the group work side of it.

Figure 8.2: Contradictions within Activity System 4



(after Engeström 1987; Sharples and Taylor et al. 2007)



= contradiction identified in Activity System (number indicates level of contradiction; letter indicates specific contradiction for reference in the text)

Level 3 contradictions

One potential contradiction was that the University's e-learning research unit were reluctant to contemplate changes to their preferred model. Duncan's frustration with this model had led him to this innovation.

8.6. Conclusions on student-focussed media

Communicative media led to similar numbers of Activities (involving similar numbers of practitioners) as each of the teacher-focussed media – narrative

and interactive. Whilst productive media involved a similar number of practitioners, it produced significantly fewer Activities (12 compared with between 20 and 22 for the other media). Only one practitioner, Angela, had more than one Activity that could be described as using productive media. This reflected the tendency for productive Activities to involve more fundamental changes to a course.

Where productive innovations were additions to their course (Ian, Korin, Sheetal), rather than integrated into it, there was limited take-up by students. In contrast, the examples of Activity Systems using teacher-focussed media that were integrated into the courses and led to fundamental change were exceptions as illustrated in the previous chapter.

For Duncan, his use of e-learning enabled him to incorporate student-controlled content creation without compromising the range of coverage on the module. Nevertheless, his preference remained for classroom contact where possible, because he felt, "It's easier for me to control that and I feel more confident in what I'm doing" (Duncan: mind-map) (see 4.5.4 'Pedagogic restrictions', p.154). He was clear, however, that e-learning would form part of the blend of any course he designed.

Angela saw the essential element of e-learning use as, "...active discussion across groups of learners". She aspired to develop a community of practice offering a range of examples of how she was working towards this, although it is debateable if this had been achieved at the time of writing (December 2010). In the distance phase of her course she focussed on the development of real-world practice (Mayes and de Freitas 2004). She provided no direct evidence

of use of narrative media, although her five Activities identified as demonstrating student-focused media were supported by narrative elements.

The often illusive aim of Web 2.0 is CTCL - deep social interaction which can have a transformative effect on learning. The collaborative approach to many of the productive exercises outlined above demonstrates the potential of Web 2.0 to support transformation in the sector. In such instances, interaction is a fundamental part of knowledge building, often focussing on reflective practice.

8.7. Conclusions on the impact of media on learning communities

As noted above, activity theory is underpinned by the notion that the interaction between subject and object is not a direct relationship but is mediated by tools and artefacts. These elements of an activity system address the widely recognised elements of a mediated system. Since the interviewees were selected because of a history of involvement with e-learning it is perhaps unsurprising that there were limited examples of contradictions within the individual elements. Where such contradictions were evident it became clear that the particular engagement with e-learning had fundamental flaws. Whilst such contradictions on occasion led to the abandonment of the e-learning engagement (Olivia), in most Activity Systems reflection on practice led to the removal of such contradictions.

Based on this thesis, three categories of potential contradiction were identified (see Table 8.3, p.311). A distinction was made between contradictions within (and between) elements in the mediation part of the system (Levels 1a and 2a) and the contradictions in the community layer (Levels 1c and 2c) (see 2.4 'The

relationship between media, communities and conceptual frameworks', p.72). A further distinction was made between the activity system, its wider outcomes and the intended outcomes of other systems (Levels 1b, 2b, 3 and 4). Consideration was given to contradictions between the individual Activity Systems analysing examples of innovation and Activity Systems intended to promote eCompetence.

Contradictions within the mediation level (Levels 1a and 2a) represented the first barriers to be overcome. Although indirect, the relationship between subject and object remained important. For an engagement with e-learning to be effective, the students had to recognise the importance of the object of the exercise. The tendency of students to adopt a more strategic approach to their studies supported by e-learning has been widely reported. This can give rise to contradictions (or tensions) at the fundamental level between subject and object. For example, the potential of linking e-learning with formal assessment was recognised by a number of interviewees as a means of motivating student engagement. Whilst some interviewees commented on the low level of student involvement where participation was optional, this was not observed by the most engaged practitioners.

Other interviewees identified the semiotic benefits of using e-learning. In these Activity Systems the nature of the medium itself is seen as sending a message to students regarding the expectation of engagement. Practitioners recognised that this could link strongly to the object of creating a 'work-like' environment. Tensions were also identified between the e-learning medium (artefact or tool) and the object set by practitioners. Effective delivery was

widely recognised to be a factor of subject and object, with similar levels of recognition of the relevance of the medium as the artefact or tool.

Contradictions at this level had to be addressed for the engagement to be considered effective by practitioners.

Contradictions with the broad outcomes of the Activity System (Levels 1b and 2b) had a significant effect on the impact of such systems on transformation.

The extent to which the objects set by practitioners related to wider outcomes corresponded to their position on the beliefs and practices spectrum. Those practitioners who demonstrated a high level of engagement – transformative engagement - also tended to identify a link with higher learning outcomes.

Tensions between immediate objects and learning outcomes were evident within a department with an apparently high level of engagement (Beverley, Pritesh, Ruth). This was clearly an example of effective e-learning, addressing a long-recognized developmental need for the course. It was evident, however, that this remained an essentially teacher-centred approach to the control of learning. Although staff engaged with e-learning and saw the immediate results as successful, there was limited evidence of wider learning outcomes being achieved. This appeared to be a factor in an unwillingness of the key practitioner involved (Beverley) to engage in other Activities and in particular with collaborative e-learning.

The final sub-division identified of the contradictions in Activity Systems was in the learning communities. This incorporates contradictions within or between:-

1. Control within the learning community;

2. Context of the learning community; and

3. Workflow within the learning community.

In addition to these contradictions, it was possible to use these sub-divisions to differentiate the nature of engagements with learning communities.

The analysis detailed below focuses on the social mediating elements of Activity Systems. Where appropriate, the learning community elements were related to the conceptual frameworks of practitioners.

Control in learning communities

The term control of the learning community encompasses the rules and procedures of the institution, including the guidelines, support and constraints influencing the Activity. These were not seen as significant barriers to innovation by practitioners interviewed for this thesis. Much of the fifteen year history of e-learning innovation has depended on the actions and enthusiasm of individuals - the early adopters. It was these individuals who faced (and addressed) the initial barriers to innovation posed by the rules of the institution. The only aspect of the governance of the institution referred to as a barrier to innovation by the practitioners interviewed for this thesis was the allocation of resources, particularly in terms of staff time.

The surface dimension of control of the content of teaching and learning suggested a spectrum between teacher- and student- control (Dimension Six, Appendix 5). In some Activities the technology acted as a surrogate for the teacher, controlling the release of information to the learner. Learner control in such circumstances was limited to being able to, “access materials when

convenient, and ... (*control*) the pace and style of interaction” (Sharples, Taylor et al. 2007). The deeper dimension referring to control of learning addressed the expected learning outcomes (Dimension 1, Appendix 5). This ranged from expecting the reproduction of information to an expectation of transformational understanding to be achieved through substantial transformation of information.

Table 8.3: Contradictions observed within Activity Systems

	Level 1: within element	Level 2: between elements	Level 3: with central activity	Level 4: between central activities
Mediation - Subject, object and mediating artefacts	Level 1a	Level 2a	Level 3 *	Level 4 *
Outcome (with object)	Level 1b	Level 2b		
Learning Community – rules and procedures, community and division of labour	Level 1c	Level 2c		

Examples of learning-centred approaches to control were identified in the Activities. These included group creation of content for use by and/or consideration by all students (four Activities), requiring individual students to choose and share the subject of their assessment within broad parameters (three Activities), departing from linear delivery to respond to the interests and needs of participants (two Activities) and encouraging past students to engage in a forum sharing ideas on teaching with current cohorts (see Dataset 7.3).

Based on the Activity Systems it was possible to derive a hierarchy of increasing student control of the scale of their engagement:-

0. Practitioner control of the learning experience;
1. Student interaction controlled by practitioner design of the learning resource – students control when and for how long they engage with the materials provided by the practitioner (Maurice and Carl, Activity System 2 and Activity 8: Appendix 3 respectively);
2. Student interaction in creating resources with broad parameters set by practitioner design – there is an expectation of student participation in discussion and support online on subjects identified by students (Angela, Activity 1: Appendix 3);
3. Student engagement in transformation of information to achieve objectives negotiated with the practitioner – although there was no example that fully adopted this approach, elements of it were shown where students select the subject and extent of online engagement (provided a minimum record is kept) for their assessed group work (Duncan, Activity System 4).

Context of learning communities

The notion of context addressed what Sharples' described as, "...the multiple communities of actors", that both practitioners and students were involved in to meet their responsibilities to the learning community (Sharples, Taylor et al. 2007). Research suggests that the actions of the early adopters have been (or are perceived to be) tolerated, but often not embraced, by the organisations

within which they operate (Armstrong and Franklin 2008). As a result, the communities such practitioners became involved in consisted of other early adopters within their institution and beyond. For there to be a transformation of teaching within the sector, innovation needed to embrace the practitioner's immediate disciplinary-based community. Whilst this need not consist of the full course team, for these Activities to be sustainable and transformative there needs to be engagement beyond the originator of such innovation.

A surface indicator of the context of communities anticipated was provided by the practitioner's view of the degree of student responsibility for the transformation of knowledge (Dimension 5, Appendix 5). The spectrum ranged from students being seen as passive recipients of knowledge packaged for the community by the lecturer to being a community of active participants, transforming information to develop their private knowledge. A deeper insight into the nature of the communities created was provided by a consideration of the expected use of knowledge (Dimension 2, Appendix 5). This involved a spectrum between knowledge being conceived as confined within the curriculum to it being used to make sense of reality.

The approaches used to engage students in this process included continuous assessment (three Activities), encouraging students to evaluate a pool of resources as part of a personalized assessment (two Activities), a highly individual piece of work such as personal development portfolio or dissertation proposal (two Activities), online 'expert witnesses' for them to question, providing formative quizzes for them to evaluate their own progress, collaborative problem solving with an element of peer assessment, and sharing

opinions and preconceptions on a subject as a basis for a session (see Dataset 7.3).

This suggested a hierarchy of context in learning communities as follows:-

0. Practitioner engaged in communities of colleagues to create a learning experience for students;
1. Students have an active role in a community of learners to develop personal knowledge – the expansion activities involve the development of a community in which students recognise the importance of sharing information to developing their personal understanding (Maurice, Activity System 2);
2. Students have an active role in a community of learners to develop collective knowledge – the expansion activities involve the development of a community in which students recognise the importance of sharing information and collaborative development of understanding (Pritesh, Activity System 3);
3. Students have an active role in a community of practice relevant to their future role beyond the institution – the context of the expansion activities is authentic, reflecting what will be expected of students in their professional development and community building in the workplace (Angela, Activity 1: Appendix 3).

Workflow in learning communities

This referred to the contribution of practitioners and students to the productive process they were engaged in - the production of knowledge. The subjects of the process – the students – had the objective of achieving their accreditation. There was widespread recognition that whilst the traditional one-way flow of communication from teacher to student (with a reciprocal flow of assessed work) may achieve this immediate objective, it does not achieve deeper learning. There is a clear divide with a scholarly community consisting of the practitioners and the students being subject of, rather than directly engaged in that community's workflow. The transformation of learning and teaching to meet the needs and expectations of students envisages them becoming a part of this production process rather than just consumers of outputs like lectures, seminars and assessments (Veen and Vrakking 2006).

Interviewees in this study had a clear aspiration for a two-way flow of communication (Dimension 4, Appendix 5) with both teacher and students actively involved (14 of 18 interviewees). A deeper insight into the nature of workflow in communities was given by the use practitioners made of students' conceptions of the phenomena dealt with in the discipline (Dimension 3, Appendix 5). The spectrum ranged from an assumption that students have no such conceptions at the beginning of the course, through the transitional stage of them being considered as common difficulties students have with particular concepts, to them being treated as the starting point of the teaching and learning process.

Among the approaches observed were extending discussions beyond the classroom (three Activities), peer knowledge exchange and even peer tutoring (three Activities), personal development among a geographically dispersed cohort of professionals including synchronous meetings (two Activities), collaboration to achieve assessed group objectives (two Activities), mutual support during placements, tailoring content to student needs and interests identified in online collaboration, peer evaluation of contributions for assessment, facilitating professional decision making, reflective learning journals, using online collaboration as a starting point for face-to-face discussion, and the exchange of ideas and experience between year groups (see Dataset 7.3).

This suggested a hierarchy of workflow in learning communities as follows:-

0. One way flows of information from practitioner to students (and vice versa);
1. A two-way flow of information between practitioner and students – the flows of information (practitioner to student and student to practitioner) may be for discrete purposes but they are mutually reinforcing. This goes beyond the one way flow of information from practitioners providing information as a basis for assessed work provided by the student. The flow of information from students influences the practitioners' delivery (Duncan, Activity System 4);
2. A balanced, two-way flow of information between practitioner and students with equivalence of contribution to transformation of information

– the traditional flows of information (see 0. and 1. above) is replaced by a collaborative exploration of a topic. This workflow may be guided and/or framed by the practitioner but involves a substantial shift of responsibility to the students for the work (Angela, Activity 1: Appendix 3);

3. Student conceptions are the starting point of a balanced, two-way flow of information between practitioner and students intended to develop such conceptions through transformation of information – the existing conceptual frameworks that students bring to the course are the basis for an exploration of the topic. Whilst the workflow primarily focuses on the collaborative work of students, the practitioner provides expertise in terms of input and acting as consultant (Pritesh, Activity System 3).

In the final chapter of this thesis, links will be considered between these three hierarchies, the conceptual frameworks of practitioners and the communities within which they operate.

9. Conclusions

9.1. Introduction

This chapter summarizes the main findings of the study, provides a critical reflection on the study itself and suggests the areas of possible future research derived from it. The specific implications of the study for staff development practice in the UK HE are also considered with recommendations for practices likely to develop CTET in the sector. The specific questions this study sought to address were:-

- What are the beliefs and practices of HE practitioners engaging with technology-enhanced learning (TEL)? Are practitioners' conceptual frameworks modified by collaborative engagement?
- What barriers are encountered to the adoption of TEL Activities?
- What are the key features of a staff development framework that encourages the adoption of collaborative TEL? What is the nature of the learning communities created?

As already noted, the literature on developing eCompetence in the HE sector lacks clarity regarding what should be taught and how it should be taught. Also Mayes and de Freitas recognised the need to be able to identify approaches to e-learning more accurately in terms of the models of learning they identified from their comprehensive literature review (Mayes and de Freitas 2004). Among the broad frameworks used to achieve this are phenomenography, activity theory and communities of practice.

This study's methodology sought to identify key differences in practitioners' beliefs and practices, reflecting levels of engagement with e-learning tools and the broader concept of TEL. Activity theory provided a tool for analysing engagement with three key aspects of learning communities – their control, context and workflow. This led to a number of specific outcomes intended to contribute both to the understanding of transformative change in HE and the cultural changes necessary to achieve it. In particular, this chapter identifies specific developments of professional development necessary to achieve such change.

9.2. Outcomes

One of the novel aspects of this study is the way it synthesises the outcomes of three broad frameworks identified in the literature as the basis for an integrative concept of learning communities that incorporates:-

- **Phenomenography** – Providing a means of classifying the extent of practitioners' engagement with the transformation of learning and teaching through e-learning;
- **Cultural-historical activity theory** – Developing a tool to evaluate the development in each element of the social dimension of an Activity System; and
- **Communities of practice** - Redefining learning communities based on the contradictions analysed within the activity systems describing them.

For the transformation of learning and teaching to take place, practitioners must do more than embrace the language of a transformed state. This study provides a clear distinction between those who engage at a surface level (adopting new language) and those engaging at a deeper level (adopting new practice). It is also evident that transformation will not take place through the simple (although superficially attractive) notion of e-learning as a 'Trojan horse'. Many of the practitioners interviewed engaged in substantial Activities that proved effective in achieving the existing objectives of their course without transforming their approaches to learning and teaching. This study provides a means of identifying not only whether Activities are efficient but also those that are likely to be effective, resulting in transformation.

Barriers to the adoption of TEL were identified by analysing the conceptual frameworks of practitioners and the contradiction evident in the Activity Systems identified. The broad influences on the implementation of TEL and the development of learning communities were identified and related to the concept of communities of practice (see 2.4 'The relationship between media, communities and conceptual frameworks', p.72). Among the barriers identified to transformation were the institution's (and sector's) emphasis on research (rather than teaching) for career progression. This contributed to the reticence of many colleagues to innovate, as did the lack of a clear framework for learning and teaching innovation. The most significant barrier identified was the fragmentary nature of the learning communities supporting such developments. The dynamic nature of activity theory – as a means of promoting as well as researching transformation – highlighted such barriers at a number of levels:-

1. **Mediation** (Level 1a and 2a) – few mediation barriers persisted because most practitioners had reconciled contradictions between the subject, artefact and object. This meant that their Activity operated efficiently and met the immediate aims they had for it;
2. **Outcome** (Level 1b and 2b) – remaining barriers included contradictions within the broad outcome element or between it and the immediate object of the Activity. Differences in conceptual frameworks between the practitioners involved were a significant factor where contradictions existed (e.g. Beverley, Activity System 1: Appendix 3);
3. **Learning community** (Level 1c, 2c, 3 and 4) – the most significant barriers to transformative change encountered by practitioners were those within the learning community. This included both the communities directly involved with the Activities and those central activities supporting transformation. In the former the evaluative tool created (see Appendix 6) provides a means of establishing the effectiveness of the communities created. Despite the constructivist language used by the majority of practitioners, the reality of their practice was not constructivist and certainly did not reflect the social constructivist thrust of the central activity.

(see 8.7 'Conclusions on the impact of media on learning communities', p.307)

Whilst the communities created within the institution may have met the needs of innovators and early adopters, they were a source of frustration for many of the early majority interviewed. The gap between the perceptions of those responsible for the central Activity System and the more pragmatic approach

adopted within departments were a major source of this frustration. Even where such a community was consciously created (Beverley, Activity System 1: Appendix 3) they did not lead to the sustainable transformation of learning and teaching beyond the immediate Activity.

As learners, those interviewed (as with practitioners in the wider sector) had limited experience either of constructivist approaches or e-learning forming a major obstacle to their ability to implement such transformative approaches. For transformation to take place practitioners need to engage in communities in which they externalise the changes they have implemented. Many of the practitioners interviewed adopted what they saw as exemplars or best practice but had not necessarily externalised them (i.e. fully adapted them to their own context, passing the modifications on to others). This study not only defines communities but also the nature of the Activities which promote externalisation.

9.3. Key findings

The following categorisation of approaches underpinning the Activities created was identified:-

1. **E-learning** – the use of web resources (Web 1.0 or Web 2.0) to replicate traditional modes of teaching;
2. **Technology-enhanced learning** – using web resources to create Activities to potentially transform individual learning; and
3. **Collaborative technology-enhanced learning** – using web resources to create Activities to develop learning communities as a focus for transformation.

The tools outlined below provide a basis to inform more transformative approaches to professional development. This forms the basis of recommendations to facilitate the switch from teacher- to student-centred approaches to learning and teaching in HE.

Relating the findings of activity theory analysis to the broader consideration of practitioners' conceptual frameworks enabled this study to provide a basis for distinguishing between:-

1. Surface v. deep engagement with TEL;
2. Surface v. deep engagement with CTTEL;
3. Internalised v. externalised engagement with learning communities.

9.3.1. Surface v. deep engagement with TEL

The overwhelming majority of interviewees provided learning-centred evidence in the surface dimensions of engagement – two-way communication, active student engagement and student control of content. Less than a quarter of the interviewees provided evidence of more than one of the three deeper dimensions of engagement – developing transformational understanding, interpreting reality and students' conceptions being the starting point for learning.

The categorisation of media used in the Activities shows that most practitioners (15 out of 18) make use of media that can be categorised as both student- and teacher-focussed (see Table 7.1, p.242). Although a majority of examples of media used in Activities were teacher-focussed, over 40% were student-focussed. In fact only three interviewees' examples of e-learning used media

categorised as either solely teacher- (Beverley, Carl) or student-focussed (Angela). This provided a means of differentiating between practitioners who accept the language of constructivism and those who implement it (see columns 1 and 2 of Table 9.1, 328). On the basis of these results it was possible to derive a three stage hierarchy of approaches to learning and teaching based on engagement with e-learning:-

1. **Limited engagement / eCompetence** – no or limited (i.e. only one dimension) evidence of learning-centred beliefs and practices (four practitioners);
2. **Transitional engagement / eCompetence** – evidence of learning-centred beliefs and practices in at least two of the surface dimensions (ten practitioners); and
3. **Transformative engagement / eCompetence** – evidence of a transitional approach with further evidence of learning-centred beliefs and practices in at least two of the deeper dimensions (four practitioners).

Of the interviewees identified in the 'most engaged' group, three demonstrated socially constructivist or situationist conceptions of learning and teaching. One of these interviewees provided evidence that could be categorised as situationist (Angela) whilst another demonstrated a socially constructivist conception of learning and teaching with many situationist elements (Edward). The third demonstrated strong socially-constructivist approaches with repeated efforts to incorporate this in e-learning (Duncan). The fourth member of the

'most engaged' group demonstrated cognitive and individual constructivist elements underpinning the conception of learning and teaching with some socially constructivist elements (Maurice).

Whilst this provided a basis for describing practitioners' engagements with TEL, further analysis was required to provide an effective basis for differentiating between levels of engagement and the factors influencing them. The majority of those interviewed were categorised as having transitional eCompetence. In order to address the research questions it was important to establish which of these practitioners were likely to adopt more transformative approaches and what was likely to influence this.

9.3.2. Surface v. deep engagement with CTCL

Collaborative work was a common feature of the examples of Activities Systems using student-focussed media explored in detail. Despite the various reservations expressed regarding the workload involved with such collaboration, group work repeatedly emerged as the most manageable option for the implementation of communicative and productive media. Furthermore, the Activities that typified a CTCL approach had the added advantage of fostering the development of learning communities which intuitively appealed to most participants (as illustrated by the widespread adoption of surface dimensions of engagement).

Collaborative elements were derived from the data for each of the three surface dimensions:-

1. **Multilateral communication** - An equivalence of status in the interaction between practitioners and students with exchanges between students fundamental to the learning process. The purpose of the communication is to develop a learning community in which students collaboratively explore the topic (Dimension 4: Teacher-Student Interaction, Appendix 5);
2. **Collective knowledge development** - Shared responsibility within a group or wider learning community for the transformation of information and the development of collective knowledge (Dimension 5: Main Responsibility for Transformation of Knowledge, Appendix 5); and
3. **Community-controlled content** - Students collectively responsible for the content of teaching and learning (Dimension 6: Control of content, Appendix 5).

From this analysis it was possible to derive a further stage of the hierarchy of approaches to learning and teaching based on engagement with e-learning (see 9.3.1 'Surface v. deep engagement with TEL', p.323). This stage – between transitionary and transformative – was defined as:-

- 2a **Potentially transformative** – evidence of a transitionary approach with further evidence of one of the deeper dimensions and at least one of the collaboration-centred elements of the surface dimensions (three practitioners).

This category provides a means of identifying those practitioners in the transitional group most likely to develop transformative engagement through TEL.

A further indication of the extent of engagement is provided by the hierarchy of engagement – in terms of control, context and workflow - with learning communities. For each aspect, the study derived a four-level hierarchy which enables practitioners to evaluate the nature of the learning communities generated through their own courses using a simple diagnostic tool (see Appendix 6).

Each of the hierarchies has four layers:-

0. **Teacher-centred** – a traditional role of the teacher leading the learning process and disseminating information to students;
1. **Teacher-focussed** – some recognition of students' potential role in learning;
2. **Student-focussed** – students play a significant role in developing their individual learning; and
3. **Student-centred** – a collaborative approach focussed on the creation of a learning community.

This focuses on the social mediating elements of Activity Systems, relating them to the conceptual frameworks of practitioners (see columns 2 and 3 of Table 9.1, p.328).

Table 9.1: Level of engagement with learning communities

1. Engagement with e- learning	2. Dimensions of constructivism	3. Hierarchy of engagement	4. Nature of engagement with communities
Surface engagement	Two-way communication (Dimension 4B)	Workflow Level 0 One way flows of information from practitioner to students (and vice versa)	Internalization
		Workflow Level 1 A two-way flow of information between practitioner and students	Internalization
	Self-development of knowledge (Dimension 5B)	Context Level 0 Practitioner engaged in communities of colleagues to create learning experience for students	Internalization
		Context Level 1 Students have an active role in a community of learners to develop personal knowledge	Internalization
	Student control of content (Dimension 6B)	Control Level 0 Practitioner control of the learning experience	Internalization
		Control Level 1 Student interaction controlled by practitioner design of the learning resource	Internalization

1. Engagement with e- learning	2. Dimensions of constructivism	3. Hierarchy of engagement	4. Nature of engagement with communities
Deeper engagement	Transformational understanding of information (Dimension 1B)	Control Level 2 Student interaction in creating resources with broad parameters set by practitioner design	Internalization
			Externalization
		Control Level 3 Student engagement in transformation of information to achieve objectives negotiated with the practitioner	Internalization
			Externalization
	Interpretation of reality (Dimension 2B)	Context Level 2 Students have an active role in a community of learners to develop collective knowledge	Internalization
			Externalization
		Context Level 3 Students have an active role in a community of practice relevant to their future role beyond the institution	Internalization
			Externalization
	Students' existing conceptions considered (Dimension 3B)	Workflow Level 2 A balanced, two-way flow of information between practitioner and students with equivalence of contribution to transformation of information	Internalization
			Externalization
		Workflow Level 3 Student conceptions are the starting point of a balanced, two-way flow of information between practitioner and students intended to develop such conceptions through transformation of information	Internalization
			Externalization

9.3.3. Internalised v. externalised engagement

In the context of this thesis, expansive learning would be the transformation of learning and teaching in the institution. There are a variety of examples in the study which clearly achieved the immediate object but no wider outcome was evident (e.g. Activity System 1: Appendix 3). These, therefore, represented effective e-learning but did not provide any evidence of being part of expansive systems. Even when an Activity System is regarded as effective (i.e. no Level 1 or 2 contradictions), achieving the broader outcome anticipated depends on the interaction with other Activity Systems. Such interaction involves the externalisation of change through learning communities.

Although further consideration needs to be given to the nature of the communities that practitioners are engaged in, initial analysis suggests that this can be linked to the level of contradictions they successfully address. For most practitioners, engagement with learning communities was reactive. They engaged with them in order to address problems with Activities or to sustain a path they had already embarked on. In order to achieve this, the practitioners appeared to have internalized aspects of both the broad constructivist agenda and the institution's e-learning project. Such practitioners are likely to have addressed (or were in the process of addressing) Level 1 and 2 contradictions through communities of self or need. These practitioners also provided evidence of the three surface dimensions of constructivism but did not necessarily demonstrate evidence of the deeper dimensions that betoken deeper or transformative engagement.

The final element required for expansive change is that the wider outcome envisaged for an individual Activity System should be compatible with, and reinforce, a wider institutional Activity System promoting transformative change. Most of the Activities in this study were effective because the immediate barriers to their success – the primary or secondary contradictions - had been overcome. The nature of the contradictions faced tended to define the nature of the practitioners' engagement with the communities supporting the implementation of e-learning within the institution.

It is possible to relate such contradictions to Dence and Mobbs' terms for such communities (Dence and Mobbs 2007) (see Table 9.2, p.334):-

- **Level 1 contradictions** – the most common basic contradiction was in the use of e-learning as a mediating artefact with technical support needed in order to overcome it. Help was sought from a number of sources – informal support from colleagues, learning technologists (departmental, staff development or the research unit) or from the institution's information technology function. The support was generally individual, representing a community of self which was only called on when a specific barrier had to be addressed;
- **Level 2 contradictions** – once the basic contradictions were addressed, the focus tends to shift to contradictions within the learning community and between elements of the System. Addressing such contradictions requires a more collaborative approach, engaging the wider course team with those providing support. A learning community meeting these needs can be described as a community of need;

- **Level 3 contradictions** – having addressed the contradictions within and between elements of the Activity System, it is necessary to look beyond immediate Activity and consider how it interacts with other related Systems. This involves consideration of the ‘fit’ with the institutional e-learning strategy and the way it is implemented. A learning community meeting these needs can be described as a community of interest;
- **Level 4 contradictions** – the emergence of a community of practice represents the development of the learning communities within the institution to support earlier stages of development, consider potential e-learning developments and influence a broad range of institutional policies.

The extent to which they demonstrate externalization could be used as a further means of differentiating between such communities. Clear evidence of transformation is only provided if the artefacts they create are new or adapting (rather than replicating) the artefacts created by others. Engagement with communities of interest and practice provide some indication of this. This distinction could, therefore, be seen as an alternative indicator betokening transformative engagement achieved through TEL (see Table 9.1, p.328).

9.4. Implications for eCompetence development

Any programme seeking to develop the eCompetence necessary for externalizing transformative change needs to focus on changing the conceptual framework of practitioners – their beliefs and practices. This study reinforces a

number of contentions regarding the conceptual framework of teachers in the literature indicating that:-

1. Such frameworks are derived from the individual's experiences as a learner and a teacher;
2. The individual's framework will influence their approach to teaching. An individual whose concepts are teacher-centred will be attracted to methods that focus on content delivery. An individual who is more student-centred will be attracted to innovations that are more facilitative; and
3. Attempts to modify the frameworks tend to be filtered by existing concepts. An individual's framework, therefore, tends to be self-perpetuating.

(Melville, Allan et al. 2009; Dempster and Deepwell 2003; Argyris 2002; Jasinski and Planet 2007)

This thesis reinforces the findings that efforts to modify teaching methods must be focused on changing the concepts of the individual teacher. This strongly indicates that any programme intended to move practitioners from a transitionary to a transformative approach must fill the more significant gap in their experience – that few practitioners have learned using e-learning.

This study identified two broad paths that practitioners followed to implement e-learning. First, using the medium to enable delivery of the 'traditional' mode on an industrial scale. Second, the transformation of delivery using CTCL. In planning programmes to promote the wider skill set (or eCompetence) necessary to achieve the latter, there are two main barriers to overcome. The first inhibits practitioners moving from limited (or no) engagement to

transitory engagement where they have developed the technical skills necessary to use e-learning tools. The second hinders the move to transformative engagement, where practitioners need the pedagogic skills necessary to support the development of learning communities.

Table 9.2: Communities and contradictions

Type of community	Notes	Remaining contradictions*	Relevant Activities	Relationship to wider community
Community of Self	Private, individual	Level 1, 2, 3 & 4	Activity 8	Internalised
Community of Need	Team/group; cohort/class	Level (1b, 1c), 2, 3 & 4	Activity System 1	Internalised
Community of Interest	Social, collective	Level (2), 3 & 4	Activity System 3 & 4	Externalised
Community of Practice	Affinity to a professional or discipline area	Level (3) & 4	Activity System 3	Externalised

() = Whilst contradictions may remain, a focus of the community is to address them

* = See 8.7 'Conclusions on the impact of media on learning communities', p.307

The development required to move to transitory engagement still involves far more than just technical eCompetence. The defining characteristics of transitory engagement include an acceptance of the need for learning to become a two-way discourse between practitioners and students. Furthermore, a transitory engagement includes a degree of acceptance of student control of the content learned and their involvement in transforming information to actively develop knowledge. Much of the existing professional development in

the sector supports this developmental step as standalone CPD or as a discrete element of IPD.

This study enables clear differentiation to be made between the development needs of innovators (and early adopters) and those of the early majority. The former need support to develop competence with e-learning tools. They are largely self-sufficient in terms of providing context for and leadership of their Activities. The early majority may be less technologically 'savvy' but the tools that enter the mainstream have been through several iterations, largely due to feedback from the innovators. By this stage many tools can be said to be 'transparent'. The technical skills needed to use such tools to implement Activities are limited, although practitioners still anticipate this as one of the major barriers to innovation. This study suggests that for early and late majority the skills most in need of development are those concerning the broader eCompetence to implement change. This includes the confidence both to adapt the models provided and share the results with others. This is the skills gap that needs to be filled in order to enable the transformation of learning and teaching in the sector.

In order to develop eCompetence for the early majority, CTETL needs to be woven into the fabric of IPD and CPD programmes if it is to be delivered effectively. Efforts to create programmes that move beyond technical proficiency have been widely reported. For example, Salmon's 'carpe diem' intervention involves two or three day training events focused on a team of practitioners responsible for developing a particular course (Armellini and Jones 2007). A substantial element of each event involves exploring the aspirations of

the course team and sharing a design model intended to facilitate a more constructivist approach to e-learning. Such a foundation is considered essential to motivate practitioners to develop more than technical eCompetence.

The institution's intensive e-learning workshops – a significant element of its CPD activity in this area – were closely based on this model. It delivered many elements required to support transformation, including:-

1. Initial focus on pedagogy, with the first half day devoted to exploring aspects of course design;
2. Development of specific resources by practitioners, available for immediate use with their own students; and
3. Team engagement over a two or three day period with the aspiration to transform a course or module.

There were, however, a number of weaknesses which limited the contributions such workshops made to the transformation of learning and teaching in the institution, including:-

1. Emphasis on internalising a specific model of e-learning - Salmon's e-tivities (Salmon 2002a);
2. No systematic preparation for the workshop, developing awareness of and skills with unfamiliar e-learning tools, particularly those associated with Web 2.0; and

3. No systematic follow up to provide support for and broaden the scope of implementation.

Where a programme is based on a predetermined model, the likely outcome is internalization – the reproduction of an existing culture (Engeström 1999a).

However innovative the model may be, practitioners will be enabled to implement existing good practice within the context of the existing culture rather than play an active role in transformation. From the responses in this study it is evident that this approach led to internalisation in many instances, although a significant minority reacted negatively to what they saw as its prescriptive nature. It is clear, however, that it does not lead to externalisation which is prerequisite for transformative change.

Hughes categorisation of support for the implementation of e-learning refers to the physical location of the support - integrated, parallel and distributed (Hughes, Hewson et al. 1997:8-13). It is also possible to locate the e-learning support in relation to delivery of support for the other key skill set - pedagogic skills. Such development can be:-

- **Discrete** – with the support for the skill sets delivered separately;
- **Parallel** – delivered separately but with practitioners guided to make links between the skill sets;
- **Sequential** - either with e-learning skills as a basis for developing pedagogic skills or vice-versa; and
- **Synchronous** – with integrated development of both skill sets.

The wider support for the sector has been delivered on a parallel basis with the HEA providing pedagogic support whilst JISC provides technological support. In recent years, however, there has been increasing co-operation between these separate organisations. Based on the findings of this study, a synchronous approach to developing the skill sets necessary for eCompetence would seem the most effective option within institutions. This suggests integration of provision in order to minimise the problems with co-ordinating the disparate expertise required. Virtual integration – with close synchronisation of approaches and input – could achieve this without the physical co-location of the different elements. More than one of these approaches could be developed within an institution, particularly where there are differential approaches to IPD and CPD. For example, during this study the institution had more than one division delivering both pedagogic support for IPD and CPD and e-learning support.

With Government funds for professional development incorporated in institutions' mainstream funding (rather than ring-fenced), a growing number of institutions have significantly reduced the funding for, or even closed, integrated units. This has resulted in a trend towards delivery by parallel units (including in the institution that is subject of this study from January 2009).

Based on the interaction of interviewees with a range of professional development activities, it is possible to derive a number of features such programmes should have to promote the development of eCompetence including:-

1. The programme should be delivered – either entirely or predominantly - using the online tools and artefacts typifying Web 2.0 that it is intended to promote;
2. Low initial technological hurdles to minimise perceived barriers to building the motivation and initial skills enabling practitioners to participate (see 3 below). Even where participants have extensive experience of the tools used, they should be encouraged to engage at this stage and evaluate it in order to develop an online induction for their own students;
3. A clear (but not prescriptive) framework for programme design. The online programme developed within the subject institution for this study used Salmon's five-stage model (Salmon 2004) with participants encouraged to adapt the e-tivities framework suggested for implementing this. Other models, such as Laurillard's conversational framework (Laurillard 2002), could be introduced as part of the process;
4. A focus on the collaborative creation of artefacts that can be re-used in a number of contexts. This involves identifying a range of learning objects that had proved successful in face-to-face contexts and then deciding which should be collaboratively develop for online use;
5. Participants working to develop their own broader 'learning experience' (e.g. three hours learning time) for their own students. They would then be expected to act as 'critical friends', supporting each other as they moved through the development process; and

6. Participants developing an evaluation framework appropriate to their own context (with a number of models provided as examples).

The practitioners that participated in the institution's own online programme based on these principles appeared disproportionately in the transformative and potentially transformative categories identified in the study. One significant finding was that the only participant in the programme who did not feature in the transformative or potentially transformative category experienced significant difficulty in engaging in reflection. The fact that participation in the programme was on a self-selecting basis means that further research is necessary to establish whether such a programme can indeed promote widespread adoption of CTCL and the externalization of the outcomes. The only other indicator associated with transformative approaches in this study was participation in a complete programme of academic practice development which embraces reflection. This strongly suggests that eCompetence development should be associated with such programmes, particularly for new academic staff.

The early stages of the online programme focused on the internalization of ideas that form the basis of the current e-learning culture. As the participants shared the results of their own innovations within the context of their own disciplines then externalization comes to the fore. A further indicator of a transformative or expansive cycle is that the results of the innovation encouraged forms the starting point for future practitioners joining the community.

The self-perpetuating nature of practitioners' conceptual frameworks forms a significant barrier to transformation. This, at least in part, accounts for why examples of e-learning innovation led to large scale replication of the existing, rather than a transformed, paradigm. Conceptual frameworks are also the greatest barrier to developing the transitionary or transformative eCompetence that provide the basis for practitioners who wish to develop student-centred approaches through TEL. For the early majority, professional development enabling adoption of such approaches should feature the integrated development of both technical and pedagogic skills. This suggests an approach involving immersing participants in Web 2.0 media, with a concerted effort to minimise the technical barriers to their engagement. At the heart of such provision should be a flexible framework for TEL to enable a collaborative exploration of programme design.

9.5. Lessons learned and critical reflection on the study

The decision to adopt a subjectivist approach to this study was only taken after lengthy discussions with my supervisor and exploration of the relevant literature. Had I followed my initial instincts for a positivist (or more likely a mixed method) approach it is questionable whether it could have answered the research questions set. The approach taken encouraged researcher reflexivity in three significant ways:-

- **Personal** – this study was initiated by a personal frame of reference suggesting that there was a deterministic relationship to be found between TEL and transformation of learning and teaching. Both the

product and process of this study initiated (and are still moulding) an alternative frame, providing a personal example of the double-loop learning referred to throughout this thesis (Argyris 2002);

- **Methodological** – the phenomenographic research method initially adopted provided a means of developing the categories of description for the results that challenged my personal frame. It was only with the introduction of activity theory that it became possible to define the dimensions of variation to more fully account for the data collected. The analysis of the contradictions within activity systems also provided a basis for defining the nature of learning communities that practitioners engaged in. Even within the use of activity theory there was a strong element of reflexivity. Initially there was the expectation that this would provide a descriptive and/or analytical research tool. Through the process of this research it also became evident that activity theory could provide a tool to enable transformation; and
- **Dissemination** – the dimensions of variation identified provided the basis of an evaluative tool developed to assist the dissemination of this research. Whilst it is hoped that this will prove of value to practitioners, the key contribution this study makes is integrating three important elements of current developments in pedagogical theory – the phenomenographic exploration of conceptual frameworks, activity theory and communities of practice.

One limitation of the study is that all the practitioners interviewed were from one institution, giving rise to concerns that it may not be representative of the wider

HE sector. In considering the transferability of the study there are a number of factors to consider. First, the data collected was sufficiently comprehensive to enable multiple methods of analysis. Second, this gave rise both to the theoretical framework developed and the practical guidelines derived from it. The success of this study is determined by the extent to which these products are transferable elsewhere. Finally, this depth of data was able to accommodate the reflexivity outlined above.

The linear or historical accounts of e-learning innovation for this study were primarily derived from single interviews with practitioners and a range of triangulating data. No attempt was made to verify the practitioners' perceptions of the impact of their innovations by approaching their students. As noted in the introduction of this study, it was intended to establish how to encourage practitioners to adopt particular approaches to their teaching. Considering the efficacy of those approaches was beyond the scope of this study.

9.6. Further research

In addition to changes within the research, this reflexive approach led to the identification of a number of areas for further research. This study is based on a major assumption - that a social constructivist approach to education is desirable. Many reports, such as CLEX (Melville, Allan et al. 2009), have provided more anecdotal evidence of the efficacy of such change. They have also provided quantitative evidence regarding the change of student perceptions which underpins the drive towards e-learning innovation. Having established an analytical framework for the social constructivist dimension of e-learning innovation, the evaluative tool based on it (see Appendix 6) needs to

be tested in diverse institutions. The potential link identified between the analytical framework and the typology of communities of learning derived also needs to be explored further.

Opting for a sample size of 18 to 20 meant that it was possible to achieve a depth of data – through collecting triangulating data – that would be impractical with a larger survey. The ‘insider’ role of the author in the institutions’ e-learning project provided access to the range and depth of supporting information that contributed to the richness of the data gathered. The frankness (and surprising outcome) of the stories captured suggests that this role did not adversely influence the data gathered. It is for the reader to confirm whether the desired transferability of the methods adopted to other contexts is possible. Further research in other institutions is, therefore, an essential next step in confirming the relevance of the findings beyond the subject institution.

An alternative source of triangulation could have been provided by a questionnaire to a broader sample of practitioners across other institutions. Such questionnaires were circulated and collected at a number of Conference presentations by the author. Whilst the data provided was supportive of the study’s findings, it was felt that to use them as part of this study would broaden its scope and deflect from the depth of analysis of engagement in a single institution that is seen as a strength of the study. Given the rich data provided by the questionnaires it is likely to be used as a pilot for further research.

This study suggests a number of guidelines for courses to support pedagogical development of practitioners in terms of both IPD and CPD. Further research is needed to confirm whether these guidelines, including online engagement by

practitioners in such programmes, will contribute to transformation in other contexts. With significant changes taking place in the way that institutions deliver support for e-learning and pedagogy, there are clearly opportunities for researching the effectiveness of different approaches.

Whilst it can be argued that CTET meets many of the changing aspirations of today's students, it should also be noted that it challenges some aspects of the more consumerist perspectives they are developing. CTET also means that the lecturer no longer has the clear producer's role in a producer-consumer relationship with students.

What still needs to be established is whether this provides a typology of learning communities that is transferable beyond the study group. What seems to be emerging is a way of capturing the journeys that the staff interviewed are undertaking. Further analyses of practitioners with transitional eCompetence – who appear to be on their 'journey' – need to be undertaken.

That such research is timely is suggested by the acceptance of a chapter based on the findings of this study in Ehler and Schneckenberg's, 'Changing cultures in Higher Education' (Churchill 2010). The peer review process involved in honing the chapter had a significant influence on both the content and style of this thesis. It should be stressed that this characterization of an individual's approaches can only be related to their engagement with e-learning. Further consideration needs to be given to the extent to which this can be said to characterize their wider approaches. It certainly builds on the notion of Knowles that teachers are increasingly expected to change their roles to that of 'process managers' rather than being 'content transmitters' (Knowles, Holton et al. 2005).

9.7. Final thoughts

As this thesis shows, the existing culture in HE has embraced the discourse of constructivism. This study demonstrates a pathway from e-learning to TEL. It also defines the transformative approach of CTEL, identifying its key features and the nature of the professional development likely to promote it. CTEL is based on the development of learning communities rather than seeing learning as an individual, relatively isolated activity. It moves beyond the hesitant use of group work currently evident in the sector due to reservations regarding assessment and the fear of inappropriate academic practices. It recognises that few roles within or beyond the institution succeed in isolation.

Collaboration, therefore, is an essential transferable skill that students must develop if they are to meet the expectations of employers. If the HE sector is to recognise this then it must change its procedures – especially assessment – so that individual contributions to collaborative endeavours are systematically identified, evaluated and recognised.

Despite the engagement of the majority of practitioners with educational psychology (as part of IPD, CPD and, in some cases, their own discipline) the terminology of pedagogy was little used. The mantra seemed to be (to paraphrase Basil Fawlty), ‘Don’t mention the pedagogy! I mentioned constructivism once but I think I got away with it’. The language of student-centredness was used by the majority of practitioners but was only reflected in the practice of only a significant minority.

Practitioners widely demonstrated the beliefs and practices that suggest a transitionary engagement with eCompetence. These dimensions act as strong

indicators of the efficient engagement with e-learning. Further evidence was provided through the use of Activity Theory for evaluation using the lack of either Level 1 or Level 2 contradictions as criteria of efficient implementation of e-learning innovation. A further factor required for effective, transformative change is that the wider outcome envisaged for an individual Activity System should be compatible with (and reinforce) a wider, institutional Activity System promoting such change.

This thesis is derived from an analysis of the history of e-learning engagement for practitioners in one particular institution. It is hoped that the findings have sufficient resonance to experiences elsewhere to be of value in planning eCompetence development programmes. Their focus should be on the externalization of e-learning innovation through the development of learning communities with the aspiration that they will become communities of practice.

This suggests four criteria that define potentially effective, transformative engagements with e-learning:-

1. The three deeper dimensions of Samuelowicz and Bain - control of content, interaction with students and responsibility for transformation of knowledge;
2. The lack of contradictions within the Activity System, including a strong link with the wider outcome envisaged;
3. The link with a wider institutional Activity System promoting transformative change; and
4. Externalisation of the developments resulting from the Activities created.

Such evaluation identifies whether e-learning either enhances or replaces traditional approaches to learning.

As this study shows, generating the motivation and technical competence are necessary, but not sufficient, criteria for a successful professional development programme to promote e-learning. Some interviewees for this study referred explicitly (Carl, Pritesh), whilst others made implicit reference (James, Olivia), to a 'golden age' of HE that has been lost with recent massification. They point to the impact on learning communities of growth in student numbers without equivalent growth in available resources. Sceptics might suggest that if there ever was such a 'golden age', it was lost when the first wave of new technology – the printed book – hit HE.

Managing and developing learning communities are essential elements of eCompetence. The new tools and artefacts at our disposal enable practitioners to place learning communities at the heart of HE. This will not be achieved unless our eCompetence development programmes are delivered online through socially mediated tools and artefacts. We and our colleagues are unlikely ever to be as accomplished users of Web 2.0 technologies as our students – that takes a lifetime of familiarity that we cannot acquire. We can, however, develop a working knowledge of such technologies, reflecting this in the pedagogy that underpins our courses. The way we can do this is by ensuring our eCompetence development programmes are in themselves learning communities.

Bibliography

- Adelman, C.J.D. Jenkins, D. and Kemmis, S. (1980) 'Rethinking case study'. In H. Simons (ed.) *Towards a science of the singular*. Norwich: Centre for Applied Research in Education, 45-62.
- Allee, V. (1997) *The knowledge evolution: Expanding organizational intelligence*. Washington: Butterworth-Heinemann.
- Anderson, C. (2009) *Free: The future of a radical price*. New York: Hyperion.
- Andrews, R. and Haythornthwaite, C. (2007) 'Introduction to e-learning research'. In R. Andrews and C. Haythornthwaite (eds.) *The Sage Handbook of e-learning research*, 1st ed. London: Sage, 1-47.
- Argyris, C. (2002) 'Double-loop learning, teaching, and research', *Academy of Management Learning & Education*, 1(2), 206-218.
- Armellini, A. and Jones, S. (2007) 'Institutional embedding of e-learning: Findings from the Adelie Pathfinder Project'. In S. Walker M. Ryan and R. Teed (eds.) *Designing for Learning: E-learning @ Greenwich Conference, 2007*, University of Greenwich 67-75.
- Armstrong, J. and Franklin, T. (2008) 'A review of current and developing international practice in the use of social networking (Web 2.0) in higher education'. Manchester: Committee of enquiry into the Changing Learner Experience.
- Ashwin, P. (2006) 'Variation in academics' accounts of tutorials', *Studies in Higher Education*, 31(6), 651-665.
- Ashworth, P. and Lucas, U. (1998) 'What is the 'World'of Phenomenography?', *Scandinavian journal of educational research*, 42(4), 415-431.
- Ashworth, P. and Lucas, U. (2000) 'Achieving empathy and engagement: A practical approach to the design, conduct and reporting of phenomenographic research', *Studies in higher Education*, 25(3), 295-308.
- Bailey, K. (2007) *Methods of social research*. New York: Free Press.
- Bain, S. (2000) *'Learning Technology Support Service Guide: An introduction to learning technology'*. Bristol: Bristol University.
- Barnett, R. (1994) *The limits of competence: Knowledge, higher education and society*. Buckingham, UK: Open University Press.
- Barnett, R. and Hallam, S. (1999) 'Teaching for supercomplexity: A pedagogy for higher education'. In P. Mortimore (ed.) *Understanding pedagogy and its impact on learning*. London: Paul Chapman Publishing, 137-154.
- Beck, U. and Camiller, P. (2000) *The brave new world of work*. Cambridge: Polity Press.
- Bennett, J.B. (2003) 'Constructing academic community: Power, relationality, hospitality, and conversation', *Interchange*, 34(1), 51-61.
- Biggs, J. (2003) *Teaching for quality learning in higher education*. Buckingham, UK: Society for Research into Higher Education and Open University Press.
- Bjørke, Å. Ask, B. and Heck, D. (2003) 'United Nations University/Global Virtual University - Global cooperation on e-learning' *International Conference on Network Universities and e-Learning, 2003*, Universidad Politecnica de Valencia.

- Blunkett, D. (2000) *Higher education and the challenges it faces in the 21st century* (<http://cms1.qre.ac.uk/dfee/>). Online, accessed 22 May 2010.
- Booth, S. (1997) 'On phenomenography, learning and teaching', *Higher Education Research & Development*, 16(2), 135-158.
- Bostock, S. (2007) *'A discussion paper on research-informed learning at Keele: Research Skills in the Undergraduate Curriculum'*. Keele: Keele University.
- Boud, D.J. (1989) 'The use of self-assessment in student grading', *Assessment and Evaluation in Higher Education*, 14(1), 20-30.
- Boyer, E.L. (1990) *Scholarship reconsidered: Priorities of the professoriate*. Princeton: Carnegie Foundation for the Advancement of Teaching.
- Boyle, T. and Cook, J. (2003) 'Learning objects, pedagogy and reuse'. In J. Seale (ed.) *Learning technology in transition: from individual enthusiasm to institutional implementation*. Lisse, Netherlands: Swets Zeitlinger, 31-44.
- Brock-Utne, B. (1996) 'Reliability and validity in qualitative research within education in Africa', *Internationale Review of Education*, 42(6), 605-621.
- Brookfield, S.D. (1986) *Understanding and facilitating adult learning*. Buckingham, UK: Open University Press.
- Brophy, J. (2006) 'Graham Nuthall and social constructivist teaching: Research-based cautions and qualifications', *Teaching and Teacher Education*, 22(5), 529-537.
- Brown, R.B. and McCartney, S. (1999) 'Multiple mirrors: reflecting on reflections', *Developing the Capable Practitioner: Professional Capability Through Higher Education*, 16.
- Browne, T. Hewitt, R. Jenkins, M. and Walker, R. (2008) *'Technology Enhanced Learning Survey'*. Oxford: Universities and Colleges Information Systems Association.
- Bubb, S. and Earley, P. (2007) *Leading & Managing Continuing Professional Development: Developing People, Developing Schools*. London: Sage Publications Ltd.
- Burrell, G. and Morgan, G. (1979) *Sociological paradigms and organisational analysis*. London: Heinemann.
- Busher, H. and James, N. (2007) 'Ethics of research in education'. In M. Coleman. and A. Briggs *Research methods in educational leadership and management* (2nd Ed.). London: Sage.
- Cambridge Online (2010) *Cambridge Advanced Learners' Dictionary*, Online ed. Cambridge: Cambridge University Press.
- Capra, F. (1996) *The web of life: A new scientific understanding of living systems*. New York: Anchor.
- Carnell, E. (2007) 'Conceptions of effective teaching in higher education: extending the boundaries', *Teaching in Higher Education*, 12(1), 25-40.
- Carr, D. (1992) 'Four dimensions of educational professionalism', *International Journal of Research & Method in Education*, 15(1), 19-31.
- Christensen, D.H. and Dahl, C.M. (1997) 'Rethinking research dichotomies', *Family and consumer sciences research journal*, 25(3), 269-285.
- Churchill, T. (2010) 'The Impact of Collaborative E-Learning on Concepts of Teaching'. In U. Ehlers and D. Schneckenberg (eds.) *Changing Cultures in Higher Education: Moving Ahead to Future Learning*. Heidelberg: Springer.

- Coffield, F. Moseley, D. Hall, E. and Ecclestone, K. (2004) *'Learning styles and pedagogy in post-16 learning: A systematic and critical review'*. London: Learning and Skills Development Agency (LSDA).
- Cohen, L. Manion, L. and Morrison, K. (2000) *Research methods in education*, 5th ed. Abingdon: Routledge.
- Cole, M. (1998) *Cultural psychology: A once and future discipline*. Harvard: Harvard University Press.
- Cole, M. and Engeström, Y. (1993) 'A cultural-historical approach to distributed cognition'. In G. Salomon (ed.) *Distributed cognitions: Psychological and educational considerations*. Cambridge University Press, 1-47.
- Collis, B. and Moonen, J. (2001) *Flexible learning in a digital world: Experiences and expectations*. London: Kogan Page.
- Collis, B. and Moonen, J. (2005a) 'An on-going journey: Technology as a learning workbench'. Enschede, Netherlands: Faculty of Behavioural sciences, University of Twente (<http://bettycollisjefmoonen.nl/rb.htm>). Online, accessed May 27 2010.
- Collis, B. and Moonen, J. (2005b) 'Collaborative learning in a contribution-oriented pedagogy', *Encyclopedia of distance learning*, 1 277-283.
- Conole, G. (2003) 'Understanding enthusiasm and implementation: E-learning research questions and methodological issues'. In J. Seale (ed.) *Learning technology in transition: From Individual enthusiasm to institutional implementation*. Lisse, The Netherlands: Swets Zeitlinger, 129-146.
- Cousin, G. (2009) *Researching learning in higher education*. New York: Routledge.
- Daniels, H. (2001) *Vygotsky and pedagogy*. Abingdon: Routledge.
- Darling, I. (1998) 'Action Evaluation and Action Theory: An assessment of the process and its connection to conflict resolution', *Educating as inquiry: A teacher action research site* (Online: Accessed 6/12/10).
- Davis, S.J. Connolly, A. and Linfield, E. (2010) 'Lecture capture: Making the most of face to face learning', *Engineering Education: Journal of the Higher Education Academy Engineering Subject Centre*, 4(2), 4.
- Deal, A. (2007) *'A teaching with technology white paper: lecture webcasting'*. Pittsburgh, USA: Carnegie Mellon University.
- Dearing, R. (1997) *'Higher education in the learning society: The National Committee of Inquiry into Higher Education'*. London: Her Majesty's Stationery Office (HMSO).
- Dehn, R. (2003) 'Has Presentation Software Changed How Students Learn?', *Perspective on Physician Assistant Education*, 14(4), 259.
- Dempster, J. and Deepwell, F. (2003) 'Experiences of national projects in embedding learning technology into institutional practices'. In J. Seale (ed.) *Learning technology in transition: from individual enthusiasm to institutional implementation*. Lisse, Netherlands: Swets & Zeitlinger, 45-62.
- Dence, R. and Mobbs, R. (2007) *'Perspectives on the nature of communities and their needs: Conceptualising and researching potential wiki use'*. Leicester: University of Leicester.
- Denzin, N.K. and Lincoln, Y.S. (2005) *The Sage handbook of qualitative research*. Thousand Oaks, CA: Sage Publications Inc.
- Department for Education & Sciences (2005) *'Harnessing Technology: transforming Learning and Children's Services'*. London: DfES.

- Dewey, J. (1961) *Democracy and education: an introduction to the philosophy of education* (1916). New York: Macmillan.
- Dey, I. (1993) *Qualitative data analysis*. London: Routledge.
- DfES (2003) *'Towards a unified e-learning strategy'*. London: Department for Education & Skills.
- DfES (2004) *'The future of Higher Education'*. London: Department for Education & Science.
- Dierking, L.D. Falk, J.H. Rennie, L. Anderson, D. and Ellenbogen, K. (2003) 'Policy statement of the "Informal Science Education ad hoc committee"', *Journal of Research in Science Teaching*, 40(2), 108-111.
- Dooley, K.J. (1997) 'A complex adaptive systems model of organization change', *Nonlinear Dynamics, Psychology, and Life Sciences*, 1(1), 69-97.
- Dortins, E. (2002) 'Reflections on phenomenographic process: Interview, transcription and analysis' *Proceedings of the 2002 Annual International Conference of HERDSA*, 2002, Higher Education Research and Development Society of Australasia (HERDSA) 207-213.
- Edwards, R. (1997) *Changing places?: Flexibility, lifelong learning and a learning society*. London: Routledge.
- Engeström, Y. (1987) *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Engeström, Y. (1996) 'Developmental work research as educational research: Looking ten years back and into the zone of proximal development', *Nordisk pedagogik*, 16(3), 131-143.
- Engeström, Y. (1999a) 'Activity theory and individual and social transformation'. In Y. Engeström R. Miettinen and R.L. Punamäki-Gitai (eds.) *Perspectives on activity theory*. Cambridge: Cambridge University Press, 19-38.
- Engeström, Y. (1999b) 'Innovative learning in work teams: Analyzing cycles of knowledge creation in practice'. In Y. Engeström R. Miettinen and R.L. Punamäki-Gitai (eds.) *Perspectives on activity theory*. Cambridge: Cambridge University Press, 377-404.
- Engeström, Y. (1999c) *Learning by expanding: An activity-theoretical approach to developmental research (German Edition - translated by Falk Seeger)*. Marburg, Germany: BdWi-Verlag.
- Engeström, Y. (2001) 'Expansive learning at work: Toward an activity theoretical reconceptualization', *Journal of education and work*, 14(1), 133-156.
- Engeström, Y. (2005) 'Non Scholae sed vitae discimus: Toward overcoming the encapsulation of school learning'. In H. Daniels (ed.) *An introduction to Vygotsky*, 2nd ed. Hove, UK: Routledge, 157-176.
- Engeström, Y. Miettinen, R. and Punamäki-Gitai, R.L. (1999) *Perspectives on activity theory*. Cambridge: Cambridge University Press.
- Entwistle, N. (1997) 'Introduction: Phenomenography in higher education', *Higher Education Research & Development*, 16(2), 127-134.
- Entwistle, N. (2000) 'Promoting deep learning through teaching and assessment: conceptual frameworks and educational contexts' *TLRP conference, Leicester, 2000*, Teaching & Learning Research Programme.
- Entwistle, N. and Ramsden, P. (1982) *Understanding Student Learning*. Beckenham, UK: Croom Helm.
- European eCompetence Initiative (2009) *The concept of eCompetence* (<http://www.ecompetence.info/index.php?id=44>). Online, accessed May 27 2010.

- Fisher, T. (2006) 'Educational transformation: Is it, like 'beauty', in the eye of the beholder, or will we know it when we see it?', *Education and Information Technologies*, 11(3), 293-303.
- Flick, U. (2002) *An introduction to qualitative research*, 2nd ed. London: Sage.
- Gardiner, L.F. (1994) '*Redesigning higher education: Producing dramatic gains in student learning*'. 23 (7). Washington D.C.: George Washington University.
- Garrison, D.R. and Anderson, T. (2003) *E-learning in the 21st century: A framework for research and practice*. London: Routledge.
- Gibbons, M. (1994) *The new production of knowledge: the dynamics of science and research in contemporary societies*. London: Sage.
- Gibbs, G. and Coffey, M. (2004) 'The impact of training of university teachers on their teaching skills, their approach to teaching and the approach to learning of their students', *Active learning in higher education*, 5(1), 87-100.
- Gladwell, M. (2001) *The Tipping Point: How little things make can make a big difference*. New York: Little, Brown & Co.
- Goodyear, P. (2001) 'Effective networked learning in higher education: notes and guidelines'. See: <http://www.csalt.lancs.ac.uk/jisc/>.
- Gorman, S. (2007). 'Managing research ethics: A head-on collision?'. In A. Campbell & S. Groundwater-Smith (Eds.), *An ethical approach to practitioner research* (pp.8-23). Abingdon: Routledge.
- Griffiths, S. (2009) 'Teaching & learning in small groups'. In H. Fry, S. Ketteridge and S. Marshall (eds.) *Teaching & learning in higher education*, 3rd ed. Oxon: Routledge, 72-84.
- Gunn, C. (2010) 'Sustainability factors for e-learning initiatives', *ALT-J: Research in learning technology*, 18(2), 89-103.
- Hammersley, M. (1991) *Reading ethnographic research: A critical guide*, London: Longman Publishing Group.
- Hammersley, M. (1993) 'On the teacher as researcher'. In M. Hammersley (ed.) *Educational research: Volume one*. London: Routledge, 425-445.
- Harley, S. Muller-Camen, M. and Collin, A. (2004) 'From academic communities to managed organisations: The implications for academic careers in UK and German universities', *Journal of vocational behavior*, 64(2), 329-345.
- Higher Education Academy (2007) *MITS90* (<http://elearning.heacademy.ac.uk/wiki/index.php/MIT90s>). Online accessed 7 June 2009.
- Higher Education Funding Council for England, HEFCE (2003) '*The costs of alternative modes of delivery*'. London: HEFCE.
- Higher Education Funding Council for England (2004) '*Units of assessment and recruitment of panel members*'. London: HEFCE.
- Higher Education Funding Council for England (2005) '*HEFCE strategy for e-learning*'. Bristol: HEFCE.
- Higher Education Funding Council for England (2009) '*Enhancing learning and teaching through the use of technology: A revised approach to HEFCE's strategy for e-learning*'. Bristol: HEFCE.
- Hiltz, S.R. Turoff, M. and Harasim, L. (2007) 'Development and philosophy of the field of asynchronous learning networks' in R. Andrews and C. Haythornthwaite (eds.) *The Sage handbook of e-learning research*. London: Sage, 55-72.

- Hitchcock, G. and Hughes, D. (1995) *Research and the teacher: A qualitative introduction to school-based research*, 2nd ed. London: Routledge.
- Ho, A. (2000) 'A conceptual change approach to staff development: A model for programme design', *The international journal for academic development*, 5(1), 30-41.
- Ho, A. Watkins, D. and Kelly, M. (2001) 'The conceptual change approach to improving teaching and learning: An evaluation of a Hong Kong staff development programme', *Higher Education*, 42(2), 143-169.
- Hoyle, E. and John, P. (1995) 'The idea of a profession' in E. Hoyle (ed.) *Professional knowledge and professional practice*. London: Cassell.
- Hughes, C. Hewson, L. and Nightingale, P. (1997) 'Developing new roles and skills' in P. Yetton (ed.) *Managing the introduction of technology in the delivery and administration of higher education*. Canberra: Australian Government Publishing Service, 49-79.
- Huxham, M. (2005) 'Learning in lectures: Do interactive windows' help?', *Active learning in higher education*, 6(1), 17.
- Ipsos MORI (2008) *'Great expectations of ICT'*. London: JISC.
- Jacobs, G. (2003) 'Preface' in J. Seale (ed.) *Learning technology in transition: From individual enthusiasm to institutional implementation*. Lisse, The Netherlands: Swets & Zeitlinger, vii-ix.
- Jacobs, G. (2005) 'Hypermedia and discovery based learning: What value?', *Australasian Journal of Educational Technology*, 21(3), 355-366.
- Jackson, N. (2006) 'Creativity in Higher Education - Creating tipping points for cultural change', *Centre for Excellence in Professional Training and Education (SCEPTre) Scholarly Paper*, v. 3, p. 1-25,
- Jarvis, P. Holford, J. and Griffin, C. (2003) *The theory & practice of learning*. London: Kogan-Page.
- Jasinski, M. and Planet, D. (2007) *'Innovate and integrate: Embedding innovative practices'* 12. Canberra: Department of Education, Science and Training.
- Jaworski, B. and Potari, D. (2009) 'Bridging the macro-and micro-divide: using an activity theory model to capture sociocultural complexity in mathematics teaching and its development', *Educational Studies in Mathematics*, 72(2), 219-236.
- Jevons, F. and Northcott, P. (1994) *'Costs and quality in resource-based learning on and off-campus'*. Canberra: National Board of Employment, Education and Training.
- Jones, A. (2004) *'A review of the research literature on barriers to the uptake of ICT by teachers'*. Coventry: BECTA.
- Karpf, A. (2002) 'Why 'portfolio working' is just a fancy name for exploitation'. *The Guardian*.
- Kauffman, K.S. (1994) 'The insider/outsider dilemma: Field experience of a white researcher" getting in" a poor black community', *Nursing research*, 43(3), 179-183.
- Kellogg, K. (1999) *'Learning communities'*. Washington DC: ERIC Digest.
- Kember, D. (1997) 'A reconceptualisation of the research into university academics' conceptions of teaching', *Learning and instruction*, 7(3), 255-275.
- Kennedy, H. (1997) *'Learning Works: widening participation in further education'*. Coventry: Further Education Funding Council (FEFC).
- Kember, D. (2001) 'Beliefs about knowledge and the process of teaching and learning as a factor in adjusting to study in higher education', *Studies in Higher Education*, 26(2), 205-221.

- Kiewra, K.A. (2002) 'How classroom teachers can help students learn and teach them how to learn', *Theory into practice*, 41(2), 71-80.
- Kilpatrick, S. Barrett, M. and Jones, T. (2003) '*Defining learning communities*'. Launceston, Tasmania: University of Tasmania.
- Kim, D. and Lee, S. (2002) 'Designing Collaborative Reflection Supporting Tools in E-Project-Based Learning Environments', *Journal of Interactive Learning Research*, 13(4), 375-393.
- Kirkwood, A. (2009) 'E-learning: you don't always get what you hope for', *Technology, Pedagogy and Education*, 18(2), 107-121.
- Kirkwood, A. and Price, L. (2005) 'Learners and learning in the 21st Century: What do we know about students' attitudes and experiences of ICT that will help us design courses?', *Studies in Higher Education*, 30(3), 257-274.
- Knowles, M. (1983) 'Andragogy: an emerging technology for adult learning'. In M. Tight (ed.) *Adult learning and education*. London: Croom Helm, 53-70.
- Knowles, M.S. Holton, E.F., III and Swanson, R.A. (2005) *The adult learner: The definitive classic in adult education and human resource development*, 6th ed. Burlington, MA: Elsevier.
- Kokotovich, V. (2008) 'Problem analysis and thinking tools: an empirical study of non-hierarchical mind mapping', *Design Studies*, 29(1), 49-69.
- Kolb, D.A. (1984) *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall.
- Kuuti, K. (1996) 'Activity Theory as a potential framework for human-computer interaction research framework'. In B.A. Nardi (ed.) *Context and consciousness: activity theory and human-computer interaction*. Cambridge, MA: The MIT Press, 17-44.
- Labaree, R.V. (2002) 'The risk of 'going observationalist': negotiating the hidden dilemmas of being an insider participant observer', *Qualitative Research*, 2(1), 97-122.
- Laurillard, D. (2002) *Rethinking university teaching: A conversational framework for the effective use of learning technologies*, 2nd ed. London: RoutledgeFalmer.
- Lave, J. and Wenger, E. (1991) *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lave, J. and Wenger, E. (1999) 'Learning and pedagogy in communities of practice'. In J. Leach and B. Moon (eds.) *Learners and pedagogy*. London: Paul Chapman, 21-33.
- Lea, S.J. Stephenson, D. and Troy, J. (2003) 'Higher Education students' attitudes to student-centred learning: beyond educational bulimia?', *Studies in Higher Education*, 28(3), 321-334.
- Leach, J. and Moon, B. (1999) 'Recreating pedagogy'. In J. Leach and B. Moon (eds.) *Learners and pedagogy*, Leach, J.; Moon, B. ed. London: Paul Chapman Publishing, 265-276.
- Leont'ev, A.N. (1981) *Problems of the development of the mind*, 4th ed. Moscow: Progress.
- Lewis, D. and Allan, B. (2004) *Virtual learning communities: A guide for practitioners*. Maidenhead, UK: Open University Press.
- Light, G. and Cox, R. (2001) *Learning and teaching in higher education: The reflective professional*. London: Sage.
- Lindblom-Ylänne, S. Trigwell, K. Nevgi, A. and Ashwin, P. (2006) 'How approaches to teaching are affected by discipline and teaching context', *Studies in Higher Education*, 31(3), 285-298.

- Littlejohn, A. and Higgison, C. (2003) *'A guide for teachers - e-learning series No. 3'*. York: Learning and Teaching Support Network (LTSN) Generic Centre.
- Littlejohn, A. and Peacock, S. (2003) 'From pioneers to partners: the changing voices of staff developers'. In J. Seale (ed.) *Learning Technology in Transition: From Individual Enthusiasm to Institutional Implementation*. Lisse, The Netherlands: Swets & Zeitlinger, 77-90.
- Littlejohn, A. and Pegler, C. (2007) *Preparing for blended e-learning*. Abingdon, UK: Routledge.
- Loughborough University (2009) *WebPA Project* (<http://webpaproject.lboro.ac.uk/>). Online, accessed 17 July 2009.
- Lowman, J. (1995) *Mastering the techniques of teaching*. San Francisco: Jossey-Bass.
- Manzo, A.V. (1998) 'Teaching for creative outcomes: Why we don't, how we all can', *Clearing House*, 71(5), 287-290.
- Marshall, C. and Rossman, G.B. (2006) *Designing qualitative research*, 4th ed. London: Sage.
- Martin, G.A. and Double, J.M. (1998) 'Developing Higher Education Teaching Skills through Peer Observation and Collaborative Reflection', *Innovations in Education and Training International*, 35(2), 161-170.
- Marton, F. (1994) 'Phenomenography'. In T. Husen and T.N. Postlethwaite (eds.) *The International encyclopedia of education: research and studies*, 2nd ed. Oxford: Pergamon.
- Marton, F. (1997) *Notes on phenomenography - Version II* (<http://www.ped.qu.se/biorn/phgraph/misc/constr/handout2.html>). Online, accessed 15 August, 2010 .
- Marton, F. Dall'Alba, G. and Beaty, E. (1993) 'Conceptions of learning', *International journal of educational research*, 19(3), 277-277.
- Marton, F. and Saljo, R. (1976) 'On Qualitative Differences in Learning: 1. Outcome and Process.', *British Journal of Educational Psychology*, 46(1), 4-11.
- Mason, R. and Rennie, F. (2006) 'Elearning: the key concepts'. Abingdon, UK: Routledge.
- Mayes, J.T. (1997) *'Towards a framework for learning technology'*. Inverness, Scotland: University of Highlands & Islands.
- Mayes, J.T. (1995) 'Learning technology and groundhog day'. In W. Strang V.B. Simpson and D. Slater (eds.) *Hypermedia at work: Practice and theory in higher education*. Canterbury: University of Kent Press, 28-37.
- Mayes, T. and de Freitas, S. (2004) *'JISC e-learning models desk study: Stage 2: Review of e-learning theories, frameworks and models'*. Bristol: Joint Information Systems Committee (JISC).
- Mayes, T. Morrison, D. Mellar, H. Bullen, P. and Oliver, M. (eds.) (2009) *Transforming Higher Education through technology-enhanced learning*. York: Higher Education Academy.
- McCarthy, M. and Simm, J. (2006) *'Survey of Employer Attitudes To Postgraduate Researchers'*. Sheffield: University of Sheffield.
- McConnell, D. (2006) *E-learning groups and communities*. Maidenhead: Open University Press.
- McDrury, J. and Alterio, M. (2003) *Learning through storytelling in higher education: Using reflection & experience to improve learning*. RoutledgeFalmer.
- McGinn, M and Bosacki, S (2004) 'Research Ethics and Practitioners: Concerns and Strategies for Novice Researchers Engaged in Graduate Education'. *Forum: Qualitative Social Research*, Volume 5, No. 2, Art. 6.

- McNaught, C. (2002) 'Views on Staff Development for Networked Learning'. In C. Steeples and C. Jones (eds.) *Networked Learning: Perspectives and Issues*. London: Springer, 111-124.
- McNeil, H.P. McNeil, H.P. Hughes, C.S. Toohey, S.M. and Dowton, S.B. (2006) 'An innovative outcomes-based medical education program built on adult learning principles', *Medical teacher*, 28(6), 527-534.
- Melville, S.D. Allan, C. Crampton, J. Fothergill, J. Godfrey, A. Harloe, M. Lydon, J. Machell, J. Morss, K. and Russell, E. (2009) *Higher Education in a Web 2.0 world*. Bristol: Committee of Inquiry into the Changing Learner Experience (CLEX).
- Mercer, J. (2006) 'The challenges of insider research in educational institutions: wielding a double-edged sword and resolving delicate dilemmas', *Oxford Review of Education*, 33(1), 1-17.
- Merriam, S.B. (1988) *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.
- Merton, R.K. (1972) 'Insiders and outsiders: A chapter in the sociology of knowledge', *American Journal of Sociology*, 78(1), 9-47.
- Morton, S. (ed.) (1991) *The Corporation of the 1990s — Information Technology and Organizational Transformation*. Oxford: Oxford University Press.
- Mumtaz, S. (2000) 'Factors affecting teachers' use of information and communications technology: a review of the literature', *Journal of information technology for teacher education*, 9(3), 319-342.
- Murray, J. (2010) 'Young students flock to the OU'. *The Guardian*.
- Nardi, B.A. (1996) 'Activity theory and human-computer interaction'. In B.A. Nardi (ed.) *Context and consciousness: activity theory and human-computer interaction*. Cambridge, MA: The MIT Press, 7-16.
- Nelson, M.R. (2008) 'E-Books in Higher Education: Nearing the end of the era of hype?', *Educause Review*, 43(2), 40-56.
- Newble, D. and Cannon, R. (1995) *A handbook for teachers in universities & colleges: a guide to improving teaching methods*. London: Kogan Page.
- Nicholls, G. (2001) *Professional development in higher education: New dimensions & directions*. London: Kogan Page.
- Nisbet, J. and Watt, J. (1984) 'Case study'. In J. Bell T. Bush A. Fox J. Goodey and S. Goulding (eds.) *Conducting small-scale investigations in educational management*. London: Harper & Row, 79-92.
- Noss, R. (2009) *'Response to Royal Society consultation: 'What are the future challenges for STEM education at primary, secondary and tertiary levels?'*. London: Teaching and Learning Research Programme (TLRP).
- Nuthall, G. (2004) 'Relating classroom teaching to student learning: A critical analysis of why research has failed to bridge the theory-practice gap', *Harvard educational review*, 74(3), 273-306.
- OED Online (2010) *Oxford English Dictionary*, Online ed. Oxford: Oxford University Press.
- Oliver, R. O'Donoghue, J. and Harper, B. (2003) 'Institutional implementation of ICT in Higher Education: an Australian perspective'. In J. Seale (ed.) *Learning technology in transition: from individual enthusiasm to institutional implementation*. Lisse, The Netherlands: Swets & Zeitlinger, 101-116.
- Olson, D.H. (1977) 'Insiders' and outsiders' views of relationships: Research studies'. In G. Levinger and H.L. Rausch (eds.) *Close relationships: Perspectives on the meaning of intimacy*. Amhurst, Ma: University of Massachusetts Press, 115-135.

- Onwuegbuzie, A.J. and Leech, N.L. (2007) 'Validity and Qualitative Research: An Oxymoron?', *Quality and quantity*, 41(2), 233-249.
- Orgill, M. (2008) *Phenomenography* (<http://www.minds.may.ie/~dez/phenom.html>) . Online, accessed 7 September 2010.
- Patton, M.Q. (2002) *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Phillips, D.C. (1995) 'The good, the bad, and the ugly: The many faces of constructivism', *Educational researcher*, 24(7), 5-12.
- Platt, J. (1981) On interviewing one's peers, *The British Journal of Sociology*, 32(1), 75-91.
- Powney, J. and Watts, M. (1987) *Interviewing in educational research*. London: Routledge & Kegan Paul.
- Plenderleith, J. and Adamson, V. (2009) 'The policy landscape of transformation'. In T. Mayes D. Morrison H. Mellar P. Bullen and M. Oliver (eds.) *Transforming Higher Education through technology-enhanced learning*. York: Higher Education Academy, 6-19.
- Prensky, M. (2001) 'Digital natives, digital immigrants', *On the horizon*, 9(5), 1-6.
- QAA (1997) *Mission statement* (<http://www.qaa.ac.uk/aboutus/foi/>). Online, accessed 7 June 2009.
- Rainbird, H. Fuller, A. and Munro, A. (2004) *Workplace learning in context*. London: Routledge.
- Richardson, J.T.E. (1999) 'The concepts and methods of phenomenographic research', *Review of Educational Research*, 69(1), 53-82.
- Rogers, E.M. (2003) *Diffusion of innovations*, 4th ed. New York: Free Press.
- Rogoff, B. (1994) 'Developing understanding of the idea of communities of learners', *Mind, culture, and activity*, 1(4), 209-229.
- Roth, W.M. and Lee, Y.J. (2007) 'Vygotsky's Neglected Legacy: Cultural-Historical Activity Theory', *Review of Educational Research*, 77(2), 186-232.
- Roth, W.M. and Lee, Y.J. (2006) 'Contradictions in theorizing and implementing communities in education', *Educational Research Review*, 1(1), 27-40.
- Roth, W.M. Lee, Y.J. and Hsu, P.L. (2009) 'A tool for changing the world: possibilities of cultural-historical activity theory to reinvigorate science education', *Studies in Science Education*, 45(2), 131-167.
- Russell, D.R. (2002) 'Looking Beyond the Interface: Activity Theory and Distributed Learning'. In M.R. Lea and K. Nicoll (eds.) *Distributed learning: Social and cultural approaches to practice*. Abingdon, UK: RoutledgeFalmer, 64-82.
- Russell, T.L. (1999) *The no significant difference phenomenon*, 4th ed. Raleigh, USA: North Carolina State University.
- Salmon, G. (2002a) *E-tivities: The key to active online learning*. London: RoutledgeFalmer.
- Salmon, G. (2002b) 'Mirror, mirror, on my screen: Exploring online reflections', *British Journal of Educational Technology*, 33(4), 379-391.
- Salmon, G. (2004) *E-moderating: The key to teaching and learning online*, 2nd ed. London: Taylor & Francis.
- Salomon, G. (1993) *Distributed cognitions: Psychological and educational considerations*. Cambridge: Cambridge University Press.

- Samuelowicz, K. and Bain, J.D. (1992) 'Conceptions of teaching held by academic teachers', *Higher Education*, 24(1), 93-111.
- Samuelowicz, K. and Bain, J.D. (2001) 'Revisiting academics' beliefs about teaching and learning', *Higher Education*, 41(3), 299-325.
- Schneckenberg, D. (2008) *Educating Tomorrow's Knowledge Workers: Concept of ECompetence and Its Application in International Higher Education*. Amsterdam: Eburon.
- Schneckenberg, D. (2009) 'Understanding the real barriers to technology-enhanced innovation in higher education', *Educational research*, 51(4), 411-424.
- Slater, N. (2010) 'The organisational impact of open educational resources'. In U. Ehlers and D. Schneckenberg (eds) *Changing Cultures in Higher Education: Moving Ahead to Future Learning*. Heidelberg: Springer.
- Seale, J. (ed.) (2003) *Learning technology in transition: from individual enthusiasm to institutional implementation*. Lisse, Netherlands: Swets & Zeitlinger.
- Shah, S. (2004) 'The researcher/interviewer in intercultural context: a social intruder!', *British Educational Research Journal*, 30(4), 549-575.
- Sharples, M. Taylor, J. and Vavoula, G. (2007) 'A theory of learning for the mobile age'. In R. Andrews and C. Haythornthwaite (eds.) *The SAGE handbook of e-learning research*. London: Sage, 221-247.
- Shattock, M. (2004) *Managing successful universities*. Maidenhead, UK: Open University Press.
- Shirky, C. (2003) 'Social software and the politics of groups', *Networks, Economics and Culture Newsletter*.
- Showers, B. (1987) 'Synthesis of Research on Staff Development: A Framework for Future Study and a State-of-the-Art Analysis.', *Educational Leadership*, 45(3), 77-87.
- Showers, B. and Joyce, B. (1996) 'The evolution of peer coaching', *Educational leadership*, 53(6), 12-16.
- Silverman, D. (1999) *Doing qualitative research: A practical handbook*. London: Sage.
- Simpson, O. (2003) *Student retention in online, open, and distance learning*. London: Kogan Page.
- Stefani, L. (2007) 'Peer and self-assessment: Drawing the parallels between student and staff practice'. In S. Frankland (ed.) *Enhancing teaching and learning through assessment*. Dordrecht: Springer, 118-129.
- Surra, C.A. and Ridley, C.A. (1991) 'Multiple perspectives on interaction: Participants, peers, and observers'. In B.M. Montgomery and S. Duck (eds.) *Studying interpersonal interaction*. New York: The Guilford Press, 35-55.
- Svensson, L. (1997) 'Theoretical foundations of phenomenography', *Higher Education Research & Development*, 16(2), 159-171.
- Tattersall, C. Watt, A. and Vernon, S. (2007) 'Mind mapping as a tool in qualitative research', *Nursing times*, 103(26), 32-33.
- Taylor, P. (1998) 'Institutional change in uncertain times: lone ranging is not enough', *Studies in Higher Education*, 23(3), 269-279.
- Teather, D. (2010) 'Amazon's ebook milestone: digital sales outstrip hardbacks for first time in US'. *The Guardian*.
- The Reporter (2001) 'Speech by Estelle Morris (transcript)'. 472(5 November 2001).

- Titscher, S. and Jenner, B. (2000) *Methods of text and discourse analysis*. London: Sage Publications Ltd.
- Trigwell, K. and Richardson, J.T.E. (2003) 'Qualitative and quantitative: Complementary approaches to research on student learning'. In C. Rust (ed.) *Improving student learning: Theory and practice ten years on*. Oxford: Oxford Centre for Staff Learning Development.
- Trow, M. (1974) 'Problems in the transition from elite to mass higher education' *General Report on the Conference on Future Structures of Post-Secondary Education, 1974*, Organisation for Economic Co-operation & Development (OECD) 55-71.
- Truss, L. (2003) *Eats, shoots & leaves: The zero tolerance approach to punctuation*. London: Profile Books.
- UK Research Councils (2001) *'Joint Statement of the UK Research Councils' Training Requirements for Research Students'*. Cambridge: UK Grad Programme.
- University of Leicester (2009) *PhD and MPhil Student Handbook 2009/10*. Leicester, UK: School of Education, University of Leicester.
- Universities UK (2004) *'Towards a framework of professional teaching standards'*. London: Universities UK.
- Van Oers, B. (2001) 'Educational forms of initiation in mathematical culture', *Educational Studies in Mathematics*, 46(1), 59-85.
- Veen, W. and Vrakking, B. (2006) *Homo zappiens: Growing up in a digital age*. London: Network Continuum Education.
- Vygotsky, L.S. (1978) *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Watkins, C. (2000) 'Feedback between teachers'. In S. Askew (ed.) *Feedback for learning*. London: RoutledgeFalmer, 65-80.
- Watson, D. (2002) 'Can we all do it all? Tensions in the mission and structure of UK higher education', *Higher Education Quarterly*, 56(2), 143-155.
- Webb, G. (1997) 'Deconstructing deep and surface: Towards a critique of phenomenography', *Higher Education*, 33(2), 195-212.
- Wellings, J. and Levine, M.H. (2005) *'The Digital Promise: Transforming Learning with Innovative Uses of Technology'*. San Jose: Apple.
- Wenger, E. (2006) *Communities of practice: A brief introduction* (<http://www.ewenger.com/theory/>). Online, accessed 27 May 2010.
- Wenger, E. (1999) *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.
- Wenger, E. White, N. and Smith, J.D. (2010) *Digital Habitats: Stewarding Technology for Communities*. Portland, Oregon: CPsquare.
- Wertsch, J.V. (1988) *Vygotsky and the social formation of mind*. Harvard: Harvard University Press.
- Wilson, J. (2003) 'Embedding learning technologies into institutional practices: A further education perspective'. In J. Seale (ed.) *Learning technology in transition: from individual enthusiasm to institutional implementation*. Lisse, The Netherlands: Swets & Zeitlinger, 63-76.
- Woo, K. Gosper, M. McNeill, M. Preston, G. Green, D. and Phillips, R. (2008) 'Web-based lecture technologies: blurring the boundaries between face-to-face and distance learning', *ALT-J*, 16(2), 81-93.

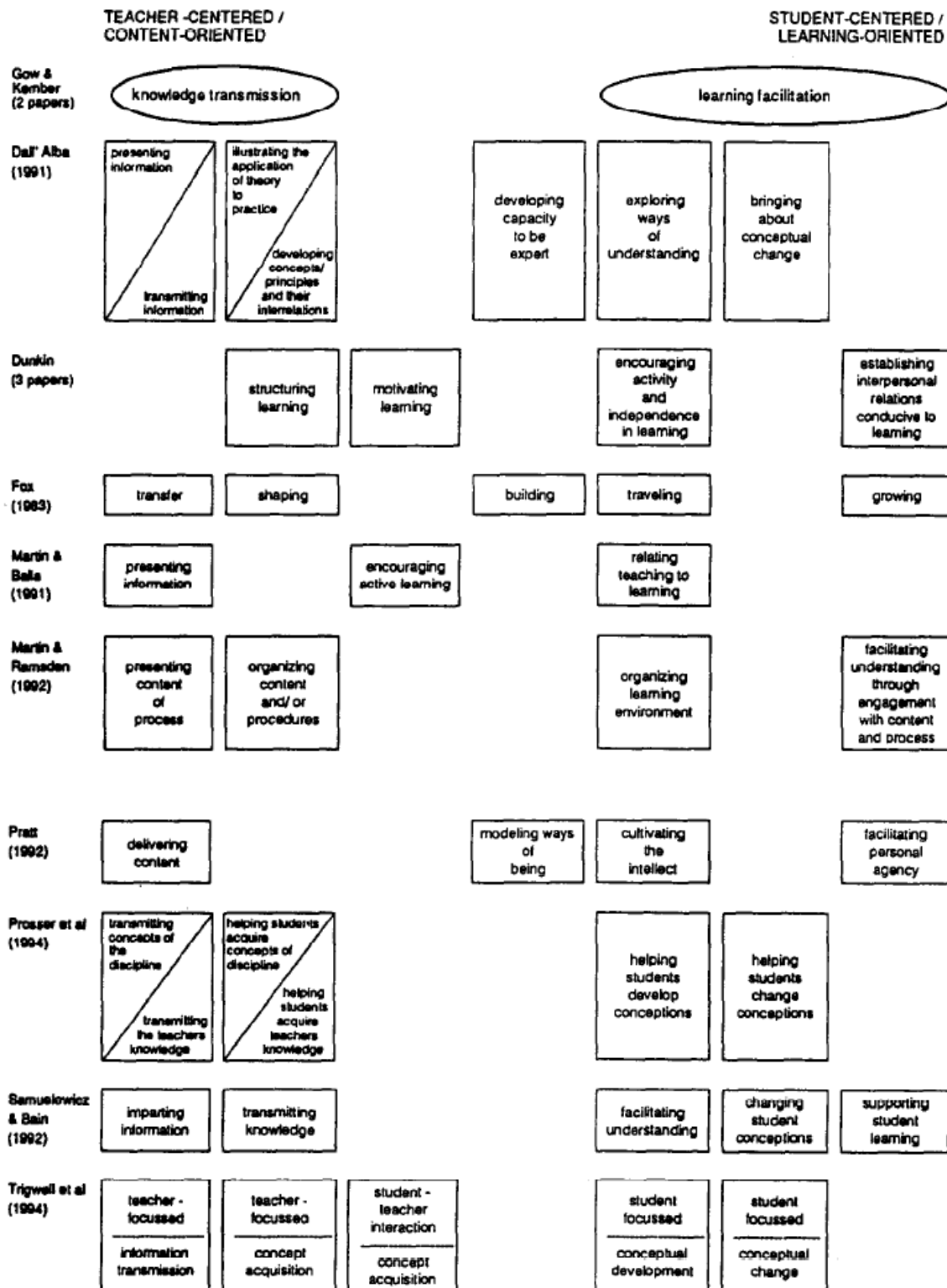
Appendices

Appendix 1: Synthesis of e-learning categorisations

Web 1.0/2.0	Features	Laurillard (1993 & 2002)	Mayes (1995)	Bains' (2000)	Synthesis
Web 1.0 – content for users to read, listen & watch	See Bains (2000)	Narrative - The nature of delivery is essentially one way – from teacher to participant.	Primary level of interaction Primary materials “support the presentation of content” which can take the form of third party products or websites, course notes, handouts and presentations.	Making simple resource material available on the web Supporting students via email;	1. Supporting learning The VLE acts as a repository of information, adding value to the 'traditional' elements of the course.
		Interactive – The user interacts with the resource in order to access the elements relevant to their needs.	Secondary and (at its most developed) tertiary level interaction Secondary materials add the further dimension of encouraging students to explore their understanding of (primary) materials provided through questions and quizzes.	Developing interactive web-based course materials; Using computer assisted assessment for formative or summative assessment and feedback; Introducing audio or video conferencing for collaborative projects or tutorials; Integrating the use of a multimedia CD-ROM into a module; Using an online discussion forum for interaction between students and tutors.	2. Enhancing learning In addition to utilising interactive web resources, VLE features such as communications and online tests (or surveys) are used. These still add value to, rather than transform, the course.

Web 1.0/2.0	Features	Laurillard (1993 & 2002)	Mayes (1995)	Bains' (2000)	Synthesis
Web 2.0 – content sharing & collaborative content creation	<p>Blogs - “a contraction of ‘web log’ ... where the author could put their log entries, and if they wish publish them”</p> <p>Wikis - “enables the collaborative creation of sets of web pages”</p> <p>Social bookmarking - “such as ...” enable users to store their Favourites or Bookmarks on the web and “... locate other resources, and people interested in the same topic” (e.g. www.delicious.com)</p> <p>Media sharing - “including flickr for photos, YouTube for videos, iTunes for podcasts, Slideshare for presentations, scribd for documents”</p> <p>Social networking - “allow the creation of online communities” Facebook, MySpace and Bebo</p> <p>Micro-blogging similar to texting (e.g. www.twitter.com)</p>	<p>Adaptive – The resource changes in response to input from the user. This can take the form of simulations or even role-play ‘games’.</p> <p>Communicative – A key element of delivery is the communication between participants.</p> <p>Productive – The focus of delivery is on participants collaborating to create content.</p>	<p>Such integration equates to the tertiary level</p> <p>through the genuine interaction with tertiary materials that learning occurs because they “support learning dialogues, through communication” through simulations and online discussions</p>	<p>Introducing online collaborative group work;</p> <p>Creating an integrated, online learning experience which incorporates several of the above</p> <p>Integrating web-based activities into a programme.</p>	<p>3. Transforming learning</p> <p>Although the VLE elements used may not change, their roles do. Rather than supporting existing modes of delivery, they become an integral part of course planning. The transformed 'blend' of the course uses e-learning and traditional elements where they best fit purpose.</p>

Appendix 2: Kember's comparison of categories of conceptions of teaching



(Kember 1997:260)

Appendix 3: Interviewees and Activities identified

Pseudonym & coding number	Discipline	Role	Age	Experience	Activities identified from interview¹	Professional development²
<i>Angela (01)</i>	Education	Lecturer	30-39	0-5 years	1: Insurance of learning 2: Ask the expert 3: Resource creation 4: Support on placement 5: Two-way alumni support	1, 2, 3
<i>Beverley (02)</i>	Language	Lecturer	Under 30	0-5 years	6: Virtual study skills 7: Online repository	1, 2, 3, 6
<i>Carl (03)</i>	Engineering	Lecturer	Under 30	0-5 years	8: Virtual Lectures II 9: Online assessment 10: Online repository	1, 3
<i>Duncan (04)</i>	Humanities	Central support	Under 30	0-5 years	11: Online workbook 12: Richer blend 13: Research skills development I 14: Research skills development II	1, 2, 3, 4
<i>Edward (05)</i>	Physical science	Lecturer	Over 40	Over 10 years	15: Site investigations 16: Online workshop 17: Online repository	1, 6
<i>Frances (06)</i>	N/a	Research support	Under 30	6-10 years	18: Online presentation 19: Online meetings 20: Online training 21: Awareness raising 22: Online induction	1, 2

Pseudonym & coding number	Discipline	Role	Age	Experience	Activities identified from interview¹	Professional development²
<i>Gurmit (07)</i>	Humanities	P/t lecturer	30 to 39	0-5 years	23: Online information 24: Collaborative glossary	1, (3)
<i>Heather (08)</i>	N/a	Central support function	Over 40	0-5 years	25: Virtual committee 26: Interactive presentation 27: Virtual consultation	1, 2, (3)
<i>Ian (09)</i>	Vocational	Lecturer (incl DL)	Over 40	0-5 years	28: Online repository 29: Online feedback	1, 2, 3
<i>James (10)</i>	Vocational	Manager/lecturer (DL)	Over 40	Over 10 years	30: Online repository 31: Online assignment tutorial 32: Thesis development 33: Virtual lectures	1, 6
<i>Korin (11)</i>	Vocational	Lecturer (DL)	Under 30	0-5 years	34: Online repository 35: Online discussion 36: Online portfolio	1, 2, 3, 4, 5, 6
<i>Linda (12)</i>	Vocational	Lecturer (DL)	Under 30	0-5 years	37: Online cafe 38: Online repository 39: Online portfolio building 40: Writing skills development 41: Plagiarism awareness	1, 2, 6
<i>Maurice (13)</i>	Engineering	Senior manager	Over 40	Over 10 years	42: Virtual Lectures I 43: Virtual seminars 44: Podcasts 45: Online assessment	1, 4

Pseudonym & coding number	Discipline	Role	Age	Experience	Activities identified from interview¹	Professional development²
<i>Nevin (14)</i>	Education	Lecturer (incl DL)	Over 40	6-10 years	46: Online repository 47: Online discussions 48: Podcasts 49: Online tutorial 50: Online assessment 51: Online meeting	1, 2, (3), 6
<i>Olivia (15)</i>	Humanities	Lecturer	Over 40	Over 10 years	52: Online discussions 53: Online resource 54: Online repository	1
<i>Pritesh (15)</i>	Language	Manager/lecturer	30 to 39	6-10 years	55: Virtual study skills 56: Engagement	1, 6
<i>Ruth (17)</i>	Language	Lecturer	Over 40	0-5 years	57: Assessment & feedback 58: Virtual study skills 59: Listening skills 60: Engagement	1, 3, 6
<i>Sheetal (18)</i>	Education	Lecturer (incl DL)	Over 40	6-10 years	61: Engagement 62: Collaboration 63: Online book 64: Video experts	1, 6

¹ Further information on each Activity in Dataset 7.3.

² These categories are explored in detail in 5.5.3 Developing eCompetence – 1. Practical training in VLE use; 2. Online reflections; 3. Academic Practice award (where shown in brackets, the interviewee discussed an equivalent course elsewhere); 4. VLE Users' group; 5. E-moderation; 6. Intensive course design workshop.

Appendix 4: Activities categorised according to Laurillard's taxonomy of educational media

	Media type & description	Learning experiences	Methods or technologies	Interviewee (Activities)	Interviewees	Activities
1.	Narrative The nature of delivery is essentially one way – from teacher to participant.	Attending, apprehending	Print, TV, video, DVD	02 (7); 03 (10); 04 (11, 13 ^b); 05 (15, 17); 06 (18, 21); 09 (28); 10 (30,33); 11 (34); 12 (38); 13 (42 ^f , 44); 14 (46, 48); 15 (53, 54); 18 (61 ⁱ , 63 ^j , 64)	13	22
2.	Interactive The user interacts with the resource in order to access the elements relevant to their needs.	Investigating, exploring	Library, CD, DVD, Web resources	02 (6 ^z); 03 (8, 9); 05 (16); 06 (20, 22); 07 (23); 08(26); 10 (31 ^d , 32 ^e); 12 (40,41); 13 (45 ^g); 14 (50); 16 (55 ^z); 17 (57, 58 ^z ,59); 18 (61 ⁱ , 63 ^j)	13	20
3.	Adaptive The resource changes in response to input from the user. This can take the form of simulations or even role-play 'games'.	Experimenting, practicing	Laboratory, field trip, simulation		0	0
4.	Communicative A key element of delivery is the communication between participants.	Discussing, debating	Seminar, online conference	01 (1, 2, 5 ^a); 04 (12, 13 ^b , 14 ^c); 05 (15 ^k); 06 (19); 08 (27); 10 (31 ^d , 32 ^e); 11 (35); 12 (37, 39); 13 (42 ^f , 43); 14 (47, 49); 15 (51, 52); 16 (56 ^h)	12	21
5.	Productive The focus of delivery is on participants collaborating to create content.	Articulating, expressing	Essay, product, animation, model	01 (3, 5 ^a); 04 (14 ^c); 05 (15 ^k); 07 (24); 08 (25); 09 (29); 11 (36); 13 (45 ^g); 16 (56 ^h); 17 (60); 18 (62)	11	12

(see Datasets 7.3 and 7.6)

Table notes:-

^a to ^j indicates that more than one media type identified

^z indicates that two other interviewees involved in this Activity (interviewees 02, 16 and 17)

Appendix 5: Samuelowicz & Bains Dimensions of Beliefs & Practices (Results of structured coding of interview data)

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
Dimension 1: Expected Learning Outcomes	A <i>Reproduction of Information</i> - Increase in knowledge achieved mainly through reproduction of received information.	12	66.7%	110	1.8%	8.6%
	AB <i>Basic Understanding</i> - Increased or changed knowledge achieved through limited manipulation of information.	16	88.9%	340	5.7%	
	B <i>Transformational Understanding</i> - Increased or changed knowledge achieved through substantial transformation of information.	5	27.8%	67	1.1%	
Dimension 2: Expected Use of Knowledge	A <i>Curriculum-bound</i> - Knowledge conceived as confined within the subject area.	5	27.8%	15	0.3%	0.9%
	B Interpretation of Reality - Knowledge is used to make sense of reality.	5	27.8%	36	0.6%	
Dimension 3: Students' Existing Conceptions	A <i>Ignored</i> - Not taken into account, it is assumed that at the beginning of the course students have no conceptions of the phenomena dealt with in the subject.	0	0.0%	0	0.0%	1.0%
	AB <i>Meant as Difficulties</i> - Taken into account, meant as common difficulties students have with particular concepts, etc.	6	33.3%	43	0.7%	

		Number of interviewees	Proportion of interviewees	Number of text units	Proportion of all text units	Total codings (% of total)
	B <i>Considered</i> - Taken into Account and treated as the starting point of the teaching and learning process.	4	22.2%	17	0.3%	
Dimension 4: Teacher-Student Interaction	A <i>One-way</i> - One-way communication flowing from teacher to student.	7	38.9%	49	0.8%	5.0%
	B <i>Two-way</i> - Two-way communication with both teacher and students actively involved.	16	88.9%	249	4.2%	
Dimension 5: Main Responsibility for Transformation of Knowledge	A <i>Receive Passively</i> - Students seen as passive recipients of knowledge packaged by teacher.	6	33.3%	31	0.5%	2.9%
	B <i>Self-develop Knowledge</i> - Students expected to transform information and actively develop private knowledge.	13	72.2%	144	2.4%	
Dimension 6: Control of Content	A <i>Teacher-controlled</i> - Teacher in control of the content of teaching /learning.	12	66.7%	270	4.5%	6.6%
	B <i>Student-controlled</i> - Students in control of the content of teaching /learning.	10	55.6%	128	2.1%	

(after Samuelowicz and Bain 1992; Ho 2000) (see Datasets 7.4 and 7.5)

Appendix 6: Tool for the evaluation of planned learning communities of courses (existing & planned)

Control in learning communities	Existing course delivery	Planned course delivery	Context of learning communities	Existing course delivery	Planned course delivery	Workflow in learning communities	Existing course delivery	Planned course delivery
0. Practitioner control of the learning experience;			0. Practitioner engaged in communities of colleagues to create learning experience for students;			0. One way flows of information from practitioner to students (and vice versa);		
1. Student interaction controlled by practitioner design of the learning resource –students control when and for how long they engage with the materials provided by the practitioner;			1. Students have an active role in a community of learners to develop personal knowledge. Students involved in a community recognising the importance of sharing information to developing their personal understanding;			1. A two-way flow of information between practitioner and students. The flows of information may be for discrete purposes but they influence the practitioners' delivery;		
2. Student interaction in creating resources with broad parameters set by practitioner design – there is an expectation of student participation in discussion and support online on subjects identified by students;			2. Students have an active role in a community of learners to develop collective knowledge. Students involved in a community recognising the importance of sharing information and collaborative development of understanding;			2. A balanced, two-way flow of information between practitioner and students with equivalence of contribution to transformation of information. Involves a substantial shift of responsibility to the students for the work;		
3. Student engagement in transformation of information to achieve objectives negotiated with the practitioner.			3. Students have an active role in a community of practice relevant to their future role beyond the institution. The context reflects what will be expected of students in their professional development and community building in the workplace.			3. Student conceptions are the starting point of a balanced, two-way flow of information between practitioner and students. The focus of the workflow is on the collaborative work of students with the practitioner acting as consultant.		

Appendix 7: Index of datasets

The data provided on the CD-Rom attached to this Thesis is:-

- 7.1 Interviewees by gender, role and pedagogic engagement
- 7.2 Influences on e-learning innovation
- 7.3 E-learning Activities (including subject, description and available data)
- 7.4 Dimensions of beliefs & practices (incidence in interviews)
- 7.5 Dimensions of beliefs & practices (coded text units)
- 7.6 Collaborative elements of surface dimensions (coded text units)
- 7.7 Examples of structured coding of comments regarding practitioners' issues when engaging in e-learning innovation
- 7.8 Examples of structured coding of comments regarding practitioners' conceptual frameworks
- 7.9 Examples of mind-mapping exercises
- 7.10 Primary and supplementary questions asked in pilot interviews

Dataset 7.1: Interviewees by gender, role and pedagogic engagement

Interviewee	Gender		Lecturer		Manager	Administrator		Pedagogic engagement				
	Male	Female	Full-time	Part-time	Head of Department or above	Department	Central service	PGCAP	PG Cert (12-18)	VLE training	Online pedagogy	Carpe diem
Angela	0	1	1	0	0	0	0	1	1	1	1	0
Beverley	0	1	1	0	0	0	0	1	0	1	0	1
Carl	1	0	1	0	0	0	0	1	0	1	0	0
Duncan	1	0	0	0	0	0	1	1	0	1	1	0
Edward	1	0	1	0	0	0	0	0	0	0	1	1
Frances	0	1	0	0	0	1	0	0	0	1	1	0
Gurmit	1	0	0	1	0	0	0	0	1	1	1	0
Heather	0	1	0	0	0	0	1	0	1	1	1	0
Ian	1	0	1	0	0	0	0	1	0	1	1	1
James	1	0	0	0	1	0	0	0	0	0	0	1
Korin	0	1	1	0	0	0	0	1	0	1	1	1
Linda	0	1	1	0	0	0	0	1	0	0	0	1
Maurice	1	0	0	0	1	0	0	0	0	0	0	0
Nevin	0	1	1	0	0	0	0	0	1	1	0	1

Interviewee	Gender		Lecturer		Manager	Administrator		Pedagogic engagement				
	Male	Female	Full-time	Part-time	Head of Department or above	Department	Central service	PGCAP	PG Cert (12-18)	VLE training	Online pedagogy	Carpe diem
Olivia	0	1	1	0	0	0	0	0	0	0	0	0
Pritesh	1	0	0	0	1	0	0	0	1	0	0	1
Ruth	0	1	1	0	0	0	0	1	0	1	0	1
Sheetal	1	0	1	0	0	0	0	0	1	0	0	1
Total	9	9	11	1	3	1	2	8	6	11	8	10

Dataset 7.2: Influences on e-learning innovation

Issues	Angela		Beverley		Carl		Duncan		Edward		Frances		Gurmit		Heather		Ian		James		Korin		Linda		Maurice		Nevin		Olivia		Pritesh		Ruth		Sheetal		No. of interviewees coded (%)	No. of text units coded (% of total coded / % of total coded)	
Technology	0	0	1	10	1	2	1	5	1	24	1	10	0	0	1	16	1	32	1	88	1	58	1	37	1	16	1	20	1	8	1	23	1	4	1	55	16 (88.9%)	408 (16.1%)	
Positives	0	0	0	0	0	0	1	1	1	17	0	0	0	0	0	0	1	5	0	0	1	4	0	0	1	16	1	4	1	4	1	1	1	1	1	12	10 (55.6%)	65 (16.7%)	
Concerns	0	0	0	0	0	0	1	4	1	7	1	12	0	0	1	16	1	27	1	88	1	43	1	38	0	0	1	14	1	4	1	25	1	3	1	43	13 (72.2%)	324 (83.3%)	
Organisational imperatives	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	22	1	45	1	4	1	15	1	1	1	10	1	8	0	0	1	2	1	5	10 (55.6%)	113 (4.5%)	
Positives	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	4	0	0	1	4	0	0	1	1	1	1	1	0	0	0	0	1	2	0	0	6 (33.3%)	13 (12.0%)
Concerns	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	15	1	45	0	0	1	13	0	0	1	9	1	8	0	0	0	0	1	5	6 (33.3%)	95 (88.0%)	
Student feedback & support	0	0	1	3	1	3	1	4	1	98	0	0	1	4	1	28	0	0	1	25	1	20	1	52	1	41	1	25	1	35	1	6	1	38	1	22	15 (83.3%)	435 (17.2%)	
Positives	0	0	0	0	0	0	0	0	1	96	0	0	1	4	1	28	0	0	1	16	1	8	1	22	1	41	0	0	1	24	1	6	1	21	0	0	10 (55.6%)	278 (66.2%)	
Concerns	0	0	0	0	0	0	1	2	1	28	0	0	0	0	0	0	0	0	1	6	0	0	1	30	0	0	1	21	1	11	0	0	1	17	1	21	8	142	

Issues	Angela		Beverley		Carl		Duncan		Edward		Frances		Gurmit		Heather		Ian		James		Korin		Linda		Maurice		Nevin		Olivia		Pritesh		Ruth		Sheetal			No. of interviewees coded (%)	No. of text units coded (% of total coded / % of total coded)
																																					(44.4%)	(33.8%)	
Pedagogic development	0	0	0	0	1	44	1	20	1	60	1	13	0	0	1	18	1	21	1	18	1	24	1	48	1	54	1	20	1	27	1	34	1	72	1	36	15 (83.3%)	516 (20.4%)	
Positives	0	0	0	0	1	37	1	4	1	60	1	7	0	0	1	19	1	21	1	3	0	0	1	45	1	50	1	20	1	9	1	33	1	43	1	10	14 (77.8%)	361 (70.1%)	
Concerns	0	0	0	0	0	0	1	17	0	0	1	7	0	0	0	0	0	0	1	18	1	6	1	13	0	0	0	0	1	18	1	3	1	46	1	26	9 (50.0%)	154 (29.9%)	
Assessment	0	0	0	0	1	31	1	32	1	62	0	0	0	0	0	0	1	22	1	103	1	23	1	48	1	84	1	6	1	10	1	14	1	27	1	26	13 (72.2%)	488 (19.3%)	
Positives	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a		
Concerns	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a		
Resources	0	0	0	0	1	8	0	0	1	16	0	0	1	1	1	14	1	42	1	40	1	72	1	31	1	12	1	30	1	13	1	59	1	11	1	27	14 (77.8%)	376 (14.9%)	
Positives	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	1	17	1	4	1	10	1	17	1	1	1	13	1	11	1	4	9 (50.0%)	86 (22.9%)	
Concerns	0	0	0	0	0	0	0	0	1	10	0	0	1	1	1	14	1	42	1	40	1	57	1	28	1	2	1	11	1	12	1	41	1	8	1	23	13 (72.2%)	289 (77.1%)	
Staff motivation &	0	0	0	0	1	10	1	4	1	8	0	0	1	3	1	4	1	7	1	2	1	15	1	3	0	0	1	17	0	0	1	63	1	8	1	49	13	193	

Issues	Angela		Beverley		Carl		Duncan		Edward		Frances		Gurmit		Heather		Ian		James		Korin		Linda		Maurice		Nevin		Olivia		Pritesh		Ruth		Sheetal			No. of interviewees coded (%)	No. of text units coded (% of total coded / % of total coded)
support																																					(72.2%)	(7.6%)	
Positives	0	0	0	0	0	0	1	4	1	8	0	0	1	3	1	4	1	5	0	0	1	2	0	0	0	0	1	8	0	0	1	12	1	8	1	19	10 (55.6%)	73 (45.6%)	
Concerns	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	1	13	1	3	0	0	1	9	0	0	1	28	0	0	1	30	7 (38.9%)	87 (54.4%)	

The first number (in italics) for each interviewee under each issue indicates whether it was evident in the interview (0 = no; 1 = yes).

The second shows the number of relevant text units identified

N/a = not applicable; assessment could not readily be separated into 'positives' and 'concerns'

Dataset 7.3: E-learning Activities (including subject, description and available data)

Activity	Interview	Subject	Description	Evidence
Activity 1: Insurance of learning	Angela (01)	PG Students	Laurillard's Taxonomy – Communicative Peer knowledge exchange; reading & reflection to supplement face-to-face session; developing ethos of professional collaboration; examples include readings (individual reports as stimulus for discussion or general discussion), group work (a collaborative task) and group issues (agreed at end of face-to-face session);	Interview 01; Online reflections course contributions (May 2004); Joint paper with author (EDEN, Helsinki 2005); PG Certificate portfolio; Access to courses in Virtual Learning Environment (VLE)
Activity 2: Ask the expert	Angela (01)	PG Students	Laurillard's Taxonomy – Communicative External specialists invited to join or lead discussion groups;	Interview 01; Online reflections course contributions; PG Certificate portfolio; Access to courses in VLE
Activity 3: Resource creation	Angela (01)	PG Students	Laurillard's Taxonomy – Productive Small groups of students develop resources that are then shared with wider cohort; NB This developed from an 'Insurance of learning' exercise. Its full implementation was being planned at the time of interview (June 2005).	Interview 01; Online reflections course contributions (May 2004); Joint paper with author (EDEN, Helsinki 2005); PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 4: Support on placement	Angela (01)	PG Students	Laurillard's Taxonomy – Communicative Support for students on placement provided in discussion open to the rest of the cohort. Mutual support, sharing experiences and exchange of resources encouraged.	Interview 01; Online reflections course contributions (May 2004); Joint paper with author (EDEN, Helsinki 2005); PG Certificate portfolio; Access to courses in VLE
Activity 5: Two-way alumni support	Angela (01)	Alumni; PG Students	Laurillard's Taxonomy – Communicative/Productive Continued access provided to discussion forum for graduating students; an expectation of providing support, experience and/or resources to current students in return.	Interview 01; Joint paper with author (EDEN, Helsinki 2005);
Activity 6: Virtual study skills	Beverley (02)	Undergraduates	Laurillard's Taxonomy – Interactive Development and reinforcement of underpinning skills and knowledge for first year undergraduates. Online mini-lectures delivering content supported by diagnostic, formative and summative multiple-choice assessments. Feedback guides students to appropriate level of engagement with resources. Practitioners able to focus support students most in need.	Interview 02; Teaching innovation proposal & report; PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 7: Online repository	Beverley (02)	Undergraduates	Laurillard's Taxonomy – Narrative Online materials as a back-up or an alternative to handouts. Potential to reduce departmental photocopying bill highlighted.	Interview 02; PG Certificate portfolio; Access to courses in VLE
Activity 8: Virtual Lectures II	Carl (03)	Undergraduates	Laurillard's Taxonomy – Narrative/Interactive Online mini-lectures based on existing course structure; created 15 minute learning objects on key topics from PowerPoint presentations converted to multimedia resources using Adobe Presenter tool; based on a similar Activity in the same department (Activity 42: Virtual Lectures I); assessed formatively and summatively online (Activity 9: Online assessment)	Mind-map 03; Interview 03; Teaching innovation proposal & report; PG Certificate portfolio; Access to courses in VLE
Activity 9: Online assessment	Carl (03)	Undergraduates;	Laurillard's Taxonomy – Interactive Formative and summative assessments consisting of multiple-choice questions providing an element of interactivity; assessment of online coverage (Activity 8: Virtual Lectures II).	Mind-map 03; Interview 03; Teaching innovation proposal & report; PG Certificate portfolio; Access to courses in VLE
Activity 10: Online repository	Carl (03)	Undergraduates; Postgraduates	Laurillard's Taxonomy – Narrative Online materials as a back-up or an alternative to handouts.	Interview 03; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 11: Online workbook	Duncan (04)	Undergraduates Postgraduates	Laurillard's Taxonomy – Narrative Self study resources supported with relevant data, images, oral testimony and source materials; increasing integration with classroom based activities providing extension activities or information through the web.	Mind-map 04; Interview 04; PG Certificate portfolio; Access to courses in VLE
Activity 12: Richer blend	Duncan (04)	Postgraduates	Laurillard's Taxonomy – Communicative A range of materials that develop themes from the classroom; e-tivities requiring online interaction between students and with tutors.	Mind-map 04; Interview 04; Presentation to VLE users group; PG Certificate portfolio; Access to courses in VLE
Activity 13: Research skills development I	Duncan (04)	Postgraduates	Laurillard's Taxonomy – Narrative/communicative Relevant materials supplemented by online mini-lectures (created with Adobe Presenter) and resources from other sources (e.g. films); e-tivities including introducing themselves, describing their projects, and providing advice for each other.	Mind-map 04; Interview 04; Presentation to VLE users group; PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 14: Research skills development II	Duncan (04)	Postgraduates	<p>Laurillard's Taxonomy – Communicative/productive</p> <p>A classroom taught, skills based course supported by online resources and discussions; assessment includes a group work research project which is seen, "...as a context for their skills development"; assessed work includes a group presentation and their 'group log'; the latter is a repository of their discussions and activities leading to their assessed group work and is stored in a private discussion board.</p>	<p>Mind-map 04; Interview 04; Presentation to VLE users group; PG Certificate portfolio; Access to courses in VLE</p>
Activity 15: Site investigations	Edward (05)	Undergraduates	<p>Laurillard's Taxonomy – Narrative/communicative/productive</p> <p>Large data sets collected from previous field courses that the students base two pieces of project work on; option of either individual or collaborative working to produce report; supporting information includes a report writing guide, sample report and a series of on-line resources (e.g. mini guides to the different sort of types of interpretation they can use with the data); electronic submission of reports for assessment.</p>	<p>Mind-map 05; Interview 05; Access to courses in VLE</p>

Activity	Interview	Subject	Description	Evidence
Activity 16: Online workshop	Edward (05)	Undergraduates	Laurillard's Taxonomy – Interactive Resource designed to teach students a particular mathematical technique with a set of worksheets and worked examples.	Mind-map 05; Interview 05; Access to courses in VLE
Activity 17: Online repository	Edward (05)	Undergraduates	Laurillard's Taxonomy – Narrative Online materials as a back-up or an alternative to handouts.	Mind-map 05; Interview 05; Access to courses in VLE
Activity 18: Online presentation	Frances (06)	Others - Research community	Laurillard's Taxonomy – Narrative Resources for a geographically dispersed research community; enables researchers to access resources rather than attend seminar; divided into 10 minute mini-presentations created with Adobe Presenter; examples include rationale and requirements for data collection; also celebration of research successes;	Mind-map 06; Interview 06; Access to courses in VLE
Activity 19: Online meetings	Frances (06)	Others - Research community	Laurillard's Taxonomy – Communicative Meetings for a geographically dispersed research community; using Adobe Connect, webcams and microphones (used in preference to web-conferencing suite requiring substantial software and hardware overheads); ability to share slides and software between participants.	Mind-map 06; Interview 06; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 20: Online training	Frances (06)	Others - Research community	Laurillard's Taxonomy – Interactive Synchronous sessions, linked to planned face-to-face delivery, addressing topics from online presentations; addresses data collection requirements, providing opportunity for detailed exploration of completion and return of relevant forms;	Mind-map 06; Interview 06; Access to courses in VLE
Activity 21: Awareness raising	Frances (06)	Others - Research community	Laurillard's Taxonomy – Narrative Using materials created to improve links with researchers' line managers (some of whom don't have research experience).	Mind-map 06; Interview 06; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 22: Online induction	Frances (06)	Others - Research community	<p>Laurillard's Taxonomy – Interactive</p> <p>Initial letter draws researcher's attention to website resources, asking them to look at key resources (e.g. Online presentations); training needs assessment shared with researchers and their line managers; intended to establish transferable skills from previous experience and gaps to be filled; currently followed up with invitation to a face-to-face induction day (held quarterly) but planned to offer online alternative meeting needs of different learning styles; face-to-face component seen as important but content will change to build on online coverage; further development being undertaken by a working group seeking to tailor resources to needs to an individual's experience and their role within the research team.</p>	<p>Mind-map 06;</p> <p>Interview 06;</p> <p>Access to courses in VLE</p>
Activity 23: Online information	Gurmit (07)	Post-graduates	<p>Laurillard's Taxonomy – Interactive</p> <p>Developing interactive learning materials suitable for distance learning project (primarily using Adobe Presenter); incorporating explanatory videos created for a related project; format used to ensure that the resources were reusable (or repurposeable) for other courses.</p>	<p>Mind-map 07;</p> <p>Interview 07;</p> <p>Access to courses in VLE</p>

Activity	Interview	Subject	Description	Evidence
Activity 24: Collaborative glossary	Gurmit (07)	Post-graduates	<p>Laurillard's Taxonomy – Productive</p> <p>Assessed work requiring students to make contributions to a course glossary; this involves creating three 250 word items involving:-</p> <ul style="list-style-type: none"> negotiating items selected on the discussion board with their peers and tutors; post a rough draft or initial thoughts about their items on the discussion board; reply to at least three other postings. <p>Assessment weighting – two-thirds for written assignment on glossary items; one-third for responses to other students' comments (feedback to others and incorporating feedback from others).</p>	<p>Mind-map 07;</p> <p>Interview 07;</p> <p>Access to courses in VLE</p>
Activity 25: Virtual committee	Heather (08)	University staff	<p>Laurillard's Taxonomy – Productive</p> <p>Preliminary information gathering and discussions for a committee to evaluate and approve research proposals in a controversial area; VLE used to store back up documents, guidance links, relevant news items etc; a discussion board used for posting participants' comments, requesting further information and approval;</p>	<p>Mind-map 08;</p> <p>Interview 08;</p> <p>Discipline journal article;</p> <p>Access to courses in VLE</p>

Activity	Interview	Subject	Description	Evidence
Activity 26: Interactive presentation	Heather (08)	University staff	Laurillard's Taxonomy – Interactive A highly interactive learning object addressing a topic essential for all the organisation's staff; a multimedia resources created using the Adobe Presenter tool;	Mind-map 08; Interview 08; Discipline journal article; Access to courses in VLE
Activity 27: Virtual consultation	Heather (08)	University staff	Laurillard's Taxonomy – Communicative Information and (little used) discussion boards for a consultative group of staff representatives;	Mind-map 08; Interview 08; Access to courses in VLE
Activity 28: Online repository	Ian (09)	Distance learning Foundation Degree	Laurillard's Taxonomy – Narrative Online materials as a basis for study including resources adapted from face-to-face course and third party web sites; potential link with face-to-face course to create flexible hybrid delivery;	Mind-map 09; Interview 09; PG Certificate portfolio; Access to courses in VLE
Activity 29: Online feedback	Ian (09)	Distance learning Foundation Degree	Laurillard's Taxonomy – Productive Individual journal entries and discussion boards used to explore content provided; exploring possibility of assessed group work exercise; potential link with face-to-face course to create flexible hybrid delivery;	Mind-map 09; Interview 09; PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 30: Online repository	James (10)	Distance learning postgraduates	Laurillard's Taxonomy – Narrative Online materials as a basis for study based on original paper resources, databases and third party web sites;	Mind-map 10; Interview 10; Access to courses in VLE
Activity 31: Online assignment tutorial	James (10)	Distance learning postgraduates	Laurillard's Taxonomy – Interactive/communicative Discussion boards for all the assignments for tutorials, raising relevant issues with staff and discussions amongst themselves;	Mind-map 10; Interview 10; Access to courses in VLE
Activity 32: Thesis development	James (10)	Distance learning postgraduates	Laurillard's Taxonomy – Interactive/communicative Working towards assessment of research methods at the end of the course, as a basis for student dissertations; students develop a thesis proposal; students participate in a range of exercises, or e-tivities, in the VLE; interaction with staff enhanced by interaction amongst themselves, discussing their own ideas and their research projects; individual contributions (and feedback on them) used to build up an assignment that the students would submit;	Mind-map 10; Interview 10; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 33: Virtual lectures	James (10)	Distance learning postgraduates	Laurillard's Taxonomy – Narrative Online mini-lectures as an alternative to teaching visits to territories where numbers of students on programmes are marginal; to be created from PowerPoint presentations (using Adobe Presenter);	Mind-map 10; Interview 10; Access to courses in VLE
Activity 34: Online repository	Korin (11)	Distance learning postgraduates	Laurillard's Taxonomy – Narrative Online materials to support (and reproduce online) existing study materials with extensive access to third party web sites; potential to reduce departmental photocopying bill highlighted.	Mind-map 11; Interview 11; PG Certificate portfolio; Access to courses in VLE
Activity 35: Online discussion	Korin (11)	Distance learning postgraduates	Laurillard's Taxonomy – Communicative Student introductions and an opportunity for questions and answers (although limited take-up of the latter);	Mind-map 11; Interview 11; PG Certificate portfolio; Access to courses in VLE
Activity 36: Online portfolio	Korin (11)	Distance learning postgraduates	Laurillard's Taxonomy – Productive Exploring use of VLE tools for professional portfolio module; aspiration to include elements of private portfolio in open discussion board;	Mind-map 11; Interview 11; PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 37: Online cafe	Linda (12)	Distance learning postgraduates (including PhD)	Laurillard's Taxonomy – Communicative An opportunity for students to use a discussion board to share issues and information;	Mind-map 12; Interview 12; PG Certificate portfolio; Access to courses in VLE
Activity 38: Online repository	Linda (12)	Distance learning postgraduates (including PhD)	Laurillard's Taxonomy – Narrative Online access to materials supporting (and providing online access to) existing study materials; access to third party web sites; assignment download;	Mind-map 12; Interview 12; PG Certificate portfolio; Access to courses in VLE
Activity 39: Online portfolio building	Linda (12)	Distance learning postgraduates (including PhD)	Laurillard's Taxonomy – Communicative Non-assessed, compulsory induction exercise regarding professional practice portfolio involving discussion board participation;	Mind-map 12; Interview 12; PG Certificate portfolio; Access to courses in VLE
Activity 40: Writing skills development	Linda (12)	Distance learning postgraduates (including PhD)	Laurillard's Taxonomy – Interactive An online module exploring essential writing skills module; a requirement of induction for students who don't have a relevant first degree;	Mind-map 12; Interview 12; PG Certificate portfolio; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 41: Plagiarism awareness	Linda (12)	Distance learning postgraduates (including PhD)	Laurillard's Taxonomy – Interactive An online mini-lecture created using Adobe Presenter including an explanation of the nature of plagiarism, diagnostic exercises to identify it and techniques to avoid it;	Mind-map 12; Interview 12; PG Certificate portfolio; Access to courses in VLE
Activity 42: Virtual Lectures I	Maurice (13)	Undergraduates and postgraduates	Laurillard's Taxonomy – Narrative/interactive/ (communicative) Online mini-lectures based on existing course structure; created 15 minute learning objects on key topics from PowerPoint presentations converted to multimedia resources using the Impatica tool; led to the development of a similar Activity in the same department (Activity 8: Virtual Lectures II); the resources were supported using materials from the face-to-face course, publishers' materials (including a chapter of an e-book and a video) and formative assessments; interaction through online discussion boards encouraged through a 'No e-mail' rule (except for personal matters); face-to-face lectures replaced by online resources; significant changes both to the face-to-face seminars and summative assessment.	Mind-map 13; Interview 13; Articles in discipline-specific journals Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 43: Virtual seminars	Maurice (13)	Undergraduates and postgraduates	Laurillard's Taxonomy – Communicative Structured e-tivities exploring content of 'Virtual lectures' and contributing to 'Online assessment' other support includes frequently-asked questions, group and general course discussion boards;	Mind-map 13; Interview 13; Articles in discipline-specific journals Access to courses in VLE
Activity 44: Podcasts	Maurice (13)	Undergraduates and postgraduates	Laurillard's Taxonomy – Narrative Weekly audio broadcasts of course-related and contextual information (recorded and edited using Audacity software); 10 minute sessions include advice on likely problems with content, joke of the week!	Mind-map 13; Interview 13; Articles in discipline-specific journals Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 45: Online assessment	Maurice (13)	Undergraduates and postgraduates	Laurillard's Taxonomy – Interactive/productive A blend of objective tests (multiple choice questions) and group work; the only face-to-face session for the course (which is optional) is a workshop session preparing for the objective tests; also supported by formative, objective tests in similar format to the summative assessment; the assessed group work involves a mandatory e-tivity requiring collaborative research (both online and library-based) resulting in a mini-project; projects submitted through plagiarism detection software (Turnitin); although not required, most groups opt to use the discussion boards to work together and/or record their ideas; group work includes an element of peer assessment; significant reductions in referral rates (from 28% to zero);	Mind-map 13; Interview 13; Articles in discipline-specific journals Access to courses in VLE
Activity 46: Online repository	Nevin (14)	Post-graduate distance & face-to-face students	Laurillard's Taxonomy – Narrative Emphasis on online access to 'expert-driven' materials supporting existing study materials; access to third party web sites; available to both modes of delivery; creation of templates for reusable learning objectives;	Mind-map 14; Interview 14; Teaching innovation proposal & report; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 47: Online discussions	Nevin (14)	Post-graduate distance & face-to-face students	Laurillard's Taxonomy – Communicative Both synchronous and asynchronous methods used for discrete discussions for each mode of delivery; limited responses to experiments with different approaches to structuring discussions – problem-based, topic based, student initiated; exploring more structured, e-tivities approach;	Mind-map 14; Interview 14; Access to courses in VLE
Activity 48: Podcasts	Nevin (14)	Post-graduate distance & face-to-face students	Laurillard's Taxonomy – Narrative Audio broadcasts providing course content – lectures and seminars; recorded and edited using Audacity software;	Mind-map 14; Interview 14; Access to courses in VLE
Activity 49: Online tutorial	Nevin (14)	Post-graduate distance & face-to-face students	Laurillard's Taxonomy – Communicative Experiment replacing 3 of 6 hours of individual e-mail tuition per student (per module) with collaborative on-line work; a range of discussion boards, blogs and/or Wikis will provide an alternative;	Mind-map 14; Interview 14; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 50: Online assessment	Nevin (14)	Post-graduate distance & face-to-face students	Laurillard's Taxonomy – Interactive Externally funded project to create multimedia materials for use in assessment; a language based module in which students access resources online and transcribe them; consideration also being given to online quizzes, although concerns regarding appropriateness of multiple choice questions;	Mind-map 14; Interview 14; Project report; Access to courses in VLE
Activity 51: Online meeting	Nevin (14)	Distance postgraduates	Laurillard's Taxonomy – Communicative Regular programme development video-conferenced meetings (using Adobe Connect); included in plans for programme delivery (although interviewee not directly involved);	Mind-map 15; Interview 15; Project report; Access to courses in Content Management System
Activity 52: Online discussions	Olivia (15)	Campus-based undergraduates	Laurillard's Taxonomy – Communicative Opportunity for students to discuss contemporary issues using discussion boards (with limited success); structured with a list of online interactions and communication ethics; seeking a shift of responsibility to students outside the assessed course element;	Mind-map 15; Interview 15; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 53: Online resource	Olivia (15)	Distance postgraduates	Laurillard's Taxonomy – Narrative Externally funded project to produce website training materials for research methods; intended both as standalone resource and to support face-to-face and online workshops;	Mind-map 15; Interview 15; Project report; Access to website
Activity 54: Online repository	Olivia (15)	Campus-based undergraduates & distance postgraduates	Laurillard's Taxonomy – Narrative Online access to materials supporting the course (primarily PowerPoint slides of lectures, with some other materials and access to web links); also considering creating resources using Adobe Presenter;	Mind-map 15; Interview 15; Access to courses in VLE
Activity 55: Virtual study skills	Pritesh (15)	Undergraduates	(Activity 6: Virtual study skills)	Mind-map 16; Interview 16;

Activity	Interview	Subject	Description	Evidence
Activity 56: Engagement	Pritesh (16)	Undergraduates	<p>Laurillard's Taxonomy – Communicative/productive</p> <p>A range of interactive Activities intended to generate engagement in 1st year module including the use of wiki's and discussion boards; students are expected to use these to share (either individually or as a group) preconceptions, ideas, research materials and build understanding which then form the basis of the face-to-face sessions; although not assessed this led to over 90% completion rate (compared with very limited response to previous expectations of completing pre-session work);</p>	<p>Mind-map 16; Interview 16;</p> <p>Report of presentation at professional development event within the institution</p> <p>Access to courses in VLE</p>
Activity 57: Assessment & feedback	Ruth (17)	Undergraduates	<p>Laurillard's Taxonomy – Interactive</p> <p>A series of grammar exercises through the VLE involving filling gaps, matching, ordering, finding mistakes etc; requirement to log in at least once a week; Activities are tailored to support face-to-face sessions, building on classroom coverage and followed up in subsequent sessions; feedback ranges from formal feedback to 'top 10 mistakes'; accounts for 10% of module grade; key motivations include reducing marking loads and improving frequency and reducing turnaround of feedback;</p>	<p>Mind-map 17; Interview 17;</p> <p>PG Certificate portfolio;</p> <p>Access to courses in VLE</p>

Activity	Interview	Subject	Description	Evidence
Activity 58: Virtual study skills	Ruth (17)	Undergraduates	(Activity 6: Virtual study skills)	Mind-map 17; Interview 17; PG Certificate portfolio;
Activity 59: Listening skills	Ruth (17)	Undergraduates	Laurillard's Taxonomy – Interactive Using a range of web resources as the basis for listening skills (e.g. BBC and YouTube) exploring language skills;	Mind-map 17; Interview 17; PG Certificate portfolio; Access to courses in VLE
Activity 60: Engagement	Ruth (17)	Undergraduates	Laurillard's Taxonomy – Productive Group exercises developing a collaborative project for presentation; peer evaluation of outcomes (e.g. a vote on case being put);	Mind-map 17; Interview 17; PG Certificate portfolio; Access to courses in VLE
Activity 61: Engagement	Sheetal (18)	Distance & Campus-based Postgraduates	Laurillard's Taxonomy – Narrative/interactive Multimedia resources introducing topics including videoed introductions and lectures; formative tests as comprehension checks (multiple choice questions created using Hot Potatoes shareware);	Mind-map 18; Interview 18; Access to courses in VLE

Activity	Interview	Subject	Description	Evidence
Activity 62: Collaboration	Sheetal (18)	Distance & Campus-based Postgraduates	Laurillard's Taxonomy – Productive Collaborative, summative assessment developing specifications relevant to the discipline; initial plan to use wikis to collate information;	Mind-map 18; Interview 18; Access to courses in VLE
Activity 63: Online book	Sheetal (18)	Distance & Campus-based Postgraduates	Laurillard's Taxonomy – Narrative/interactive Content from the interviewee's own text book and supporting multimedia resources (from the publisher's web site);	Mind-map 18; Interview 18; Access to courses in VLE
Activity 64: Video experts	Sheetal (18)	Distance & Campus-based Postgraduates	Laurillard's Taxonomy – Narrative The interviewee and other experts in the field record 10 minute videos introducing specific topics;	Mind-map 18; Interview 18; Access to courses in VLE

Dataset 7.4: Dimensions of beliefs & practices (incidence in interviews)

Italicised cells indicate presence (1) or lack (0) of evidence of each dimension category

Dimensions	Categories of dimensions	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of interviewees coded	% of interviewees coded
Dimension 1: Expected Learning Outcomes	A Reproduction of Information	0	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	12	66.7%
	AB Basic Understanding	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	16	88.9%
	B Transformational Understanding	1	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	5	27.8%
Dimension 2: Expected Use of Knowledge	A Curriculum-bound	0	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	27.8%
	B Interpretation of Reality	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	5	27.8%
Dimension 3: Students' Existing Conceptions	A Ignored	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
	AB Meant as Difficulties	0	1	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	6	33.3%
	B Considered	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	4	22.2%
Dimension 4: Teacher-Student Interaction	A One-way	0	0	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	7	38.9%
	B Two-way	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	88.9%
Dimension 5: Main Responsibility	A Receive Passively	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	6	33.3%

Dimensions	Categories of dimensions	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of interviewees coded	% of interviewees coded
for Transformation of Knowledge	B Self-develop Knowledge	1	1	1	1	1	0	1	1	0	0	1	1	1	0	1	1	1	0	13	72.2%
Dimension 6: Control of Content	A Teacher-controlled	0	1	1	0	0	1	1	0	1	1	1	1	0	1	1	0	1	1	12	66.7%
	B Student-controlled	1	0	0	1	1	1	1	1	1	0	0	0	1	0	0	1	1	0	10	55.6%
Total number of dimensions coded		8	7	8	8	7	5	7	7	6	7	9	8	8	4	5	5	5	6	120	
Dimensions categorised as teacher-centred (A)		0	4	5	2	1	2	2	2	2	3	5	4	1	2	2	1	1	3	42	
Dimensions categorised as intermediate (A/B)		2	2	2	1	1	1	1	1	2	2	1	3	2	1	2	0	1	2	27	
Dimensions categorised as learning-centred (B)		6	1	1	5	5	2	4	4	2	2	3	1	5	1	1	4	3	1	51	
Dimensions categorised as transformative (B 1,2,3)		3	0	0	2	2	0	1	1	0	1	1	0	2	0	0	1	0	0	14	
Dimensions categorised as transitional (B 4,5,6)		3	1	1	3	3	2	3	3	2	1	2	1	3	1	1	3	3	1	37	

Dataset 7.5: Dimensions of beliefs & practices (coded text units)

Dimensions & categories	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of text units coded	% of text units coded
Dimension 1: Expected learning outcomes																				
A Reproduction of Information	0	20	13	4	3	6	9	1	3	2	34	0	0	0	9	6	0	0	110	1.8%
AB Basic Understanding	17	11	8	8	32	20	9	19	16	39	51	22	19	0	16	0	28	25	340	5.7%
B Transformational Understanding	13	0	0	0	21	0	13	16	0	0	0	0	4	0	0	0	0	0	67	1.1%
Dimension 2: Expected use of knowledge																				
A Curriculum-bound	0	5	4	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	15	0.3%
B Interpretation of Reality	5	0	0	7	12	0	0	0	0	0	7	0	5	0	0	0	0	0	36	0.6%
Dimension 3: Students' existing conceptions																				
A Ignored	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
AB Meant as Difficulties	0	2	8	0	0	0	0	0	5	20	0	3	0	0	0	0	0	5	43	0.7%
B Considered	1	0	0	2	0	0	0	0	0	4	0	0	0	0	0	10	0	0	17	0.3%
Dimension 4: Teacher-student interaction																				
A One-way	0	0	3	0	0	0	0	0	0	2	2	7	15	16	0	0	0	4	49	0.8%

Dimensions & categories	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of text units coded	% of text units coded
B Two-way	15	0	0	38	26	18	10	11	4	26	22	10	19	16	4	5	5	20	249	4.2%
Dimension 5: Main responsibility for transformation of knowledge																				
A Receive Passively	0	2	2	0	0	0	0	9	0	0	2	3	0	0	0	0	0	13	31	0.5%
B Self-develop Knowledge	14	15	5	22	14	0	8	4	0	0	5	11	7	0	13	13	13	0	144	2.4%
Dimension 6: Control of content																				
A Teacher-controlled	0	9	4	0	0	15	7	0	40	45	35	21	0	37	3	0	12	42	270	4.5%
B Student-controlled	1	0	0	3	23	6	15	20	5	0	0	0	35	0	0	8	12	0	128	2.1%
Coded units	66	64	47	86	131	65	71	80	73	138	160	79	104	69	45	42	70	109	1499	25.2%
Total units	140	158	251	210	345	378	282	497	390	704	506	379	382	293	230	315	241	257	5958	
Proportion coded	47.1%	40.5%	18.7%	41.0%	38.0%	17.2%	25.2%	16.1%	18.7%	19.6%	31.6%	20.8%	27.2%	23.5%	19.6%	13.3%	29.0%	42.4%	25.2%	

Dataset 7.6: Collaborative elements of surface dimensions (coded text units)

Dimensions & categories	Angela	Beverley	Carl	Duncan	Edward	Frances	Gurmit	Heather	Ian	James	Korin	Linda	Maurice	Nevin	Olivia	Pritesh	Ruth	Sheetal	No. of text units coded
Dimension 4: Multilateral	9	0	0	4	0	0	0	0	3	2	4	0	5	2	0	7	0	0	36

Dimension 5: Collective knowledge development	3	0	0	40	35	0	8	7	0	1	16	0	31	0	0	8	19	11	179
Dimension 6: Community-controlled	2	0	0	4	12	0	0	3	0	0	0	0	0	0	0	4	17	0	42
Number of collaborative elements	3	0	0	3	2	0	1	2	1	2	2	0	2	1	0	3	2	1	25
Number of text units	14	0	0	48	47	0	8	10	3	3	20	0	36	2	0	19	36	11	257

Dataset 7.7: Examples of structured coding of comments regarding practitioners' issues when engaging in e-learning innovation

	Data	Category of description	Secondary coding
1.	"With E-Learning they actually have much more of a tangible record of what was said in many cases during that lecture." (Edward)	1. Student feedback and support	Positive
2.	"I think that, although I find (<i>online collaboration</i>) very, very attractive and I find it very interesting, because that course isn't accredited I haven't ever, I don't think, really made it work and kept the attention of the students from beginning to end - the management of the course, timings and things like that have always been very fluid. So that's created problems so I don't think it worked very well." (Duncan)	1. Student feedback and support	Concern
3.	"I give out about a 4 slide hand out which tells them how to log on and use (<i>the VLE</i>). In practice it's hardly necessary now. But when I started, this was the first interaction they had with Blackboard so perhaps it was." (Maurice)	2. Technology	Positive
4.	"We just had one bit of a technical failure when for some reason (<i>the video conferencing</i>) server suddenly slowed down for no apparent reason. We don't know why. So that was a slight hitch, but apart from that, (<i>the participant</i>) got the gist of it." (Frances)	2. Technology	Confidence in the medium

	Data	Category of description	Secondary coding
5.	<p>"I think at a more personal level I've always been fairly creative and had an interest in materials development. From that I made a conscious decision in my last job, job before last, into having on-line materials because I thought that was the way things were going to go." (Nevin)</p>	3. Staff motivation & support	Positives
6.	<p>"But one of the issues in our department and I suppose it's like it in a lot of departments, is that its distance learning modules aren't counted, aren't weighted in any way against any campus based modules. So that, in our department we have a teaching workload spreadsheet and all the distance-based teachers are on there with their however many hours a week and it's all being equalized so everyone is doing 4 hours a week of teaching during term time." (Linda)</p>	3. Staff motivation & support	Concerns

Dataset 7.8: Examples of structured coding of comments regarding practitioners' conceptual frameworks

	Data	Dimension of variation	Secondary coding
1.	"The other outcome – it's a two-way thing - it's peer knowledge exchange and developing their peer tutoring role and that's in one section. That's developing their new materials but also each other as experts. Now that hasn't gone as well as it could have done and that's for development next year ... But it's all about taking what happens in face to face away and developing it further – we're exploring it more."	Dimension 4 (of 6): Teacher-learner interaction	Two-way - Two-way communication with both teacher and students actively involved.
2.	"Regurgitating acquired material may not be the best testing of the ability of engineers in terms of knowledge. Nevertheless it is testing knowledge and is evidence that they have acquired something they will be able to use in their future life so there is a positive outcome in that. So this was more or less the experience of e-learning."	Dimension 1 (of 6): Expected learning outcomes	(A) Reproduction of Information - where an increase in knowledge achieved mainly through reproduction of received information;
3.	"Well there's another way in which it seems to work very well, because students seem to think they can do them already so it is good to have a diagnostic Test because it means that them we can prove to them that they don't know everything and it opens their mind we hope to then learning about them."	Dimension 3 (of 6): Learners' existing conceptions	(A/B) Meant as Difficulties - taken into account, meant as common difficulties students have with particular concepts, etc.;

	Data	Dimension of variation	Secondary coding
4.	"Another aspect is that with blended learning and online surveys you can 'force' students to pace themselves because there is this assessment. So use VLE to pace the learning process."	Dimension 6 (of 6): Control of content	(A) Teacher-controlled -Teacher in control of the content of teaching /learning;
5.	"The collaboration skills are for example where someone else would do a reading that is linked to it in a discussion board after a face to face session on chronology and what it means to teach it. Then in twos and threes – very small groups – they have to find some focus questions that they are going to take into school and find out what sort of chronological understanding kids get, where they get it from and whether it affects their take up at GCSE and whether it affects their performance in exams."	Dimension 5 (of 6): Main responsibility for transformation of knowledge	(B) Self-develop Knowledge - Students expected to transform information and actively develop private knowledge.

Dataset 7.9: Examples of mind-mapping exercises

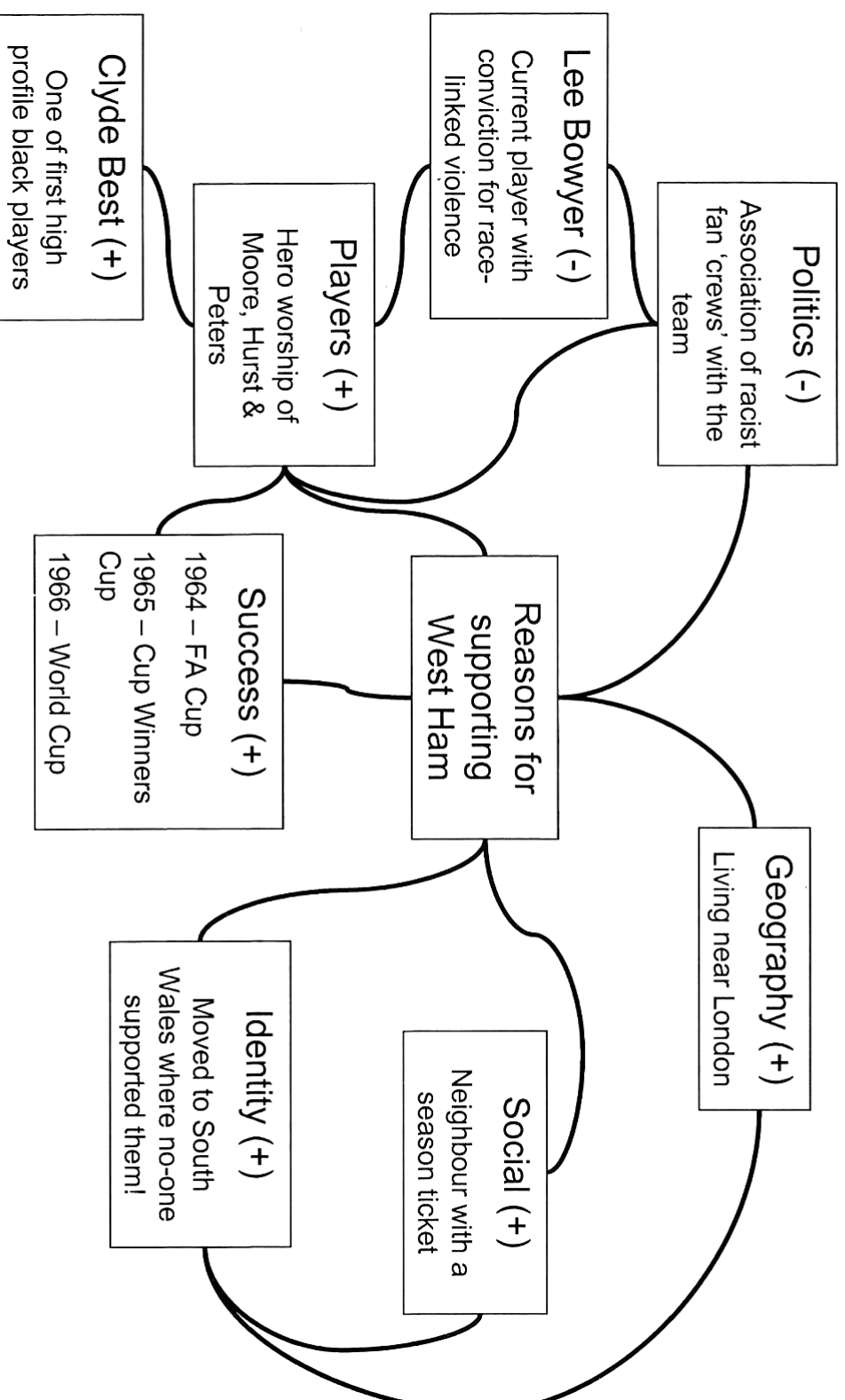
Mind-map 1: Example shown to interviewees at the start of the process

Mind-map 2: Practitioner's map - Frances

Mind-map 3: Practitioner's map - Pritesh

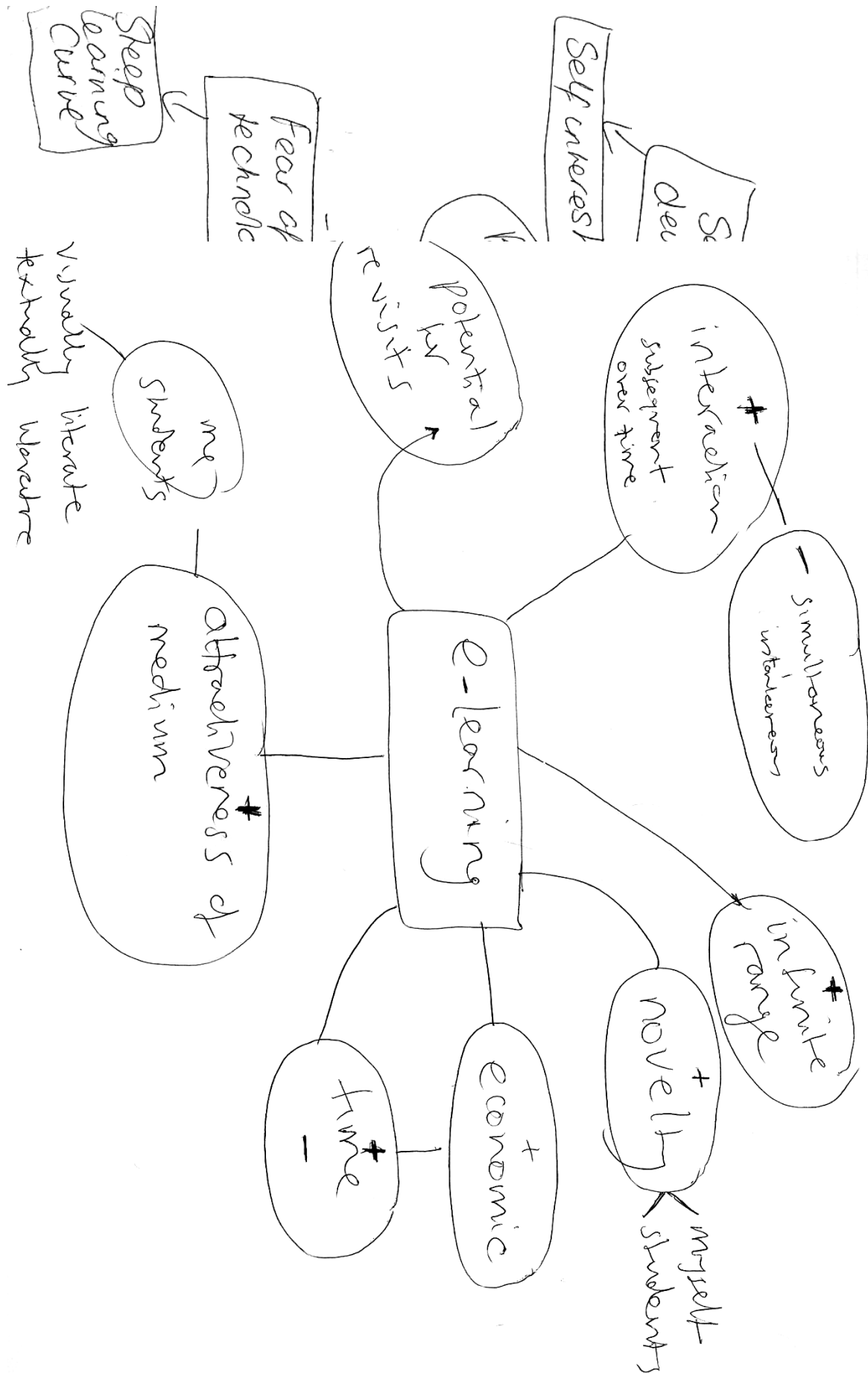
An example of a cognitive map...

Dataset 7.9.1: Mind-map 1 - Example shown to interviewees at the start of the process



To

Dataset 7.9.2: Mind-map 2 - Practitioner's map (Frances)



Dataset 7.10: Primary and supplementary questions asked in pilot interviews

	Topic	Primary questions	Supplementary questions
1.	Introduction	<p>Thanks very much for agreeing to this interview. As you know it's for my PhD research and the subject I am looking into is the way that e-learning influences teaching and teaching influences e-learning.</p> <p>The purpose and way I intend to analyse the data – the recorded interview - is described in the consent form I sent you. All my interviews are transcribed and then I use NVivo software to do text analysis, highlighting text and looking for patterns between all the interviews. It is very much a qualitative approach.</p> <p>The thesis and any publications arising from it will be suitably anonymised. Any quotations and patterns that emerge will not be traceable back to the individual that made the comments. If there is the possibility of you being identified then I'll contact you before publication for permission.</p> <p>What I am seeking is a range of people's experiences of using e-learning and how it has impacted on their teaching. On that basis are you happy to sign the consent form and go ahead with the interview?</p>	
2.	Learning outcomes	<p>Could you tell me how e-learning fits in your course and particularly its relationship to learning outcomes?</p> <p>Are there any specific learning outcomes that e-learning meets?</p>	<p>All interviewees – Are any transferable skills addressed using e-learning?</p> <p>Is there a specific transferable skill covered by your course such as IT skills or more general soft skills such as group work and so on? (Angela)</p> <p>Can I confirm that this involves checking the underpinning skills that enable the students to address the course learning outcomes? (Beverley)</p> <p>In terms of the coverage of the course content, what proportion of the learning outcomes are addressed predominantly by e-learning resources? (Carl)</p>

	Topic	Primary questions	Supplementary questions
3.	Student activities	What specific sorts of activities are your students doing online?	<p>I've got your article/report for the Teaching Initiative which explains the background. Are you happy for that to be considered as part of the data for this research? (Angela, Beverley, Carl)</p> <p>Could you tell me a little bit more about what a typical student would do for this module? What would be their path through it? (Carl)</p> <p>Is this particular student dyslexic? (Carl)</p> <p>When you've used a blended approach, has what you've done in the classroom changed as a result of having that blend? (Carl, Duncan)</p>
4.	Student workloads	How do you think that e-learning has impacted on student learning and their workload?	<p>All interviewees – probing to ensure both student learning AND workload are addressed. Also clarification of the extent to which they feel this results from e-learning.</p> <p>How do the students support each other? (Angela)</p>
5.	Staff workloads	<p>Well that's their workload – what about your workload?</p> <p>What has been the involvement of colleagues in this? What has been the effect on their effectiveness and workload?</p>	<p>Now that you know what you want, you've set it up how will that effect workload in future? (Angela)</p> <p>Is that (identification of topics) done in negotiation with students? (Angela)</p> <p>To what extent do your colleagues use the VLE? (Angela)</p> <p>In terms of workload, are you doing more or doing it differently? (Angela)</p> <p>So has this meant that the workload has been front-loaded – with more preparation but less delivery time? (Beverley)</p> <p>Is that the case for the majority of the team? (Beverley)</p> <p>Was that module run as a traditional course before using e-learning or</p>

	Topic	Primary questions	Supplementary questions
			<p>was it a new course you took and run in this way? (Duncan)</p> <p>In terms of the overall effectiveness of the effort that's put into e-learning, have you any thoughts on the impact it's had? (Duncan)</p>
6.	Future plans	<p>Are there any other areas that you are thinking of looking at as a result of this experience – are you more or less inclined to look at e-learning?</p> <p>Do you have any plans to extend the scope of e-learning as part of your courses?</p>	<p>Who will be undertaking that work? (Angela)</p> <p>What areas do you think e-learning is particularly appropriate for? (Beverley)</p> <p>So if you were looking at new module or starting another module would you inclined to embark on the same path again or a development of it? (Carl)</p>