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Educational Informatics: Supporting Networked Learning through Practice-Based Research

Philippa Levy
Department of Information Studies University of Sheffield, UK
E-mail：p.levy@sheffield.ac.uk

Introduction

Over the last decade, the impact of information and communication technologies (ICTs) on learning has been enormous – some might say, revolutionary. Governmental and inter-governmental policy agendas, combined with institutional and commercial interests in an increasingly globalised arena, point the way towards continuing, rapid diffusion of ICT-based resources and processes into all areas of educational practice in the developed world. It is safe to predict that ICTs are set to play an increasingly significant role in people's experience of both formal and informal learning at all levels. There are considerable implications here for the organisation and development of practice in education and in the wide range of professions that support education and learning across the sectors. In UK higher education, staff with different professional backgrounds are working in new collaborations and partnerships, as part of the effort to enable active and independent learning amongst an increasingly diverse student community and within the new 'space' for educational activity that has resulted from the convergence and rapid development of ICTs. In this context, library and information professionals are working increasingly closely with colleagues from different professional backgrounds - including learning technologists, information technologists, educational developers, skills support specialists as well as academic staff – on the development, delivery and support of new modes of blended and distributed learning. This includes the design of e-learning approaches based on the integration of virtual learning environment (VLE) software with digital libraries, and the creation and management of digital 'learning objects'. It also includes the development of VLE-based approaches to information literacy teaching. VLEs such as WebCT and Blackboard are now in use for subject teaching (both at a distance and campus-based) in nearly all higher education institutions in the UK and recent research indicates that they already have been adopted for the delivery of information literacy education/support in over half of these institutions, alongside other methods of delivery, and that this trend is likely to spread across the sector as a whole (Hough, 2003). In response to changes such as these in the educational environment, this year in the Department of Information Studies at the University of Sheffield we are introducing a new module in educational informatics for Masters students on first professional education programmes in librarianship, information management and information systems. We define educational informatics as *"the application of digital technologies and techniques to the use and communication of information in learning and education"* and the aim of the module is to provide a foundation for these students' future professional roles in the inter- and multi-disciplinary practice of designing, developing and supporting ICT-enabled learning.

The use of the Internet as both an information environment and a learning environment sets a new agenda for research as well as teaching in library and information studies (LIS) (see Levy et al., 2003). The main concerns of educational

informatics research are twofold, and relate closely to each other. First, researchers seek to understand the effects on people of using digital information (re)sources, services, systems, environments and communications media for learning and education, by exploring the issues and problems that arise from their practice and by examining how these relate to factors such as educational and professional context, communication and information practices, psychological and cognitive variables, and ICT design and use. Second, they seek to contribute to the development of practical knowledge of relevance to educational and learning support practice. This includes knowledge about appropriate pedagogies, ICT and information management strategies, management approaches and instructional materials, and systems and environments, for example by designing, implementing and evaluating the outcomes of ICT-enabled educational interventions. Action research - that is, research that is carried out through and within social action by those involved - offers one approach to evaluating, theorising and improving practice in educational informatics. In Sheffield we include our own professional practice as LIS educators within the scope of the agenda for educational informatics research, and in this paper my aim is to give a flavour of my own work in this area. The paper focuses on a project through which I have examined experiences of networked learning as a mode of professional development, highlighting some key findings and pointing to the close relationship between evaluation and practical theory building in this research approach. It concludes by suggesting that action research methodology offers a valuable framework for information practitioners as they take forward the practice of networked learning support, including support for information literacy.

Research Context, Aims and Approach

Networked learning has been described as the use of ICT "to promote connections: between one learner and other learners, between learners and tutors, between a learning community and its learning resources" (Goodyear, 2002). It is a particular approach to ICT-enabled learning that draws on ideas from constructivist and situated learning theories and is closely associated with the tradition of computer-supported collaborative learning (e.g., McConnell, 2000). The emphasis on self-directedness, collaboration and community differentiates this approach from other forms of online or e-learning; the use of on-line learning materials and information resources being seen as only part - and not necessarily the central part - of the networked learner's experience. A key challenge in this context is to enable networked learners to take full advantage of the learning approach and the range of social, information and technical resources at their disposal in the online environment. This would include, where appropriate, provision of information literacy support as well as support for other 'process capabilities' required for learners' productive engagement with meaningful learning tasks.

In the case of this seventeen-week course, entitled 'Networked Learner Support in Higher Education', the aim was to offer learning support practitioners from UK higher education institutions an opportunity to engage with ideas and issues associated with their changing educational roles in the networked environment, as well as to develop new technical expertise. The course was not designed to transmit a particular body of content; instead, it was conceived as a resource environment within which practitioners would carry out a number of flexible tasks that would enable them to explore ideas and develop skills of most relevance to their own professional interests and circumstances. With the aim of facilitating self-directed, collaborative learning, emphasis was placed on developing new perspectives and expertise within a networked learning community, through on-line discussion, group-work and work-based projects with peer support. A series of tasks focusing on the experience and practice of networked learning, and involving critical reflection and discussion, were embedded into

the course, and a portfolio approach to recording learning was encouraged. Access was entirely on-line – there were no face-to-face meetings – and the technical platform was a 'home grown' experiment in virtual learning environment (VLE) design, in that the Web and a number of asynchronous and synchronous conferencing tools were used to provide integrated access to social and information resources. For all participants, this was a new type of learning experience. From the perspective of my role in developing the course design and as one of a number of course tutors, I embarked on an action research project with the aims of improving both my understanding of networked learning from the learner's perspective, and the impact and effectiveness of my own educational practice.

The practice-based project methodology, discussed in more detail in Levy (2003), blends approaches associated with interpretivist and critical traditions in action research (e.g., Carr & Kemmis, 1986; McNiff et al. 1996) with those of constructivist programme evaluation (Guba & Lincoln, 1989; Lincoln, 2001). The key purpose of this approach to research is to evaluate and improve educational practices and understandings through critical analysis of specific educational situations, developing knowledge that will both inform local practice and offer a resource for other practitioners working in similar settings and with similar purposes. The emphasis here is on developing practical knowledge (the Aristotelian concept of phronesis) rather than propositional knowledge (episteme) – practical knowledge being understood to be the basis of professional competence in relation to the situatedness and complexity of practice situations. There is a close relationship between evaluation and theory building in this research approach. The form of theory generated through action research has been called 'living theory' (McNiff et al., 1996), signalling that it is embedded in personal experience, is context-specific and is open to refinement and reinterpretation. Typically, the process of theory building is shared through case studies which aim to provide sufficiently 'thick' (interpretive) description of social context and action as to enable readers to judge how far these compare with their own situations, experiences and practice. The outcome of this process is often expressed through conceptual models and frameworks that aim to guide practice.

My project has involved moving through a cycle of activities within four main phases:

- planning the action and the research;
- taking action – monitoring, reflecting, documenting;
- creating a case study as the basis for case evaluation;
- and finally, drawing conclusions for practice ('living theory') and disseminating results.

A combination of on-line and face-to-face data collection methods were used, including participant observation and on-line transcript analysis, on-line dialogue, a post-course participant feedback questionnaire, face-to-face research conversations, peer debriefing with other tutors, reflective dialogue with a 'critical friend' and a personal research journal. The case study draws on all of these sources to (re)construct 'what happened' on the course and to explore the question 'how should this be interpreted?' in relation to (my own) educational objectives, assumptions and strategies. Since my purpose in (re)constructing this case is to provide a basis for evaluating and improving my educational understandings and practice, its focus is on events, issues and perspectives that indicate strengths and weaknesses in the pedagogic model and its implementation. This means adopting a critical, 'warts and all' stance, highlighting participants' (and my own) difficulties and frustrations as well as their satisfactions and successes, and drawing attention to points of tension or contrast within the participant group as well as to areas of common experience and viewpoint.

Developmental Processes in Networked Learning

Encouragingly, there was much that was very positive in participants' responses to this course. Nevertheless, the research has revealed a fine-grained picture of diverse experiences and

evaluation perspectives that highlights design and facilitation problems and enables further refinement of the learning model that was tested. One key theme to emerge from the research has been the identification of four broad, interconnected developmental processes in experiences of networked learning in this context. These are as follows:

Orientation – becoming aware of, and positioned in relation to, key features of the learning environment, resources and approach. There were three main dimensions of orientation:

- orientation to the learning space: becoming aware of, and positioned within, the structure of the course Web site and the virtual spaces created by its CMC tools;
- orientation to the information environment: becoming aware of, and positioned within, the electronic information resource environment within and beyond the course environment;
- orientation to the learning design and approach: becoming aware of, and engaged with, the nature and practical implications of the learning design and approach. This involved two stages: firstly, engaging with information about tasks and the approach, and secondly, developing a deeper understanding of the implications of the approach for learning.

Socialisation – forming social connections within the learning environment. There were two main dimensions of socialisation:

- constructing relationships - forming social relationships with others through asynchronous and real-time computer-mediated interaction;
- constructing community – developing affiliation to, and participation in, a wider 'community' of learners.

Communication – contributing actively to dialogue and debate in the context of learning tasks. There were two main dimensions of communication:

- communicating asynchronously - principally using the text-based Focus conferencing system;
- communicating synchronously - principally using the text-based MOO (multi-user, object-oriented) environment.

Organisation – planning and structuring personal and collective engagement with the networked learning approach, design and resources. There were four main dimensions of organisation:

- managing communication – engaging with the practical aspects of asynchronous and synchronous computer conferencing on the course, in particular access and response routines;
- managing information - engaging with the flow of information generated within the learning environment and in relation tasks, including reading strategies;
- managing time and flexibility - integrating the networked learning approach to professional development into working and domestic lives;
- managing collaboration - organising and facilitating collaborative activity on-line, particularly in small, distributed learning groups ('learning sets').

The research has shown the impact of participants' experiences in these key areas on the nature and quality of their engagement with the learning environment and designed tasks. Positive experiences contributed to positive engagement with the environment and tasks, whilst negative experiences placed constraints on productive engagement. The research also revealed a combination of factors - including contextual factors external to, but interacting with, the designed learning environment, as well as factors related to learning design and facilitation – that were perceived to shape learners' experiences in these areas. Both enabling and constraining factors were identified, some of which are highlighted below in relation to the process of orientation.

Reflecting the findings of this research, Figure 1 depicts these four processes as central to productive networked learning within the context of the learning environment and design in question. It shows them as parallel,

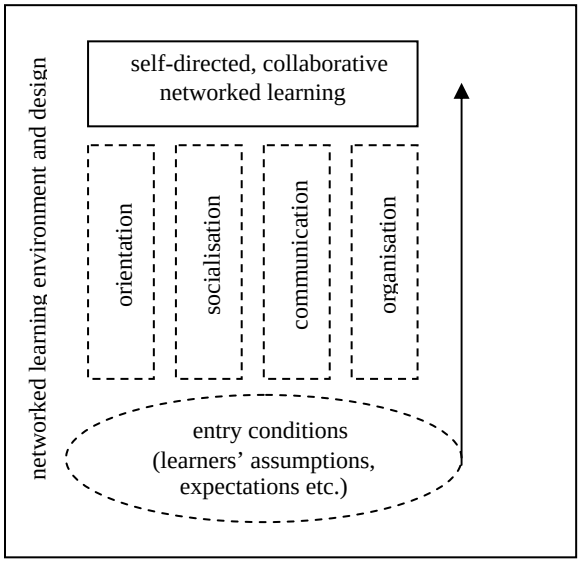

Figure 1 Developmental processes in networked learning

interconnected and mutually reinforcing processes (or pillars). The developmental nature of participants' experiences in relation to these processes, in terms of improved personal awareness, relationships and practices as networked learners over time, is signalled on the diagram, as are variations in the 'entry conditions' for individual learners. However, the diagram does not show the considerable amount of variation in the speed and ease with which individuals moved through these processes. Nor does it show the potential for individuals to move at somewhat different rates through each one, despite their inter-connectedness.

The 'living theory' being generated through this project takes the form of a conceptual framework for designing and facilitating networked learning that is supportive of learners' engagement with these processes (work in progress). Whilst emphatically not intended to provide a universal theory of 'process support' for networked learning, it may nevertheless prove relevant to practitioners with similar purposes in their practice to my own.

In what follows, the focus is on aspects of one theme only of the case study: experiences of (dis)orientation, and some implications for evaluation and practical theory building. Pseudonyms are used for individual participants, who are also designated by numerical identifier (P1-P29). Sources of data are identified by the following conventions: OT – online transcript; QF – questionnaire feedback; RC – research conversation. Both negative and positive experiences of orientation are highlighted, revealing orientation to the self-directed learning approach, in particular, to have been for many participants a developmental process occurring over time as opposed to a 'once and for all' event at entry to the environment. The research points to a combination of constraining factors in relation to orientation - including designed features of the learning environment and tasks, aspects of tutoring practice, and participants' assumptions and expectations about learning - as well as facilitative factors. It also draws attention to my own developing awareness, as a practitioner-researcher, of orientation issues during the course.

Experiences of Orientation

Orientation: *"positioning with relation to specific directions; alignment of oneself or one's ideas to surrounding circumstances"* (Collins English Dictionary, 1999).

On entry to the course environment participants encountered the home page for the first, two-week, Unit. This presented them with a clickable image map of the Unit structure, timetable and its cycle of intended activity, illustrating graphically the relationship between individual, group and plenary tasks. Whereas some tasks were to be carried out in sequence, others were designed to run concurrently. The map was intended to show how participants should work through a cycle of activities in each Unit towards reflective 'closing round' discussion and individual portfolio work. They also encountered a number of asynchronous conferencing forums and a Web-based synchronous chat facility, as well as the course's Resource Base - a structured, Web-based information resource comprising bibliographic references to off-line documents, annotated links

to external Web documents and links to a small range of materials produced specifically for the course, including guidance materials about the learning approach that suggested approaches participants might take to tasks such as learning journals, project planning and portfolios.

Unit 1 included some tasks - experimenting with the technology, reading the documentation about the course, and plenary discussion about general course issues - that were intended to introduce participants to the learning environment and to the course objectives and learning approach. I hoped that participants would read the guidance materials and raise concerns and questions in the plenary forum, thereby initiating general discussion of learning and support issues that might extend throughout the course. Other introductory tasks were: personal introductions in a plenary forum, some additional reading in preparation for Unit 2, and personal reflection and small-group discussion on professional development interests and goals in 'learning set' forums.

" Have I Seen Everything? Have I Been to All the Bits? "

Most participants, using the signposting provided by the Unit map, the Technical Support area of the Web site and the "technical issues" discussion forum hosted by the technical support tutor, found that they needed relatively little time in the early days of the course to gain a clear overview of the learning environment and to locate and navigate its key spaces and landmarks. Early technical concerns related to access to different areas were generally resolved quickly, and participants rapidly located the pre-established forums on the bulletin board; as time went on found it easy to follow the pathway from one Unit to another. At the same time, it took a few participants somewhat longer than others to become fully aware of, and confident about, the structure of the site and the resources and facilities at their disposal, as Angela later explained: "Looking back it is a clear structure, but I'm always a bit like that with Web sites, I'm always, have I seen everything? Have I been to all the bits? So I was disorientated at first" (P18:RC). And as we shall see, the clear structure of the learning space did not necessarily lead straightforwardly to engagement with the information environment or learning design.

" It Seemed to Go On Forever "

As they began to explore the structured Resource Base within the course Web site, participants also were becoming aware of, and beginning to engage with, the wider information environment within which it was located. As already noted, the Resource Base, with signposts leading out of the designed resource environment towards relevant material in the wider, rich landscape of Internet resources, was introduced as an integral part of the course environment from the start. On the one hand, this richness was a source of excitement; Naomi's enthusiasm was widely shared: *"So many good information sources, and they all led to others […] I really enjoyed going on that resource base and going from one link to another"* (P24:RC). On the other hand, despite their familiarity with the Web as information professionals, the borderlessness of the resource environment and the seductions of hypertext could be problematic to course participants as learners, contributing to some participants' 'information anxiety' and sense of disorientation at the start of the course. Kate commented that,

> *"It was hard, being prepared for the amount of material on the Web, it still seemed to go on forever even with the structured resource base you had […] I should have realised, I've had the Web at home and at work […] but I felt, where do I stop?"* (P6:RC)

As participants became increasingly acclimatised to their environment, and focused in their learning on the course, disorientation and anxiety in relation to the information environment tended to decrease. Perspectives on the course's Resource Base also changed, with post-course feedback indicating that its scope and clearly structured presentation was highly valued. Looking back, Charlotte commented

that "I wouldn't have wanted a smaller resource base in retrospect, but if you'd have asked me that 4 weeks into the course I would have said, cut it down, it's scary" (P13:RC). Nevertheless, some participants continued to spend a good deal of time exploring the Web throughout the course, sometimes losing their way and becoming distracted from the purposes and focus of Unit tasks.

" Struggling to Find a Conceptual Map "

Some participants found it relatively unproblematic to assimilate information rapidly about the course's learning design and approach - the signposts provided by supporting documentation, Unit Overviews and early bulletin board discussion with tutors being sufficient to enable them to gain a clear overview of the design and its underpinning philosophy. Those whose prior learning experiences and expectations matched the assumptions and expectations embedded in the course design were in a better position than others in this respect. Thus, for Richard, this all seemed *"very explicit"* (P7:RC) from the start. Frances noted that, *"There were lots of guideposts I suppose, that's what I'd say, [the course] was well guided to make sure you didn't get totally left behind or go off the track"* (P17:RC). They and others in a similar position tended to see the course design as *"clearly structured"*.

However, for many, orientation in relation to both the learning design and the underpinning approach proved to be less straightforward and more extended – well beyond the two-week period of the introductory Unit. Early in the second week, a plenary discussion thread was instigated to invite questions and discussion about the course approach and particular tasks that might be unfamiliar. This elicited little feedback, despite the lively exchanges that were occurring at the same time in other areas of the conferencing environment, particularly an ice-breaker thread and the "technical issues" forum. At the same time, it was evident that discussions in most learning set forums were not taking off as intended, despite the efforts of tutors to set a discussion task in motion there.

I felt uncomfortably in the dark about participants' responses to the course approach, including whether or not they understood and were carrying out the sequence of tasks as designed. With the following posting to the plenary forum I expressed something of my concern:

> *"[…] Maybe everyone feels perfectly clear about how it all fits together and is just busy getting on with it, which is great! But please do feel free to ask questions, make comments […] we're open to discussing any aspect of the course at all"* (OT).

Again, this invitation elicited some, but relatively little, response. Yet at this point many participants were, as Valerie put it, *"struggling to find a conceptual map to cope with the course."* She added that, *"I usually rely very heavily on face-to-face contact"* (P28:OT). Faced with a number of different tasks, participants were unsure of where the emphasis lay and which they should prioritise. Ruth's first few weeks were *"very bewildering, you didn't know what to concentrate on and what to spend more time on."* (P4: RC). The result was a period of disorientation and relatively directionless activity. Charlotte later recalled how she had been, *"all over the place"* (P13:RC) and Margaret that, *"I didn't know where I was"* (P21:RC).

Moreover, whilst early signposts and support that were intended to support orientation to the learning design and approach met the needs of some participants, it was not unusual for others to fail to notice, or fully take in, early sources of information and discussions. Peter later suggested that this might be an inherent feature of the online learning environment, in that: *"people flash in and out so quick… you have to work at concentrating on a course environment like this"* (P12:RC). Margaret recalled that:

"When I looked back at the early messages that you had sent in the first two weeks, and it was like, well I know I read them but I obviously didn't take them in, and if I'd paid attention to what the messages were saying I'd have been a lot better off […] the instructions were there but it was like I hadn't taken them in" (P21:RC).

Some found that getting used to the technical features of the environment tended to displace attention from other dimensions of the introductory Unit. Others found that the intensive activity in some plenary forums and the amount of information in the learning environment had a similar effect. For example, early pointers to, and guidance about, journals and portfolios often went unnoticed or unassimilated in the early weeks of the course, with the result that some participants ultimately decided against embarking on them: *"It wasn't 'til a way into the course that I thought what's this [journal] that they're talking about, should I be doing it? Then I started trying but it was too late in the day"* (Charlotte, P13:RC).

Attention was also distracted away from information about small-group (learning set) tasks. Focusing in the initial and other early Units on reading and interactions in the ice-breaker and other plenary forums, Lydia's (mistaken) impression that, *"we weren't given anything to discuss as a group early on. It wasn't until later in the course that we were told to go away and discuss as a group"* (P27:RC) was shared by others. And when information and guidance did not go unnoticed, it was not necessarily assimilated. Siobhan later commented that, *"early on we were taking in a lot of stuff and it was explained about the learning sets, so I'd read that message and just not assimilated it"* (P11:RC). Early postings from tutors within learning set forums aimed to introduce and invite discussion about small groups within the learning design as well as the intended roles and contributions of set tutors and other members. However, relatively little discussion ensued at this stage, and the role of sets in the learning design remained unclear (as well as unconvincing) to some participants, with negative effects. As Tim later explained, *"I was not altogether clear as to the exact function of the set (or perhaps convinced of their use) and so initially I had been hesitant to use it"* (P19:OT).

Participants' expectations about learning may have contributed to misconceptions about aspects of the learning design with which they felt more familiar. This was suggested by early responses to information about the reading and resource discovery tasks, the importance of which, in relation to other tasks, tended to be over-estimated. It was common for participants to feel that they should read all the material in what was intended to be an indicative list only. As with other aspects of the learning design, not all participants were in a position readily to attend to, or respond to, the guidance that was offered about this issue. Emma later explained that,

"[Later on] I was trying to read everything and several people said, well you shouldn't have done that, you should have been picking up what was relevant and of interest and not trying to do it all. But [early on] I wasn't sure what was expected of me, even though I'm sure you said so, I hadn't picked it up and I was trying to do everything" (P5:RC).

More broadly, over and above their engagement with information and guidance about the learning design and specific tasks, many participants subsequently came to feel that they had not been in a position to assimilate information rapidly about a learning approach that, with its emphasis on self-directedness and flexibility, was both unfamiliar and unexpected. And, encountering an approach based on self-directed learning for the first time, they needed time and on-going support to develop their understanding of its implications. As Jonathon later explained:

"I didn't pick up what the model was at the start, didn't pay enough attention to it [my] expectation was that it was a course and you'd have the content dumped in to you […] in the early weeks I was still expecting delivery of course content coming my way" (P29:RC).

From this position, far from seeing the learning design as clearly structured, it was not uncommon to perceive it as distinctly - and uncomfortably - *"unstructured"* (Rachel, P1:OT) and open-ended in the early part of the course.

With the failure of the plenary thread to encourage questions and discussion on learning issues at an early stage, and as individual participants expressed confusions and raised questions on a one-to-one basis with tutors or in learning sets, I came a better understanding of the importance of monitoring individual participants' awareness of features of the learning design, and of the developmental nature of orientation to the learning approach. I and other tutors made efforts to explore learning issues with participants in an integrated way, alongside their activities as time went on, and I became more aware of the value of the small-group forums, as opposed to the plenary forum, in this respect. Despite early experiences of disorientation, awareness and understanding of the various components of the learning design and the implications of its underpinning philosophy increased as the course progressed. For example, Julia's overall understanding of the principles underpinning the learning design, and awareness of the implications for herself as a learner, developed over time through involvement in learning activities and discussion:

> *"I think over the time you sort of developed the impression it was for you to decide which way you wanted the course to go, which I think was the aim really […] because it was really a learning experience aimed at you rather than an examined course"* (P16:RC).

As this happened, initial perceptions of the learning design sometimes changed. A design that was at first perceived as unstructured and confusing came to be perceived as a coherent whole; as Siobhan put it, *"all completely integrated, there was a unity"* (P11:RC).

Nevertheless, the process of orientation to the learning approach was still on-going as the course was coming to an end. Participants were continuing to explore ideas about self-directedness and the implications for their own practice as networked learners. Towards the end of the course, Jonathon remarked that he had only recently *"started to see how the whole course was meant to hang together… all that stuff about reflective practice, constructivist knowledge and active learning is beginning to make (some kind of) sense!"* (P29). Looking back later, he confirmed that,

> *"It took me a long time into the course before I picked up on [the intended approach] […] it wasn't until around about [Unit 5] that I went back and read a lot of the early stuff, and I thought blimey, that's what we're doing!"* (P29:RC).

Evaluation: Supporting Orientation in Networked Learning

This case study account points to a range of issues related to the practice of networked learning design and facilitation. But it draws attention in particular to the question of supporting the process of orientation, which in this context was experienced in relation to the course's designed learning space, its information resource environment, and its learning design and approach. From the perspective of evaluation and 'living theory', the question that arises is: how effective was this particular instance of networked learning design and implementation in this respect, and how might it have been improved?

Most participants evaluated the first Unit positively - some very positively - in terms of providing an introduction to the course and its environment. The design and usability of the course Web site and its computer-mediated communication (CMC) tools were highly rated. Most found it relatively unproblematic at an early stage to gain a clear overview of the structure of the Web site and its communication space. However, a rather more complex picture emerges in relation to orientation to the course's learning design and approach and, to a lesser extent, its information resource environment. It is evident that all the features of the learning design were

not clearly visible to participants until some time into the course, and that coming to a deeper understanding of the learning approach and its practical implications was a developmental process over time, facilitated most effectively by experiential, reflexive engagement with learning tasks and resources and by opportunities for on-going 'process dialogue' with peers and tutors along the way. Similarly, orientation within the information resource environment was more securely established over time, as participants positioned themselves within it in relation to their learning purposes.

Participants' views on the effectiveness of support for orientation differed in the light of individual experiences; as already noted, there was considerable variation in perceptions of, and responses to, the presentation of the course design and approach, arising at least in part from variation in participants' assumptions and expectations about learning. However, there was broad consensus that the approach to supporting orientation, especially in the early weeks, had only partially been successful. Some of the practical evaluation points that emerged from the research, in terms of what worked well and what could have been done differently, are as follows.

Task Design

- *Task complexity* was an issue at the start of the course. Being asked to carry out a number of tasks in parallel was confusing and distracted attention from tasks intended to support orientation to the learning design and approach. The focus on learning issues could have been distinguished more clearly from other introductory activities, perhaps as part of a more extended orientation, or induction, period.
- *Task specification* at the start of the course in relation to engagement with learning issues might usefully have been less open-ended (i.e., asking for more than general input to discussion), thereby sharpening the focus on orientation to the learning design and approach. It might also have placed less emphasis on engagement with the wider information environment.
- *On-going support* for experiential learning throughout the course, in the form of both informal opportunities and more structured tasks to encourage reflection and discussion about experiences of networked learning, proved especially effective in support of orientation to the learning approach, and could have been further strengthened.

Socio-technical Design

- The socio-technical conditions for *dialogue* at an early stage could have been improved. Strong emphasis on the use of plenary forums on the bulletin board distracted attention away from small group forums and participants were expected to engage in a very public form of dialogue on learning issues that many found daunting. An early focus on learning issues therefore more effectively might have taken place in small groups, led by learning set tutors, rather than in the plenary forum, thereby setting the scene for further, small-group discussion on learning issues throughout the course. At the same time, reducing the emphasis on plenary discussions at an early stage in favour of small groups would have increased the visibility of the latter, enhancing opportunities for forming relationships (socialisation) and offering early experience of small-group activity, thereby supporting orientation to the collaborative learning aspect of the course more rapidly than was the case.
- A MOO environment was introduced later in the course with very positive effects in terms of socialization. Therefore, more use of *synchronous computer-mediated communication tools* early on in the course also might have supported orientation to the learning design and approach more effectively, in terms of encouraging interaction on learning issues.

Information Design

- *Information overload* was a problem in the early stages of the course, distracting attention away from engagement with information and guidance about the learning design and approach. At the same time, exposure to fewer pre-identified resources initially might have been helpful as part

of a step-by-step process towards orientation to the information resource environment. Possible strategies might have been to defer the introduction to the full Resource Base until the second Unit, or to build up its scope incrementally as the course progressed, in relation to specific tasks.

Tutoring

- The case study highlights the importance of individual monitoring and support in relation to orientation. There was a need for more intensive and direct *personal contact* between tutors and participants in the early stages of the programme, for example using email as well as the bulletin board.

Conclusion

In developing educational and learning support practice within the networked environment, we need to gain a holistic understanding of our learners' experiences and the effects on them of the ways in which we design and support learning in this context. In this paper I have aimed to share something of my own learning, through action research, about key dimensions of learners' experiences on a networked learning course - focusing in particular on experiences of (dis)orientation - and about the impact of aspects of my own practice. I have pointed to some implications in terms of the development of my own practical knowledge, or 'living theory', about support for networked learning. Whilst action research is of necessity highly context-specific, the findings of this project may be relevant to practitioners with similar purposes, especially in terms of implications for process support.

In higher education many information professionals work, increasingly, at the intersection of two principal areas of practice - information practice and educational practice - within the context of ICT-related innovation in both of these areas. As they become more involved in designing, developing and supporting ICT-enabled learning, including as information literacy educators, action research approaches of the type described in this paper offer a framework both for the development and dissemination of good practice, and for the important contribution that they have to make, alongside other practitioners, as "co-researchers in the pedagogy of online scholarship" (Laurillard , 2001).

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