Knowledge construction and on-line environments

The purpose of this Symposium is to explore critically ideas concerning knowledge construction and on-line environments. Three papers are offered which raise some general issues grounded in particular contexts

These papers are addressing three overarching questions: what do we mean by knowledge construction? do we have a sound foundation for believing that knowledge construction takes place in on-line environments? and, what constitutes evidence for knowledge construction? The first question leads us to review attempts to theorise about knowledge creation through on-line discussion. These accounts derive from broadly social constructivist theories of learning and often place particular emphasis on communities of practice. They have a particular relevance in a 'late modern age' when professional knowledge is subject to rapid change and more open to contestation. A common point of reference in this Symposium is the distinction between propositional knowledge and 'practical' knowledge or 'know-how'. We ask how far this distinction is helpful in our consideration of constructing knowledge within and about the on-line learning community.

The second question leads us to explore specific examples of online learning and the judgements we have reached about their effectiveness. We recognise the value of on-line learning in giving learners opportunities to share knowledge; to provide peer support; to enable a more measured and reflective type of discourse. At the same time we are aware of the constraints of time and access in the forums we have evaluated and the reticence of some learners to take part. Our experience of evaluating on-line working leads to our third question concerning the evidence of knowledge construction. We have conventional means to evalauting on-line working, such as questionnaires surveys, learners diaries and interviews, as well as new possibilities including dialogues within on-line forums and access to on-line discussion transcripts. We have worked within broadly action research perspectives that have given rise to particular issues concerning the purposes and politics of research and the validation of findings in the experience of learners. Our research poses particular ethical problems to of accountability, confidentiality and permission. Writing about such research, there is a need to acknowledge the personal nature of knowledge and the issues that arise from the researcher's construction of case 'narratives'. Our attempts to consider professional knowledge creation within on-line forums bring us back to considering how we ourselves create our own professional knowledge.

Organised by: Mick Hammond

Discourses on collaborative networked learning

Catherine Edwards

University of Warwick

Catherine.Edwards@warwick.ac.uk

ABSTRACT

This paper will propose that much of the discourse on knowledge construction through collaborative networked learning is based upon speculative and aspirational stances rather than strong theoretical or empirical grounds. It will ask how one might investigate the robustness of the claim that collaborative knowledge creation, or construction, can be achieved through on-line debate and dialogue. It will suggest that issues of community and commodification are impinging on this discourse. Some dilemmas intrinsic to this claim are discussed and illustrated through examples from the author's professional experience within continuing education.

Keywords

Constructivism, on-line collaboration, community, knowledge-construction

INTRODUCTION

What are the claims for knowledge construction through collaborative networked learning? Where can examples of these claims be found in the literature on online pedagogy? What is it about the commodification of education and a sense of community which drives us to make these claims? Why are we not yet in a position to uphold these claims unequivocally?

The point of departure for this exploration of theoretical stances and discourses about collaborative networked (online) learning is drawn from several contemporary sources. It begins by noting some of the common theoretical positions and principles of sub-disciplines which are either directly referred to or 'taken as read' in the literature on on-line pedagogies. These specifically include, constructionism, as in Hodgson (2000); social constructivism and situated learning (Lave and Wenger, 1999); and the principles of adult learning (Edwards, 2001; Merriam, 2001). These are currently most commonly used to form the theoretical basis for claims that online debates can enable knowledge construction to take place.

The question of *why* the claims being made for collaborative networked learning might be desired and desirable, will be addressed with reference to two major themes.The first is the desire of educators to reclaim pedagogic integrity in the midst of the commodification of (mass) educational provision and their own roles within that. The second is the desire for community as expressed in the Giddens (1994) influenced debate on 'the self in late modern age' as found in Slevin (2000).

Some of the problems inherent in these perspectives will be illustrated with examples from the author's own research into the use of on-line debate for teaching and learning and curriculum development (Edwards and Hammond, 1998; Edwards, 2000 and 2002). They will be explored further with reference to the author's current professional practice, working with learners in the field of continuing education.

The purpose of the critique is to support an exercise in concept framework building from which one might proceed to gather data through which a more robust theoretical stance might become available. Or indeed to pose the question of whether or not we are in a position to offer a 'better' framework than those currently being proposed.

Discourses of collaborative learning and knowledge construction

what claims are being made?

A summary of the claims about online knowledge construction being addressed here is as follows:

> That we can create viable communities of learners online.
>
> That these online communities can construct knowledge through dialogue using eg. email or conferencing software
>
> That the knowledge thus constructed will be useful to learners as professional practitioners and/or enable them to develop the kinds of critical thinking which will enhance their professional practice.
>
> That there is the added bonus that this 'knowledge' can be captured/evidenced because the dialogues are text-based and therefore recordable.

Where do these claims appear in the literature? How are they related to constructivism and principles Of adult learning?

Theories of learning currently in vogue put strong emphasis on the dialogic process within the context of a learning community . "As Vygotskian and Deweyan traditions suggest, we do not learn in isolation from others. Discussion among students and between students and teachers promote the *guided construction* of knowledge in the learning environment." (Lim, C, 2001:27) The extraordinary capacity of online technologies for the *transmission* of information is undeniable in that classic Shannon and Weaver sense of code-transmit-receive-decode. Any capacity for the construction of knowledge depends upon the 'active and generative [process] of composing and comprehending' (Spivey, 1997:415). Contemporary adult learning discourse has for the most part absorbed constructivism as part of either postmodern or late-modern perspectives on its methods, mission and constituency: 'the learning process is …also making sense of our lives, transforming not just what we learn but the say we learn…absorbing, imagining, intuiting……not only can we see learning as situated in a particular context, but we can examine how race, class, gender, power and oppression, and conceptions of knowledge and truth shape the context in the first place…' (Merriam, 2001:96).

The aspect of 'learning' of interest in this paper is therefore not so much the acquisition of new information or 'existing bodies of knowledge' but the creation of new meanings – knowledge construction – through the sharing of different and conflicting perspectives, specifically in this case through online debate and dialogue. Amongst others, Hodgson's work has been influential in promoting these claims as in her taxonomy on contrasting orientations to open learning: 'Shared construction achieved through dialogue and discussion' (Hodgson, 2000:143). This perspective has increasingly become a given in online pedagogy texts where it

is promoted sometimes together with clear reference to the aforementioned economic imperative: '…rising student numbers…make it increasingly difficult for us to schedule and run small-group discussion seminars face-to-face. Proponents of online seminars argue that they can not only overcome but also help us facilitate higher-quality debate than that typically present in face-to-face seminars' (Maier and Warren, 2000:98).

The ability to facilitate knowledge sharing through meaningful debate online is developed as one of the key competencies of e-moderators in Salmon's text: 'Knowledge sharing: able to explore ideas, develop arguments….build a learning community' (Salmon:2000:40). And Collis and Moonen adhere to the notion of learning community online in a way which implies the imperatives of situated learning discourse: 'Learning as participation, the process of becoming the member of a community, the ability to communicate in the language of this community and act according to its norms' (Collis and Moonen, 2001:88). These are just a selection of perspectives from the literature on online pedagogy chosen to indicate the taken-for-granteds that have become the norm in such texts.

One would not, of course, expect to find in this kind of text the research evidence backing the claims they assume and upon which they base their pedagogic advice. Attempts at gathering such evidence are growing in number. However, it is still difficult to compare and contrast the nature of the evidence and how it is being analysed due in part to the idiosyncratic and often multi-disciplinary nature of analytical constructs. One example of a most thorough and careful attempt to research evidence of learning in online communities can be found in Owen, Pollard, Kilpatrick and Rumley (1998). The concept indicators of learning which they sought evidence for in their analysis of four different online forums were 'experiencing, reflecting, conceptualising, and experimenting', (Owen et al, 1998:8).

The principles derived from the domain of adult learning most often quoted in contemporary literature on online pedagogy to these ends are learner-centredness, authenticity of task, flexibility, and relevance to (professional) practice in the (mostly) not-online context of each learner. A pre-requisite for these includes membership of a 'learning community'.

Why are we compelled to make them?

The economic context within which educationalists involved in online developments are currently placed means they are increasingly subjected to institutional pressures to use these developments to cut costs. It is understandable but arguably mistaken to expect such developments will enable all such institutions to organise quality education and learning to many for the same cost as we used to do for few. Particular specialist institutions may of course be designed and managed to successfully do just that.

The expansion and commodification of educational provision and providers as perhaps best caricatured by critics of distance and e-learning has thus created a dissonance for educationalists brought up with the previous generation's expectations and experiences of staff/student ratios. As Mayes notes: 'Some of the new online universities are attempting to….tackle …the key problem- that individual tutors for every student are too expensive', (Mayes, 2001:21). He acknowledges the 'fundamental problem of online learning: too few tutors and too many learners.' (ibid:24). For educationalists there are likely to be elements of both compliance with and resistance to these expectations in the way they plan and promote online developments, to their students, colleagues, institutions. To comply might ensure that their work continues to be valued albeit possibly for the 'wrong' reasons. To resist at some point becomes a necessity for survival where the demands and exigencies of 'making it work' become untenable.

This commodification of educational provision has had a deep impact on how knowledge itself is perceived and 'sold' and how the acquisition of knowledge in this context is publicly acknowledged through assessment. Our transparent, clearly defined and charted learning outcomes, the matched assessment criteria which accompany them, and the still predominant (though hardly new) individuated assessment practices, testify to this. This packaging of knowledge runs counter to the sentiments and practices required to uphold the significance and value of constructing knowledge with and within, rather than for, a learning community.

One way of resisting or at least countering this trend is to reclaim the moral high ground by emphasising the role of dialogue and debate in learning and embracing that 'warmth and goodness' which is resonant in the notion of community – community of learners, community of practice, virtual community.

'Community', together-as-one; lives, interests and futures in common; evokes warmth, care, concern and mutuality and still carries strong sense of a geographical proximity in daily living and working. It evokes tensions between intimacy and distance, self and others. Giddens (in Slevin) suggests that the fragmentation of self-identity in what he terms late-modern society provokes a fresh desire for the binding and bonding characteristics of community which is in turn increasingly illusive and thus more longingly desired. On this 'forging of commitment and mutuality' Slevin says: "In modern social conditions, individuals are engaged in a diversity of contexts of interaction and are caught up in encounters which cut across a diversity of cultural settings. Individuals therefore actively seek to forge commitment and mutuality with others in an attempt to restrict the experiences they have to sample in order to develop a coherent self-identity and successfully fulfil the projects in which they are engaged." (Slevin, 2000:25)) He talks of a 'general longing for community together with a gradual realisation that we can't go back to the certainties of social

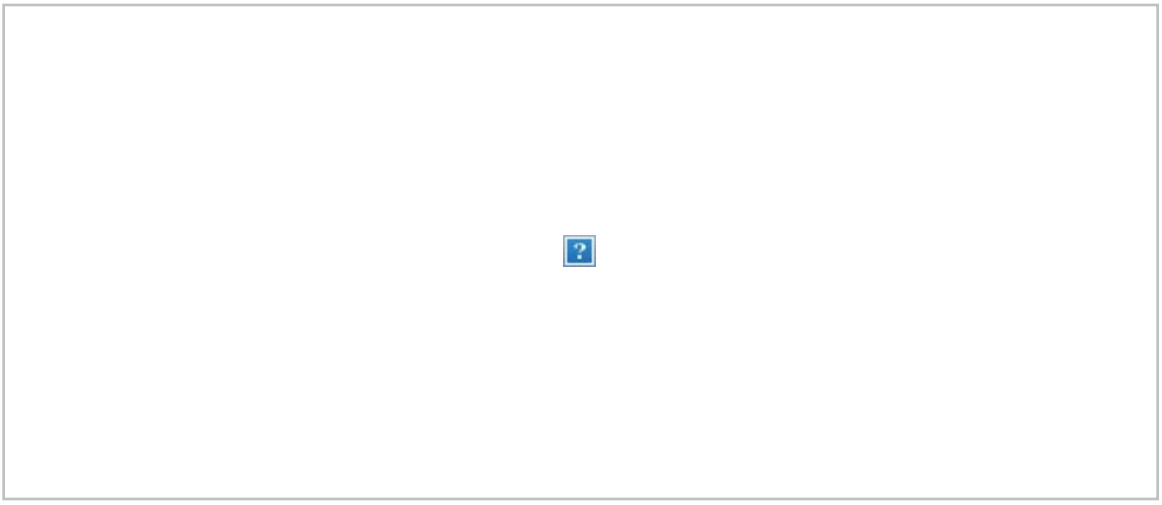
arrangements which no longer exist' (Slevin, 2000:95). There is further acknowledgement that the creation of virtual communities does not necessarily replace what we have lost. Even if some believe it offers something better, the difference is not yet fully understood and might well have a bearing on the meaningfulness of the kinds of communications it affords – 'while new technologies of communication may provide the means for creating new forms of action and interaction, they do not automatically result in understood relationships of intelligent agents' (Slevin, 2000:99)

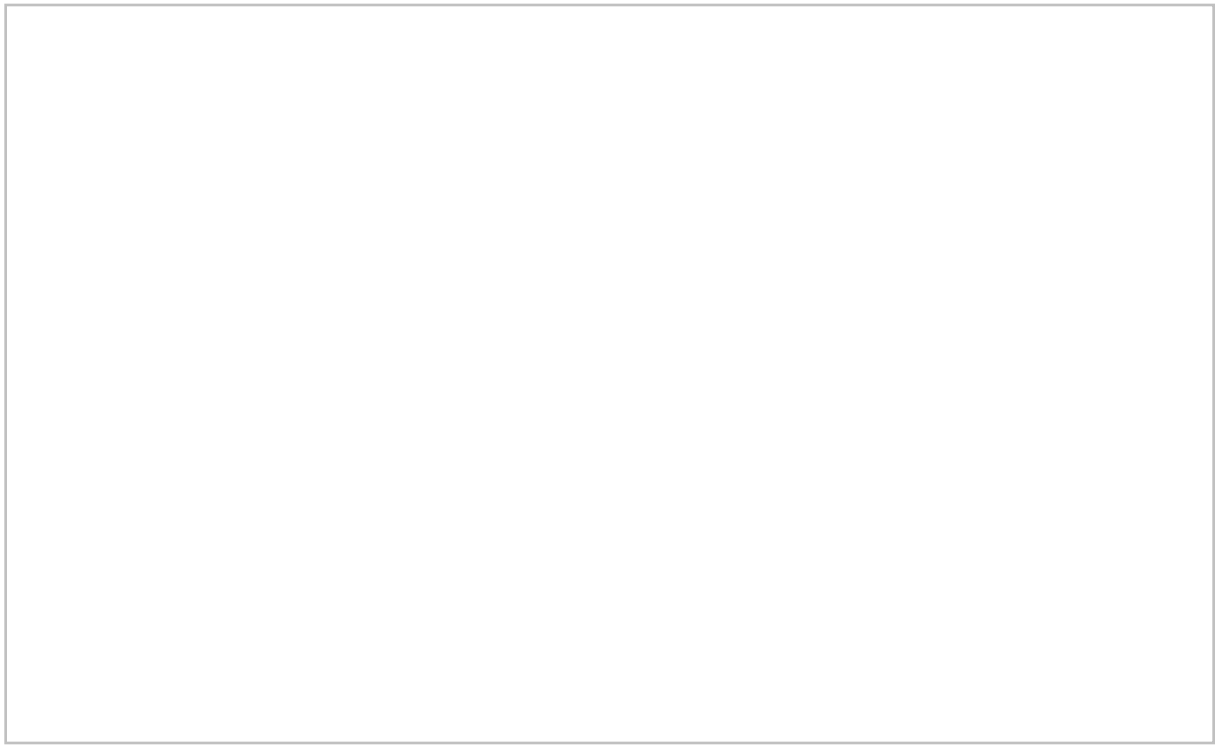
In the term 'communities of practice' community becomes a metaphor. Virtual communities are both representational of this dilemma and a potential new means of dealing with it. The actual physical dis-connectedness between members of virtual communities, such as those introduced in the examples below who are pursuing online debates for the purpose of learning, proffers an environment of yearning for the warmth of proximity and a relief from its burdens. Dis-connection is, arguably, at one's fingertip easier, connection more tricky. Yet Slevin insists, 'despite these problems, new forms of human association remain of central importance because they constitute the spaces in which the processes of meaning generation and truth validation are set,' (Slevin, 2000:99). The more culturally diverse the membership of an online debate the more tricky it might seem to make connections through which to learn, deprived as one must be from actual immersion in the cultural context encompassing each group member, yet the more enriching any learning might eventually be as these limitations are overcome (Edwards, C, 2002)

Why can we not uphold these claims unequivocally – issues of theory and examples from practice

Two examples from the author's experience of working with groups of professional postgraduate students will be used as discussion points to illustrate some dilemmas which relate to the claims noted above about knowledge construction online. These are as follows:

The first example is drawn from the author's previous research into the use of on-line debate for teaching and learning and curriculum development (Edwards and Hammond, 1998; Edwards, 2002). This was a group of distance learning part-time students using email discussion forums to complement mainly text-based and some face-to-face teaching. The second example is drawn from the author's current professional practice, working with part-time students on a campus based course using online media to complement class sessions and using class session time to 'work-at' the online debate text.





Claim one: that we can create viable communities of learners online

I would strongly suggest that we need to watch what we are calling a community so that it does not just come to mean any group of people temporarily, even if most purposefully, connected to one another. The kind of community in which useable knowledge will be constructed requires sustained motivation to belong and commitment to explore issues deeply which will participants will only adhere to if they feel compelled to do so through the immediate and ongoing value to them of participating. Despite the good intentions behind stances such as this one, 'Networking and collaboration between individuals or groups of learners will be a key learning activity and will extend globally, (Stephenson, 2001:222) my albeit limited experience told a different story. In the examples above, group one put much initial effort into setting up online forums with the good intent of being able to contribute to cross-cultural discussions across three countries in two continents, relating to their academic assignments. Much excitement and enthusiasm was expressed. There was much talk about the sharing of professional practices for mutual gain in addition to discussing course work. But in practice very little sharing on either front took place at any critical level without intense tutor encouragement and prompting. Whenever tutors stood back, either because of their own time pressures (which is a curriculum design issue) or to be less dominating in the process (promoting learner-centredness? depending on how that is understood), debates soon withered. I would propose that this was less to do with confidence, capability, or power relations, and more to do with perceived value and prioritising by participants who would already be engaged in valuable learning in communities they felt much more compelled to belong to.

Claim two: that these online communities can construct knowledge through dialogue using eg. Email or conferencing software

Alexander and Boud warn that 'what may be regarded as affordances by the course designer need to be tested empirically to ensure that they actually have the desired intent' (Alexander and Boud, 2002:11). This is certainly the case for those of us wanting to use online forums to develop critical awareness and capacities. The use of online technologies most certainly does not make this any easier for us. As Brown and Duguid state 'It is a mistake to equate knowledge and information and to assume that difficulties can be overcome with information technologies…. because moving knowledge between communities and synthesising it takes a great deal of work, *deciding what to invest time and effort in as well as determining what to act upon is a critical task….' (Brown and Duguid, 2002:30). If knowledge construction is the task, then the sharing of different perspectives through debate and dialogue is, within a social constructivist framework, a precondition for it but does not simply constitute it. Getting to the point of actually constructing new knowledge (new to individuals and maybe new in the public domain) requires skilled, sustained, purposive and directed analytic and creative conceptual communication practices. Attempting to do this using a technological medium that requires participants to express their ideas through text adds another layer of problems. One of these is that 'while it may sensibly be argued that codified knowledge is also information, much knowledge cannot be codified and remains inaccessible to information technology' (Little, 2002:8).*

With the example from group two above, extracts from debates conducted online were used in a face-to-face seminar to demonstrate

tacit knowledge within each contribution, the use of similar and different concepts to explore key issues and the extent to which people began to change the terms they used as they encountered the perspectives of others, thus constructing knowledge. The fact of the debate being 'captured' in text was considered to be of added value. This was felt to be intense, rich, challenging, valuable, but participants and tutor questioned how sustainable this level of learning would be were the debates and analyses only conducted online. The group was small (nine), local, and had more off than online contact.

Claim three: that the knowledge thus constructed will be useful to learners as professional practitioners and/or enable them to develop the kinds of critical thinking that will enhance their professional practice

Unless online teaching and learning *is* their practice, online learners are not working within their professional community of practice when they are working in an online forum, even if the practitioners they are in the forum with come from the same fields. They are still divorced from their every day work context and from the knowledge networks in that context. If we agree with Brown and Duguid about the collectively held rather than individually held knowledge then we have further understanding of why online forums will have limited success in being relevant in the workplace. 'Experience at work creates its own knowledge…most work is a collective, co-operative venture, so most dispositional knowledge is intriguingly collective – less held by individuals than shared by work groups. This view of knowledge as social property stands at odds with the pervasive ideas of knowledge as individual' (Brown and Duguid, 2002:24). Participants in online forums have to try to imagine the context within which a fellow contributor's message comes, or to fill in the gaps of what they think they know about it, in order to interpret it and respond. As Little confirms, 'When we seek to transfer knowledge to another context we must understand the context within which it was created, in order to reinterpret its meaning and decontextualise if for a new context' (Little, 2002:11).

In both of the groups above this was of necessity an issue. Group one took the steps of increasing awareness of basic cultural differences at the start of the initiative (Edwards, 2002), but this approach would have had to have been sustained and broadened to deal with more subtle cultural differences at many levels to make knowledge construction possible and useable.

Claim four: That there is the added bonus that this knowledge can be captured/evidenced because the dialogues are text-based and therefore recordable

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End notes

There is nothing inherently wrong with aspiration and speculation. They reflect our purposes that drive creativity and action. I believe it helps us to uphold our integrity by acknowledging what is impeding the congruence between the kinds of pedagogic relationships we want and what are possible, economically, socially and technologically. We are constrained in creating communities of learners online who can construct knowledge of value to them in professional practice for reasons including those introduced above. We must not 'sell' our practices and online educators on the basis that these communities can be easily created or sustained, whilst continuing to experiment with and explore the affordances they do offer.

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Construction of Professional Knowledge within an On-line

Environment: the Case of Teacher On-line Forums

Michael Hammond

University of Warwick

m.hammond@warwick.ac.uk

Abstract

This paper looks at the value of on-line forums and gives some examples of forums set up for teachers. It then looks at a small scale innovation using First Class conferencing at the Institute of Education, University of Warwick, and goes on to describe a project which tracked the professional development of cohorts of new teachers of ICT in secondary schools. A final section discusses the fit between the types of learning supported by on-line forums and 'normal' patterns of professional development.

Keywords Knowledge construction, professional learning, on-line learning, reflective practice

INTRODUCTION

Communication within an on-line environment is frequently said to allow learners to articulate knowledge; to get access to help and up to date information; to reflect on contributions of others; and to reach consensus on issues in professional practice. Commentators writing about on-line learning have found social constructivism an important point of reference (Lewis, 1995, Salomon, 1993), but there have been comparatively few attempts to provide theoretical models of professional development grounded on work with specific groups of learners. One early example is that of Bonamy and Hauglusaine-Charlier (1995) who provide a model of 'just in time' learning in which professionals articulate, reflect on and 'reify' new knowledge through on-line discussion. McConnell (2000) argues that through engagement with on-line communities learners can uncover hidden knowledge as well as articulate new knowledge. He goes on to suggest there are features of on-line learning which support an 'ideal speech community'. This theme is taken up by Wegerif (1998) who argues that on-line communities can provide an environment in which all members have unlimited opportunities to speak without constraints of time, distance space or distracting visual clues. Meanwhile an intriguing and more general attempt to chart the creation of knowledge within an on-line forum was offered by Henri (1991). The idea here was to analyse messages according to function and reach conclusions as to how language might scaffold learning within an on-line community. However a weakness in this, and similar approaches taken by other authors, is a lack of participant validation.

These contributions on the nature of on-line learning are useful but we lack a coherent explanation of how participants learn within on-line forums and how such an explanation fits what we already know about learning. Some of the difficulties of providing such an explanation are illustrated in the area of professional development with which I am most familiar, that of new teachers. Here I briefly describe some examples of teacher forums and some of the research I have carried out charting the professional development of new teachers. This research has arisen from my role as subject tutor to four cohorts of students on the Post Graduate Certificate in Education (PGCE) course training to teach ICT as a subject in secondary school. (The PGCE is a one year full time course leading to a teaching qualification.) My research has focused on how members of the course felt they had learnt to teach. It is based on extensive interviews with these teachers at the end of their training and in their first years of teaching. Key issues have been motivation to teach and experiences of professional development (eg Hammond 2001, Hammond and Mumtaz 2001).

on-line forums for teachers

There are numerous examples of on-line communities for teachers including open lists (eg Muscella and Di Mauro, 1995, Tsui, A., 1995); discussion within closed lists (eg Dutt-Doner and Powers, 2000, Hammond, 1998, Selinger, 1996); pre service courses (eg Nonis, Bronack and Heaton 2000); and linking preservice teachers with learners (eg Poole, 2000) and with other groups of teachers or trainee teachers (eg Todd et al 1995). Details of 14 local and national electronic networks of teachers in the USA are described by Zhao and Rop (2001) in a critical review of more than 28 papers associated with these forums. In the UK a virtual teachers centre

provides several discussion lists (http://search.ngfl.gov.uk/) and on-line forum are a normal part of innovative approaches to inservice training (eg Leask 2001).

The development of teacher discussion forums should be seen in the context of the investment nearly all governments are making in developing the ICT skills of teachers. However, as Zhao and Rop point out, the specific goal of many forums is to provide an on-line community for teachers to address the isolation and individualised nature of teachers' work. They go on to argue that the notion of community is not always well defined and its relationship to professional practice is not made explicit.

On-line forums for beginner teachers at Warwick

Along with many institutions which offer PGCE courses, we have set up several on-line forums at the Institute of Education, University of Warwick, in which students can share resources; discuss experiences; get help and make social arrangements . These forums (using First Class conferencing software) also provide a space in which tutors can post lectures notes and course information. There are whole course forums and ones for students of particular subjects. My focus has been on students learning to teach ICT as a subject. As ICT specialists these students are confident users of the technology and have significant past experience of using conferencing software. However use of forums over the past four years has been limited. A representative example is a forum for the 15 members of this year's ICT course. During 12 weeks in the Autumn term 2001 there were 68 messages sent to this forum. Fifty of these messages were sent during 6 weeks of face to face teaching at university and consisted mostly of worksheets and comments on teaching sessions. During the 5 weeks spent entirely in school 18 messages were posted, 12 were of a social nature and 6 more related to classroom issues. Several students had posted one or more messages to other forums based at the Institute of Education and all the group had used email for one to one contact. Eight members of the group had set up their own distribution lists for members of the group outside of First Class and had used this route to occasionally mail their peers. Five had raised general teaching issues in this way. In addition 8 members of the course belonged, or had recently belonged, to forums whose members did not have any particular connection with the University. Three of these lists were teacher related. Forums have also been created for members of past cohorts, at their own request. However use has been very sporadic though some ex students of course keep in fairly regular one to one contact.

On-line forums are evaluated positively by students at Warwick and most students readily recognise the value of sharing experiences within forums and want to keep in contact with each other during school placements. Such forums would be missed if they were taken away but the figures cited above suggest that on-line discussion is peripheral to the process of learning to teach even for a group of experienced and confident ICT users. In part this is because university teaching is characterised by intensive, fairly small group teaching with many opportunities for interactive discussion in a face to face setting. Forums would appear to have a more central role in distance learning courses for teachers. Our students are further constrained by an intensive and quite tightly controlled curriculum. However they could give forum participation a high priority and could support each other more when they start full time jobs. Why does not this happen? My suggestion is that there is a poor fit between how new teachers feel they learn to teach and the experiences which on-line forums provide.

The professional development of new teachers

Becoming a teacher requires the ability to integrate subject knowledge with skills of planning, classroom management and assessments. Skills need reinforcing with an understanding of professional values. Turner-Bisset (2001) presents a more comprehensive list and usefully stresses that effective teaching successfully combines sets of skills. But how does this happen?

Drever and Cope (1999) offer an interesting angle. They asked beginner teachers to assess the relevance of three widely disseminated views of professional learning. These were the idea of entering a community of practice (eg Lave and Wenger, 1991); the notion of reflective practice (Schon, 1987); and the competence based model (relevant in our study are the Government standards for Initial Teacher Education). In Drever and Cope's study beginner teachers were reported as recognising some value in all these theories as ways of understanding their professional development and in particular the notion of entering a community of practice, but their relevance was limited. For example the competence-based model provided at best a post hoc description of skills acquired through classroom practice while a more general criticism was that they believed that learning to teach was inherently context specific ('knowing what will work with this particular group') and did not lend itself to generalisation. In this they perhaps paradoxically supported Schon's own theory of professional learning.

My research showed a similar difficulty in fitting what new teachers said about the process of learning to teach and these established models of learning. However a consistent finding between cohorts, and within the same cohort over time, has been the deeply held belief that teaching is a practical activity in which the interaction with students is the source of professional satisfaction as well as professional development. This is illustrated in one recent case in which 15 students were asked at the end of the course what had been most useful for them in learning to teach (table 1).

category	frequency
reflection on own teaching (before, during and after lessons with pupils)	12
observation of other teachers	8
feedback of mentor	8
using my own experience as a learner as a model	3
helpful theoretical models at university	3
the support of other teachers	2
friend’s advice	1
intuition	1

Table 1: What has helped me most in learning to teach? (Total number of responses > 15 as more than one response was sometimes given).

In my analysis, teachers’ focus on classroom interaction is seen as double edged. Commentators from Lortie onwards (1975) have seen teachers’ work as characterised by professional isolation; resistance to theory and lack of exposure to alternative conceptions of teaching. However, this is only part of the picture. By tightly focusing on implicit and explicit feedback from pupils, new teachers learn how to adapt their planning and classroom management to appeal to pupils’ interests and set appropriate targets and expectations. Above all the classroom is the environment in which teachers have, in Tomlinson’s phrase, to ‘bring together’ a set of skills (Tomlinson, 1995). This they can only achieve through practice. For teachers in my research ‘normal’ professional development takes place in the classroom and they feel they have successfully developed their teaching and achieved considerable professional satisfaction through a tight focus on the classroom. Only when relationships with pupils cannot be successfully resolved is normal development stunted. They then need to hear alternative perspectives on their work from outside. Fortunately, the teachers in my study have largely experienced positive relationships with their pupils, in part because of young people’s attitudes to ICT.

New teachers in my research recognised some of the limitations arising from an exclusive focus on the classroom and valued observation, feedback and formal mentoring. However they were often sceptical of the models of teaching they were observing and of the value of mentoring they received particularly in their probationary year. In contrast they were deeply appreciative of mentors who provided what they saw as credible models of teaching and coherent and challenging feedback. Their intention was not to imitate other teacher styles but to incorporate parts of what they saw into their teaching. One powerful example of support for new teachers into a community of practice was given by Shamina when describing her experiences as a newly qualified teacher.

There are five of us NQT's, and there's been support. We have meetings with our mentors every week, we all see each other every day. I take time off timetable with Diane (the head of department) and meet Anna (the professional mentor) with the others once a month. We go through issues, it could be anything. She takes us all out to dinner twice a year so we see each other away from school. They push us to do observations on other teachers, as we have a lower timetable, I've had one trip to a special needs schools and training for ICT and for business studies next year.

In the department everyone is helpful to each other. Diane is my mentor she doesn't just say "do this", she backs it up, she will check if it has worked and if it doesn't work then she’ll say "why not do this, or this" and I'll do it.

I'm used to people coming in and out of my lessons all the time but if we've got a formal observation here, it's a big thing, it's good, but here I am watching all the time. I watch the way Diane teaches, how she talks to the kids, how the others do it, and I observe Anna and she came to observe me. One of the targets which came out of my lesson observation was questioning, extended questioning, so I said, "can I watch you?". So I went to her lesson to see how it was done, and picked up good techniques, and you can't do this unless you see a teacher in action.

Relating on-line forums to teacher professional development

It is easy to see from this brief sketch of new teachers’ professional development that interaction in the classroom normally lies at the heart of learning to teach. This is a powerful but limited strategy. Mentoring and peer support can be influential but only if coherent and deemed appropriate. Influences outside of the immediate world of classroom and the school, for example, friends,

university tutors and on-line forums of peers lie at the periphery as an influence on beginner and new teachers' development (see figure 1), though they may of course be much more influential in orienting the new entrant to the profession. This is not to dismiss on-line forums or indeed any other approach to professional learning. And it is not to argue for exclusively school based training. However teacher attitudes to their own professional development explain why forums are not readily adopted. Forums might be of special value for a teacher with a special affinity for text based communication; or for teachers who find themselves particularly isolated in schools or quite simply searching to make a connection between what is happening to them and the experiences of others. An on-line forum could be a convenient source of up to date information on new developments, for example changes in course syllabuses or general news within the profession. In addition forums could provide a new perspective on a critical issue, for example for a new teacher locked in an unproductive relationship with a class. However a limitation is that forum members are always working from descriptions of events. They do not allow members to go into another classroom and see 'how it is done' and many people find text based working time consuming and laborious.

Of course the metaphor of creating a community of practice is a powerful one. However we should look carefully at what type of community of practice forums provide. Earlier we described how Shamina joined a very supportive community of practice which provided her with model of teaching, coaching and fading of support. Over a short time Shamina moved from novice to full participation in the group. She had joined a community of practice focused on working with particular students in a particular school. An on-line forum offers a different kind of community in which members share the experience of taking part in a discussion. They do not share first hand knowledge and experience of particular schools, they do not share observation of the same classroom events and cannot physically model practice for each other.

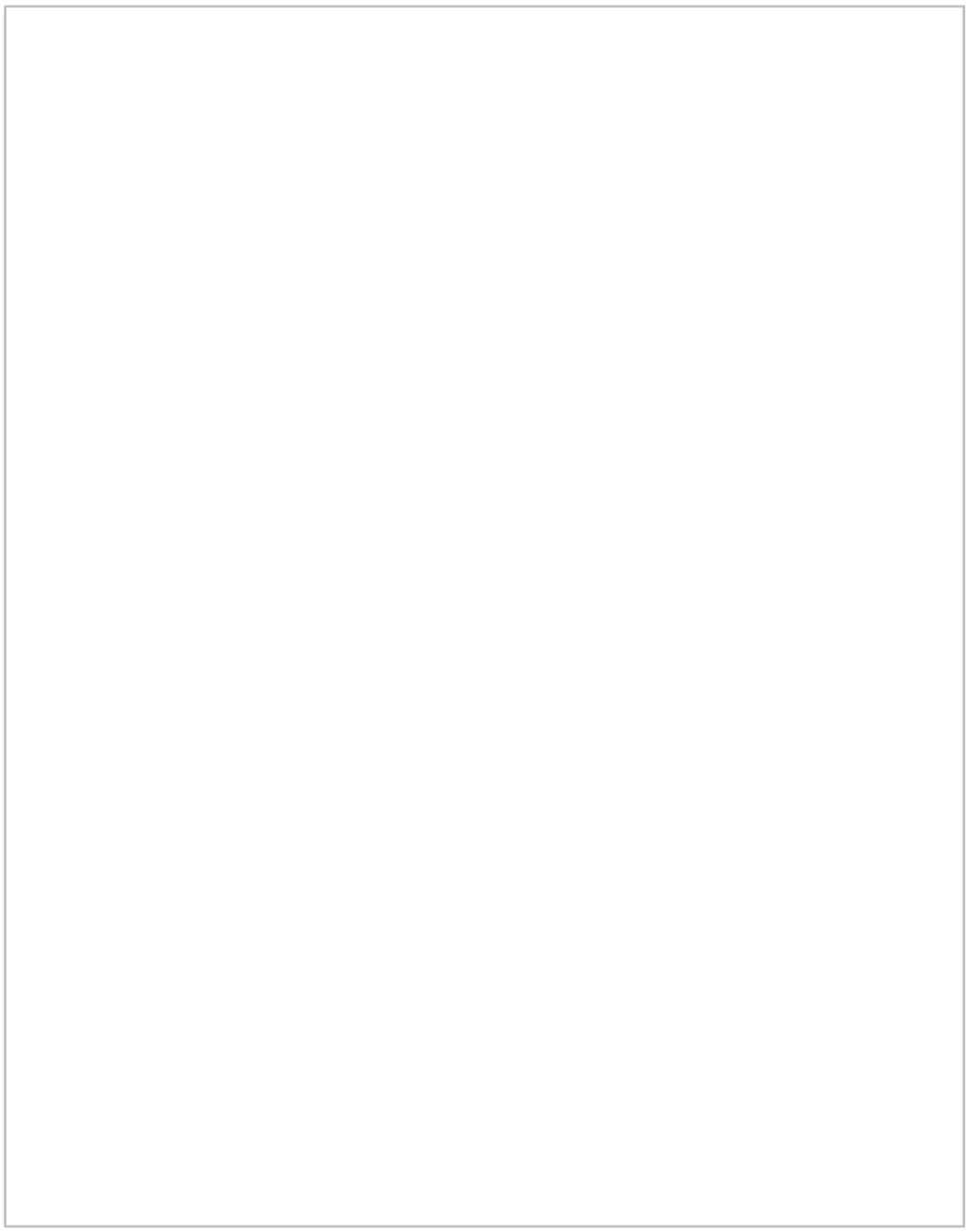

Figure 1: The world of the learner teacher: perceived influences on teacher professional development

Having spelt out the limitations of on-line forums for teachers why do some of us remain engaged with their development? In my experience it is the quality of reflection, characterised by a bringing together of personal and professional concerns, which communicative participants (Hammond 2000) bring to the forum. Knowledge developed within the on-line forum is not easily defined and forums are not merely focused on the development of teacher skills and subject knowledge. Many on-line forums aim to develop reflective practice by 'extending' the professional to consider others ways of working. Is the reflective teacher a 'better' teacher? The question is unanswerable in instrumental terms. In an educational context reflection on practice and discussion of values are also ends in themselves.

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Researching Networked Learning and Teaching: a Case Study in Practitioner Knowledge Construction

Philippa Levy

University of Sheffield

p.levy@sheffield.ac.uk

ABSTRACT

This paper presents a short methodological case study. It focuses on the author's action research approach to testing and refining a pedagogic model that was designed for an intensive, networked professional development course for information services staff. The research explored participants' learning experiences as a means of evaluating the design, facilitation and impact of the course, and the methodology was developed with reference to principles associated with constructivist programme evaluation as well as with interpretivist and critical traditions in action research. The paper discusses the philosophical perspectives that informed the research strategy, describes its overall framework and methods (including on-line and face-to-face data collection), and highlights some methodological issues that arose during the research. It concludes with a brief reflection on the experience of learning through 'networked action research', and suggests that this experience raises issues of relevance to facilitating the construction of practitioner knowledge in on-line learning environments.

Keywords

Practitioner learning; action research; constructivism; evaluation; case study

INTRODUCTION

Action research is a well-established approach to the construction and sharing of practitioner knowledge within educational contexts. Recently, it has begun to be used within the emerging field of networked learning, as a methodology for evaluating the design, facilitation and impact of new initiatives, and for developing validated conceptual models that can be used as a resource by practitioners working in similar settings (e.g., Salmon, 2002). Case study accounts are a common vehicle for sharing educational knowledge that has been generated through action research, and they also offer a means of sharing understandings, experiences and models of the research process itself. However, there are as yet few accounts of how action research is being carried out in the context of networked learning.

This paper presents a short methodological case study, focusing on the approach that was taken to testing and refining a pedagogic model designed for an intensive, networked professional development course for information services staff. The course was offered as part of a programme of development activities by NetLinkS, a HEFC-JISC funded project with a national remit to research and promote the roles of information specialists in networked learner support. The course ran for 17 weeks in 1997-8 with participants from more than thirty UK higher education institutions, with the aim of providing an opportunity for learner support staff to engage

with ideas and issues associated with their changing educational roles in the networked environment, as well as to develop new technical expertise (see Levy, 2002). A number of themes - educational, professional, organisational and technological – were selected to provide the focus for learning activities. However, the course was not designed to transmit a particular body of content; instead, it was conceived as a flexible resource framework, or environment, within which practitioners would be able to explore ideas and develop skills of most relevance to their professional and learning purposes. The pedagogic model was developed with reference to constructivist perspectives on learning (e.g., Grabinger and Dunlap, 1995), and with the aim of supporting self-managed, collaborative learning in what was for all participants a new type of learning environment. There was a strong emphasis on developing new perspectives and expertise within a 'virtual' community of practice, through on-line discussion, group-work and developing work-based projects with peer support, and on learning experientially about networked learning. Using the experiential learning cycle as a design framework (see Kolb, 1984), a series of developmental 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. The technical environment was an early experiment in 'virtual learning environment' (VLE) design, in that the Web and a range of asynchronous and synchronous conferencing tools were used to provide integrated access to social and information resources. The course was well received (see Levy, 1999).

As the designer and leader of the course, I developed an action research approach to evaluating the design, facilitation and impact of the pedagogic model, through in-depth exploration of participants' on-line learning experiences and their perspectives on evaluation issues. Action research is carried out *through* and *within* social action by practitioners, rather than on it (or them) from an external vantage point. It can take a variety of forms and as a methodological tradition is subject to the influence of changing perspectives in social theory and inquiry. At the same time, the networked environment offers new possibilities for carrying out research, for example through on-line observation and dialogue, and transcript analysis. In the case of this project, the methodology was developed with reference to recent developments in constructivist programme evaluation as well as to interpretivist and critical traditions in action research and some aspects of post-modern thought. Engaging with methodological issues was a developmental process rather than a 'once and for all' step at the outset of the project when the over-arching action research framework was decided upon. As the research evolved iteratively through a number of cycles of planning, implementation and reflection, and as I revisited the methodology literature from time to time, I was able to clarify my standpoint within the landscape of qualitative inquiry. In doing so, I came to identify my project as an initiative in constructivist action research, drawing on and blending related methodological perspectives and approaches to fit the circumstances and purposes of my project.

In what follows, my aim is to give a flavour of what this has meant in both philosophical and practical terms, as a means of contributing to discussion about evaluation and theory-building in the field of networked learning. The paper reviews the perspectives and principles that informed the design of the research strategy, describes its overall framework and methods, and highlights some methodological issues that arose during the research. It concludes with a short reflection on the experience of learning through 'networked action research' and suggests that in addition to raising issues to do with research methodology, this experience of practitioner knowledge construction also raises issues of relevance to facilitating practitioner learning in on-line environments.

ACTION RESEARCH

Carrying out action research in the context of educational practice implies a particular philosophical and political stance in relation to knowledge and knowledge construction. On the grounds that specific educational situations are unique and complex, professional competence is assumed to be more than just a matter of routinely applying universal rules of practice or purely technical know-how derived from external sources of guidance. Instead, competence is taken to be a matter of being able to perceive, and take forward, the right course of action when faced with particular situations (Schon, 1983); it is based on knowledge that is embedded in personal experience and that is essentially context-specific, concrete and open to re-interpretation and change. At the same time, it is assumed to be both appropriate and necessary that educational practitioners participate actively in developing the knowledge that relates to, and guides, their practice. In the light of these considerations, action research therefore does not aspire to the construction of propositional knowledge (*episteme*), or to the production of know-how. Instead, the aim is to construct validated, 'practical' knowledge (the Aristotelian concept of *phronesis*) through action (or *praxis*) and critical analysis of specific educational situations. This is not to suggest that scientific knowledge has nothing to do with practice; as Usher et al. (1997: 128) comment, practical knowledge *"may involve general or universal knowledge, but by being contextually mediated it becomes particularised"*. The same might be said for technical know-how. Nor is this to diminish the theoretical dimension of action research; on the contrary, theory building is conceived as an integral aspect of constructing practical knowledge through action. The form of theory generated through action research has been called 'living theory' (McNiff, et al., 1996); by sharing living theory with colleagues, practitioner-researchers aim to contribute to the knowledge base of their professional community. However, whilst action research involves theory building, its main purpose is the improvement of personal educational understandings and practices, and the wider situations that impact on these.

In terms of methodology, interpretive and reflective practice are conceived as fundamental to knowledge construction in the action research paradigm. Practitioner-researchers investigate and evaluate educational situations inductively by engaging with the

perspectives of all those involved, looking afresh at their own educational beliefs, values, aims, assumptions and actions in relation to the perspectives of participants in their programmes. What is meant by reflective practice in the literature varies considerably, to the extent that it can be seen as a catch-all term embracing epistemological and ideological positions that are incompatible. Nevertheless, it is clear that essentially it implies a commitment to examine critically - and perhaps abandon – those personal 'theories-in-use' (Schon, 1983) that underpin practice, as an essential part of the project to refine educational understandings. Action researchers typically keep a research journal as a vehicle for documenting and reflecting systematically on action from their own perspective, and participate in reflective dialogue, for example with a 'critical friend' whose role is both to challenge and support the researcher to move towards new understandings. In 'critical' mood, action researchers are also committed to engaging with the structural contexts of their educational practice – including those ideological, institutional, economic, and political pressures that influence and constrain local practices and meanings (e.g, Carr and Kemmis, 1986); it has been suggested that this is especially necessary at times of rapid policy and technological change (Winter, 1989). The critical stance serves as a reminder that there may well be a need to challenge the impact of globalisation, commodification and commercialisation in technology-supported learning in higher education, and the instrumentalist and managerialist agendas that are discernable in much discussion about new applications such as 'managed learning environments'.

Interpretive and reflective practice in action research typically take place within the framework of the action research cycle - a systematic, problem-solving sequence of steps involving planning, acting, monitoring, reflecting and theorising, using both qualitative and quantitative methods for investigating stakeholder perspectives - and a strong participatory ethos often underpins research design. The action research cycle also can be understood as a process of experiential learning, in which concrete experience provides the basis for observation, critical reflection, theory building and the application and testing of new understandings in new situations. Kolb's (1984: 38) definition of experiential learning as *"the process whereby knowledge is created through the transformation of experience"* could apply equally well to action research.

A CONSTRUCTIVIST STANDPOINT

Action research offers a robust and widely accepted framework for understanding and engaging systematically in 'practical' knowledge construction, although some commentators have discerned a tendency within this tradition to gloss over the complexities of both philosophical and procedural aspects of the research process (e.g., Zuber-Skerrit, 1996). For example, from a constructivist standpoint, issues arise in relation to subjectivity and reflexivity in knowledge construction that have implications for research practice in areas such as data collection and analysis, the 'research relationship' between stakeholders, textual representation and knowledge validation. A number of strands in the wider field of interpretivist inquiry provide guidance in these areas, and I found constructivist evaluation methodology (Guba and Lincoln, 1989) particularly relevant in the context to my study - perhaps reflecting what appears to be an increasing convergence between this methodology and some strands in participatory action research in the wider field.

Constructivist epistemology is grounded in the view that people actively construct meaning within situated contexts of social interaction involving a complex range of factors such as language, history and ideology. Multiple and sometimes conflicting realities are understood to be the result of perspective, each with at least some claim to be meaningful. The focus of constructivist evaluation research is therefore on illuminating contextualised meaning from multiple points of view (Greene, 2000), with the goal of collaboratively building more informed understandings of shared experiences. Understandings in this context are defined in terms of 'the best informed views on which there are agreements' (Lincoln and Guba, 2000) or, from a related perspective, 'community consensus' (Heron and Reason, 1997), rather than 'truths' in an absolute sense. This emphasis on consensus does not imply any intention to ignore instances of difference or individual perspectives. On the contrary, for philosophical, ethical and practical reasons this approach emphasises the importance of inclusive representation of all stakeholder perspectives in an evaluation project. In the case of my own research, the possibility of identifying sufficient consensus on evaluation issues was explored, and alongside exploration of experiences of participation in the course provided the basis for the conclusions that are drawn.

Reflexive practice

When the construction of meaning is viewed as a situated, transactional process through which individuals interpret the actions and discourse of others who are themselves interpreters, the inherent reflexivity of interpretive practice becomes apparent. From this perspective, researchers can be seen to make sense of their subject through the interaction between their own 'interpretive frameworks' and those of others, and therefore are inevitably "*part of the setting, context and social phenomena* [they seek] *to understand"* (Schwandt, 1997: 136). Hence the need for constructivist researchers to adopt 'reflexive practice' - what Heron and Reason (1997: 282) call "*self-reflexive attention to the ground on which one is standing"* - not in order to suspend subjectivity, but to use the researcher's personal interpretive framework consciously as the foundation for developing new understandings. (A distinction is made here between 'reflexive' and 'reflective' practice, the former being used to refer to the attempt to address the implications of the hermeneutics of research practice, and the latter to refer to the activity of critiquing personal, professional activity and understandings). It is accepted that there are elements of any researcher's interpretive framework that will resist both fixity and identification. In general, however, reflexive practice can be said to involve explicit critical examination of the research process - for

example, in terms of the researcher's 'working hypotheses', motivations, status within the social context – as a means of illuminating how these factors contribute to orienting the direction of research, generating data, defining the research relationship, and arriving at interpretations. The structural role of power in the relationship between researcher and researched, and in the production of data, is one issue that arises here: as Hollway (1989: 39) notes, accounts of experience and viewpoint are always situated in contexts that include power relations: *"People's accounts are always contingent: upon available time and discourses… upon the relationships within which accounts are produced and upon the context of events recounted; upon power and the defences in operation against formulating different versions because of their self-threatening implications."* One obvious dimension of the research relationship in my project was my role as course leader, referred to - albeit jokingly - by one participant when she characterised me as "*the Vice-Chancellor… you were in charge!"*

Dialogue, debate and case (re)construction

The view of the hermeneutic process as essentially transactional, the aim to identify points of consensus and difference in interpretations and experiences of a situation, as well as certain ethical commitments, provide the basis for the participatory methodology of constructivist programme evaluation. The emphasis in procedural terms is on cycles of dialogical exchange in which all participants in the programme - not only the researcher – are exposed to each others' viewpoints. Issues and perspectives raised in one iteration are followed up in successive iterations until consensus, consensuses, or the impossibility of consensus, on evaluation issues has been established. Openness about contrasting perspectives, including the researcher's own intentions and perspectives, is important here for both ethical and practical reasons, since withholding information or views is taken to be a constraint on the joint construction of meaning. This methodology is seen as dialectical in that the researcher's *and* other participants' beliefs, preconceptions and practices may be challenged and transformed through the research (Guba and Lincoln, 1989).

As in action research, case studies are used in constructivist evaluation to represent and interpret multiple experiences and perspectives, and are viewed as co-constructed by the researcher and other participants through dialogical exchanges and other activities such as 'member-checking', whereby participants view and have input into drafts of the case study itself. Collaborative case (re)construction is therefore seen as fundamental to knowledge construction in this context. In that participants in my project agreed to co-operate with an action research agenda which was not theirs but was shaped by their concerns as well as my own, and was carried out using the kind of iterative, open approach to data collection and analysis outlined above, it is possible to advance the claim that the research was participatory and the resulting case study co-constructed. Nevertheless, this falls some way short of more radical positions on collaboration in inquiry in which it is advocated that all participants have the status of both co-researcher and co-subject, with an equal role in determining and implementing research focus, design and analysis.

A number of practical challenges arise in relation to constructing case studies from this standpoint. For example, 'thick' contextual description in the Geerzian sense is taken to be essential - but it is interpretive texture, rather than level of detail, that matters. At the same time, there is the question of realism and authority in representation. Narrative realism, the traditional mode of academic writing, presents itself as a neutral vehicle for conveying the truth, appealing directly to the reader's 'willing suspension of disbelief.' However, the work of ethnographers in particular has demonstrated that literary and research genres have more in common with each other than traditionally has been acknowledged, in that texts do not straightforwardly report reality but contribute to the process of reality-construction (e.g., Hammersley, 1992). Moreover, research writing commonly conceals both the transactional dimension of interpretation and the power relations between researcher and researched, leaving the researcher in a position of authority and control. Therefore, whilst Guba and Lincoln (1989) emphasise that 'grounded case construction' should reflect all perspectives clearly and provide a level of understanding that is credible and relevant to all participants in the study, it also might be added that it should present the 'story' in a way that challenges the powerful appeal of the text to realism and authority.

Validation

Knowledge that is produced through constructivist evaluation, as through action research, is conceived as 'working knowledge' – that is, context-specific, provisional knowledge that is amenable to new interpretations. Nevertheless, constructivist interpretation is subject to validation and may be considered problematic if *"incomplete, simplistic, uninformed, internally inconsistent, or derived by an inadequate methodology"* (Guba and Lincoln, 1989: 143). The view that positivist validation criteria are not meaningful in the context of the constructivist paradigm is evident in on-going reformulations of the influential 'trustworthiness' standards that were proposed originally by the same authors in the context of naturalistic inquiry, and that correspond broadly to the positivist standards of internal and external validity, reliability and objectivity. The 'trustworthiness' criteria are primarily concerned with the quality of the research product and the accuracy of the researcher's interpretations. In contrast, their more recent 'authenticity' criteria appear more in tune with the philosophical assumptions of the constructivist paradigm, in that they focus on the integrity, quality and transparency of the constructivist research process (Rodwell and Byers, 1997). Criteria related to thoroughness, fairness, reflexivity, sharing learning from the research with stakeholders and fostering positive action underpin the new approach; the question of how a research account was constructed, rather than whether or not it is true in an absolute sense, becomes the crucial issue (Schwandt, 1997). For example, from the perspective of 'authenticity' it is more logical to perceive member checking and triangulation as matters of ethical and methodological accountability rather than of achieving ultimate verification of meaning. Putting constructivist

validation criteria into practice therefore entails procedural and ethical commitments throughout the evaluation research process to ensure that due attention is paid to issues such as heterogeneity amongst participants, equality of opportunity to contribute experience and perspectives, and the relevance of the research to all stakeholders in relation to meaningful action and change (Lincoln, 1995). It is perhaps worth noting, in relation to the evaluation of networked learning programmes, that from this standpoint claims about learning having taken place, or about pedagogic effectiveness, could not be based solely on the researcher's interpretation of the meaning of on-line learning interactions through transcript analysis; whilst transcript analysis offers a useful vehicle for investigating these issues, such claims must be grounded in the interpretive perspectives of all stakeholders.

PRINCIPLES INTO PRACTICE: RESEARCHING NETWORKED LEARNING

As indicated above, principles from both action research and constructivist evaluation informed my approach to testing and refining the pedagogic model designed for the NetLinkS course. This section describes the overall framework and the methods adopted for the project, as a means of illustrating ways in which principles have been put into practice. Figure 1 represents the constructivist action research cycle in terms of four main phases, each of which is discussed briefly below; the project is still in progress (Phases 3-4).

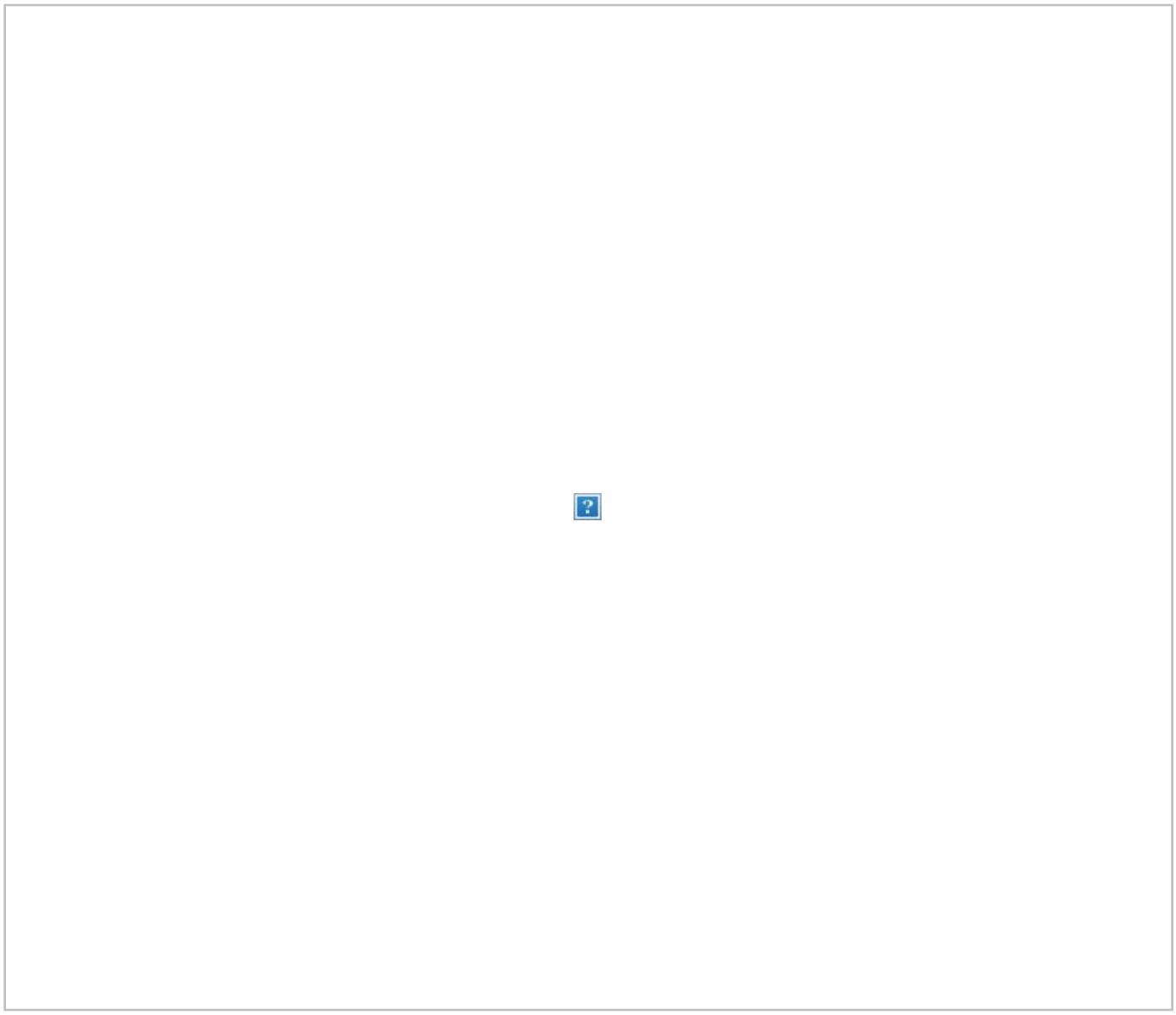

Fig. 1: Constructivist action research cycle

Inevitably, the cycle as represented above provides only a rough guide to the essentially messy, non-linear process of knowledge construction. Moreover, within the constructivist paradigm, (re)construction of social action as a case is understood as an emergent and participative process, encompassing cycles of data collection and analysis as well as the writing of the narrative account. The (re)construction of the case therefore could be said to have begun during the action phase of the project (Phase 2). Therefore the

diagram draws attention to the iterative, participative dimension of Phases 2 and 3, and the close connection between them. The cycle also extends back as well as forward in time, building on previous cycles of action research related to networked learning and moving towards testing the learning from this cycle in the future.

Phase 1: planning action and research

Development of research approach, including starting a research journal and establishing an arrangement with a 'critical friend' to observe the action and support my reflective practice throughout the project.

Investigation of field of action, i.e., information specialists' professional development needs, interests and circumstances in relation to networked learner support. Data were gathered by means of NetLinkS project activities such as focus groups and on-line conferences, as well as by means of personal desk research.

Design of pedagogic and technical models; feedback on the draft course design was gained via a small number of stakeholder interviews with learner support staff, and a technical pilot was carried out.

Preliminary focus on stakeholder 'entry conditions' as regards research and course participation - using a pre-course questionnaire focusing on participants' prior experiences of e-learning, and technical and practical aspects of their planned involvement in the course.

Phase 2: taking action - monitoring, reflecting, documenting

Establishment of participative framework for the research, e.g., by discussing the project with participants, gaining permission to use on-line transcripts in data analysis, establishing confidentiality standards, etc.

Participant observation within learning environment, focusing on asynchronous and synchronous on-line learning interactions that took place in public forums and in my own learning group's forums. Transcript analysis was carried out with the aim of gaining a broad overview of the characteristics, content and frequency of interactions in the context of different learning activities.

Cycles of on-line 'stakeholder' dialogue and debate. Some learning tasks were designed specifically to invite reflective discussion on learning experiences and evaluation issues in small groups or in the larger course forum, and participants also explored personal perspectives on participation in the course through informal discussions. Both observation and participation in on-going interactions enabled me to identify emerging themes from participants' perspectives, and to begin to explore these collaboratively.

Reflective dialogue with critical friend, peer debriefing and personal journal. These procedures enabled me to reflect critically and systematically on the issues arising out of action from both my own and other participants' perspectives, and to document this reflection. Regular review meetings with the course team offered opportunities to explore other tutor perspectives and like other forms of 'reflection-on-action' sometimes led to adjustments in the design of learning tasks and facilitation of learning activities.

Phase 3: (re)constructing, evaluating

Closing on-line discussion and feedback questionnaire. At the close of the course, a plenary discussion thread was devoted to overall course and learning review activities, including individual reflection, on-line discussion and completion of a detailed feedback questionnaire distributed in hard-copy by mail. Whilst reflective on-line discussions at this stage and before were a valuable means of exchange of data collection, not everyone joined in these and so the questionnaire (completed by all participants) proved important from the point of view of triangulation and inclusiveness. Based on themes and concerns that had emerged as salient from my own and others' perspectives during the course, it was designed mainly to gain more information about the logistics of participation, evaluative feedback on major elements of course design and facilitation, and perceived learning outcomes. Quantitative data were not collected with the purpose of generalising findings to a wider population, but as a contribution to the detailed description of this setting and to the (re)construction of the action as a case. Questionnaire feedback was disseminated rapidly via NetLinkS project reporting.

Research conversations. Face-to-face research conversations were carried out in the months following the course with the large majority of participants. Using the term 'conversation' rather than 'interview' here is intentional, since this draws attention to the dialogic and dialectical status of such interactions within the constructivist paradigm; interpersonal processes associated more readily with 'real' conversational exchange than with classic research interviewing are fundamental to constructivist methodology. My aim in this context was to facilitate reflective dialogue, as a further means of eliciting, and enabling comparison between, different experiences and views within the stakeholder group, and of exploring the extent to which consensus or divergence on specific issues might be identified. Participants often already knew something of others' experiences and views (including my own); in conversation, I drew further attention to similar or contrasting experiences and perspectives, and to my own understandings,

where I judged that this would assist in clarification of issues being discussed. I also adopted strategies to address issues of power in the 'research relationship', albeit on the assumption that whilst it might be possible to move towards identifying ways in which power impacted on accounts produced within this context, it would not be possible to eliminate its presence or effects. Participants' feedback on these conversations suggest that they were often found to be valuable in contributing to further 'sense-making' related to personal learning, as well as in contributing to the research project of which they were part.

Writing and member-checking. Drawing on all forms of data collected during the project, the case study aims to present a 'thick description' of participation on the course. Since the purpose of case (re)construction is to provide a basis for evaluation and improvement of my educational understandings and practice, the narrative focuses on events, issues and perspectives that indicate strengths and weaknesses in the pedagogic model and its implementation. This entails adopting a 'warts and all' stance, highlighting participants' difficulties and frustrations as well as their satisfactions and successes, and drawing attention to points of tension or contrast as well as areas of common experience and consensus. Thematic case descriptions are followed by a reflective commentaries, based on both my own and other participants' evaluative perspectives. Thus, whilst the case descriptions (re)construct key aspects of 'what happened', the case commentaries explore the question 'how should this be interpreted?' in relation to educational objectives, assumptions and strategies. In an effort to emphasise the role of subjectivity and reflexivity in the interpretive and textual aspects of this work, the case study draws attention to my own part in framing the research focus as well as in contributing to the processes of action and sense-making, and aims to ensure inclusive, detailed representation of the individual 'voices' of other stakeholders.

Phase 4: Theorising, disseminating

Developing 'living theory'. As already indicated, there is a close relationship between evaluation and theory-building in the research approach adopted for this project. The evaluation research has illuminated a number of developmental issues that enable validation and further refinement of the pedagogic model tested on the course. The refined model offers a principled conceptual framework for supporting networked practitioner learning within four developmental phases identified provisionally as: access and participation; orientation and socialisation; structured learning; self-directed and co-operative learning (work in progress). Although developed to support practitioner learning in a specific context, this conceptual framework has elements that are likely to be applicable to other professional development areas within information science and beyond, and also constitutes a (researchable) action-plan for my own future practice.

SOME IMPLICATIONS FOR PEDAGOGY

Carrying out the research project discussed in this paper has enabled me to examine issues and processes related to practitioner knowledge construction from two perspectives. I have explored the learning experiences of information specialists on a networked professional development course. At the same time, I have examined the question of practical knowledge construction from a personal standpoint, through the experience of carrying out 'networked action research'. Aspects of this experience that I have found particularly significant in reaching new understandings about my field of action and practice include the following:

The opportunity to learn through professional action, engagement with the relationship between personal experience and theory, and the challenge to theorise - not just evaluate - personal practice;

The opportunity to learn through open, collaborative interaction with stakeholders in my practice, as well as with my 'critical friend', and through highly focused reflective dialogues in each case. Both asynchronous and synchronous, text-based on-line exchange proved to offer a powerful (and enjoyable) means of articulation and reflection, but research conversations in face-to-face settings were essential to my learning experience, not least because of the amount of ground that could be covered in a relatively short time;

Constructing meaning through exploration of multiple viewpoints and through writing - and rewriting - 'thick' description, with all that this entails in terms of engaging with, making sense of and representing, diverse responses to shared experience.

This experience, and what is known about practical knowledge construction in other situations, raises some interesting issues about pedagogic purposes and methods in relation to practitioner learning in networked environments – for example, in terms of connecting virtual environments for learning with the environments in which practice takes place, designing and facilitating learning tasks and environments that will support reflective dialogue effectively, and using the on-line medium creatively to facilitate exploration of multiple viewpoints and varied forms of writing for 'sense-making'.

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