THE ROLE OF WEB-BASED COMMUNITIES IN TEACHER PROFESSIONAL DEVELOPMENT

EXAMPLES DRAWN FROM MIRANDANET: A LEARNING COMMUNITY – A COMMUNITY OF LEARNERS.

Summary

Traditional models of learning have reified into concepts of learning, with the teacher frozen as the embodiment of skills and knowledge that have to be passed on to students. The pace of change in industry and technology has burst through into schools. The syllabus has been expanded to the point of absurdity: the application of knowledge has become a critical issue for those who navigate these shoals as captains of industry. Just-in-Time has become the watchword for Learning, as it has in industry. Whereas Industry has re-engineered itself, however, Education, like Lot's Wife, looks backwards.

The pace of change often means that teachers carry a train of conceptual baggage, with expectations as to what should be taught and why it should be taught. These conflict with students as practitioners, who battle with their teachers and academics who act as the gatekeepers over what constitute standards.

Knowledge is seen as contained in artefacts – 'knowledge artefacts', whereas for many students knowledge is contained within the artefacts of production: the artefacts produced.

The MirandaNet community consists of teachers and academics as practitioners, who embody the problems faced by their students at the bleeding edge of technology. Within this community cognition is manifested as both materiel and social. Information and Communication technology is both the network for communication and also the collective memory of the community.

The website acts as the repository of memory: newsletters, case studies, the forum for meetings, workshops and conferences; the source of expert knowledge, with the posting of questions and collaborative learning.

This chapter investigates four threads in the development of teacher development.

The first thread examines the ways in which the learning community can be seen as a form of distributed cognition. The second deals with factors contributing to teacher participation, the ways in which the online learning community itself requires, and develops, new skills and concepts. The third thread deals with the re-conceptualisation of learning, whilst the final aspect focuses on the co-construction of knowledge in an online environment.

The Learning Community as a form of Distributed Cognition

MirandaNet, as the social construction for how we learn and why we learn, forms the focus for life-long learning. The distributed cognition manifested within this grouping of practitioners disseminates into the wider structures of education. A number of small-scale studies are described that focus on the ways in which e-learning can be integrated in a range of settings for teachers and their pupils. They examine a range of projects: those based in classrooms; home-school environments; after-school activities; school-based continuous professional development (CPD); subject-based CPD in national contexts and post-graduate accreditation. The work of primary and secondary school pupils and adult learners is considered.

Factors contributing to teacher participation

Web-based communities of practice are seen as a critical component in the development of a knowledge society. This is particularly so in Education: the vision of e-learning, empowering learners, supporting creative and innovative teaching, is dependent on teachers being able to access professional forums in which they can construct praxis appropriate to new ways of teaching and learning. A number of such online communities of practice are examined, and the factors that contribute to teacher participation described. The extent to which knowledge is constructed in these forums is also examined.

The re-conceptualisation of learning

The drive for e-learning as a cost-effective and flexible channel for distance and life-long learning has focused on the benefits of a just-in-time delivery of content to the learner. The assumption is that knowledge is inseparable from, and follows, content. An obvious and important aspect of e-learning has been the need for online tutors to deploy a range of Soft Skills to support learners. E-learning relies on e-tutoring: the concept of e-tutoring embodies mentoring, coaching and facilitating techniques. In an online environment in which student discussion forums constitute one of the tools for knowledge construction the role of the facilitator assumes greater importance that of mentor, moderator or coach. The ability to facilitate a discussion or a debate becomes central to the construction of new knowledge for the participants (Holmes et al, 2001) In spring and early summer 2004 a group of teachers from diverse backgrounds engaged in an intensive course in e-facilitation techniques. This section describes how they learned and were taught, and evaluates the ways in which an online collaborative environment enabled the development of the basic skills required for e-facilitation.

The effectiveness of individuals as both contributors and e-facilitators in a range of online educational forums is assessed, together with the contributions each made, and the e-facilitation techniques deployed in various forums are detailed. Outcomes are measured against the input that individuals made. The ways in which the participants were able to construct new knowledge in the online communal context are detailed. These are compared with some other models of learning in an online environment: Cuthell (2001); (Salmon (2002). Finally, this section evaluates the ways in which e-facilitation enables individuals to construct new knowledge, both with and for others. An interesting consequence of participating in a course of this nature is that perceptions of teaching, learning and knowledge change. Do these perceptions follow through into the daily praxis of the teachers? The implications for teaching and learning in a range of educational environments are identified.

The communal construction of knowledge in an online environment

The final section describes the ways in which the full affordances of the MirandaNet website can be utilized: as a medium for publishing, peer-review, feedback and collaborative professional development. A number of small-scale studies that focus on the ways in which e-learning can be integrated in a range of settings for teachers and their pupils are described. They examine a range of projects: those based in classrooms; home-school environments; after-school activities; school-based continuous professional development (CPD); subject-based CPD in national contexts and post-graduate accreditation. The work of primary and secondary school pupils and adult learners is considered.

1. The Learning Community as a form of Distributed Cognition
Background

By 2000 the MirandaNet Fellowship had developed considerable experience in the use of learning platforms and learning communities. The Director of MirandaNet, Christina Preston, described the experience of the community in 'Life Long Learning in the Electronic Age':

"MirandaNet is an international Fellowship of educators, established in 1992, who have been using Information and Communications Technology (ICT) to change their teaching and learning practice and to develop innovative models for continuing professional development. The mission statement (developed by its on line community,) proclaims that MirandaNet strives to enrich the lifelong learning of professionals involved in education. Using advanced technologies the Fellowship spans social, vocational, cultural and political divides to create lifelong learning solutions for the education market place. MirandaNet provides an innovative and inclusive forum for the agents of change that recognises individual learning patterns through peer mentoring and action research strategies. Research, evaluation and on-going discussion underpins and supports good practice and the sharing of enabling strategies. Dissemination and publication are central to the Fellowship process.

Central to this learning community communications internally and publicly are a web site, MirandaNet, and Mirandalink, the closed conference system. The central research interest of MirandaNet is in the use of action research methodology as a means of empowering teachers using ICT in the classroom. The Fellowship has been able to study wider applications of on line community building since 1999 because they have been piloting Think.com, a web based learning environment, in partnership with Oracle. The system already has 10,000 users." (Preston, 2000)

Definitions of a learning community

Initial definitions of a learning community emerged in the USA from 1990 onwards. They were seen as communities consisting of a large number of students and a small number of teachers, with the community supporting and developing the students' learning. In this context the learning community was a part of the wider community of a college or university in which the learning was situated. (Gabelnick et al.,1990; Tinto, Love, and Russo 1993; Dana Foundation Report 1990)

In this context creativity and learning become synonymous: for those engaged in teaching, the experience of being a learner once more is a valuable corrective to what have often become 'professional reflexes'. The opportunity for creative collaboration within a learning space is often in sharp contrast to the working environment of curriculum delivery, administration and meetings.

What is a Learning Community?

A learning community is a social structure that "purposefully restructures the curriculum to link together courses or course work so that students find greater coherence in what they are learning as well as increased intellectual interaction with faculty and fellow students" (Gabelnick (1990 p. 5)). It usually involves some combination of collaborative and active learning, team teaching, and interdisciplinary themes or approaches. Essentially, a learning community is "any one of a variety of curricular structures that link together existing courses--or restructure the curricular material entirely--so that students have opportunities for deeper understanding and integration of the material they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise" (Gabelnick, (1990 p.19)).

The idea behind a learning community is to provide students and faculty with an opportunity to experience courses clustered with others connected by time, space, and intellectual interests. Learning communities provide students with an opportunity to meet others who share common classes, which in turn "allows students to feel comfortable in those classes and enables them to build a network with peers that then functions as both an academic and social support system by providing study partners, sources of class notes, and help with homework, and class assignments" (Tinto et al,. (1993, p. 18)). Clustering students to form learning communities allows faculty to "teach students college-survival and text processing skills; provide enrichment and accelerated instruction in selected courses; provide adjunct or supplemental instruction congruent with specific course content, lecture, and objectives; help students build personal communities around shared academic interests, and train students to study cooperatively, to become a support network for one another, that is, to become partners-in-learning" (McEady-Gillead 1992, p. 4). Learning communities are seen as especially appropriate for lower division general education courses and for freshman. In essence, they "fundamentally restructure the curriculum and the time and space of students" (Smith 1993, pp. 32-33).

The expectations in the early 1990's, then, were essentially administrative and pedagogical: part of the academy, rather than a community of equals. Nevertheless, it was clear that the existence of the community predicated a range of learning outcomes that were dependent on the community.

Broadening expectations

At the same time as learning communities were identified as transformational in the relationships between learners, online communities were emerging that themselves facilitated learning.

Network communities are a form of technology- mediated environment that foster a sense of community among users. One of the design dimensions of network communities is developing a sense of persistent, shared space - an environment that frames the presence of multiple actors and provides mutual awareness. The shared space of a network community offers the potential for verbal and non-verbal communication at all times, but the space does not exist only when explicit communication is taking place. There is a "there" there, even when participants are quiet or absent.

In 1993, Rheingold identified the opportunities for the development of on-line communities

"Virtual communities are social aggregations that emerge from the Net when enough people carry on public discussions, long enough and with enough human feeling to form webs of personal relationships in Cyberspace."

Technology and transformations

Heppell (1998) saw the opportunities for learning communities and preserving diversity on the Net. "The ability to contribute is not only important in building effective communities, it is also the only protection for small cultures; without this two way bandwidth, powerful authoring tools and the resultant opportunity to originate material these small cultures (and Europe is rich in their diversity) will be engulfed in the same way that they have been by the economies of scale of television or cinema. Culturally, dissemination technology is imposing, communication technology is empowering."

Online communities, then, were communities because of the technology. Their existence was both dependent on and a result of the technology, with its use embedding itself in the interactions of their members and their praxis. The more the community members participated, the more the virtual community embodied itself: and the embodiment of the community was the listserv or website which was its 'home'.

Heppell's concept of technology as empowering, however, is more than traditional concept of technology as a tool. The affordances generated by the actual tools of computers, keyboards, monitors and a telecomm system are the base on which the superstructure of the virtual community and its virtual tools are constructed. These generate a set of affordances which develop with each of the social interactions that take place within the community. As the interactions increase, the knowledge embedded within the community becomes available to all of its members. Each iteration becomes more powerful than its predecessor.

Learning and the online community

Learning to operate successfully within an online community involves stages that are remarkably similar to the stages of cognitive development. The first stage is dependent upon an understanding of email, listservs, websites and the ways in which the user can interact with these. Some users experience a long period of frustration before they are able to participate. These may be compared with the Piagetian sensorimotor/ preoperational stages, or Bruner's enactive phase of learning.

The second stage requires the participant to learn the norms, the routines and etiquette, and the management systems of the community. In many ways these mirror the concrete operational or iconic phases of learning theories.

When the user is able to operate independently, mirroring Piaget's stage of formal operations, or Bruner's symbolic phase, the interactions within the community become transparent. Not only that, the competences can be transferred to other online communities.

The learning curve for the individual, then, is supported by the cognition distributed within the community. This distribution may be within the structure of the community: help files; automated messaging; checks supported by the software on which the community is based. Cognition is also distributed among exchanges contained within the archive to which members have access. The greatest store of cognition, however, is distributed among the members of the community, to which the individual has access.

Scoop: an online learning environment

MirandaNet members spent a year trialling software from the Oracle Corporation designed to be used to support educational communities. Feedback from users enabled the software development team to effect changes on a continual basis. Of possibly more importance was the way in which users were able to extend and expand their own understanding and use of the site. The software, Think.com, was originally called Scoop.

Distributed cognition in an online community.

The experiences of MirandaNet members encompass a range of roles. The themes with which they engage are as diverse as the backgrounds from which they are drawn. What is shared, however, is an involvement with education and learning. The involvement is both personal and professional, with demarcation between the two impossible. The ways in which one learns shapes one's teaching, and the ways in which one learns shapes further learning.

It is, perhaps, this last factor that provides the key to our understanding of the ways in which cognition can be distributed in an online learning community. Using the environment stimulates further learning, and this in turn shapes the way in which the environment is used. The debates about lurking provided the key for this: that active learning is about participation, and engagement with the online learning environment counts as participation. The act of signing up to an online community and reading the postings provides access to the cognition distributed within that organisation.

Those who are active within a community, in that they contribute to postings, initiate debate and synthesise the submissions of others, are increasing the sum of the cognition distributed within the artefact/environment. This artefact/environment, consisting of hardware, software and what Lovink refers to as 'wetware', exists on a server, on people's hard drives as an archive but, most importantly, within the collective consciousness of the people – the 'wetware'. The cognition may be centrally stored by hardware, but it is distributed between the users' hardware and the users' consciousness. And it is available for others to use.

2.   Factors contributing to teacher participation: What does it take to be active?

From 1997 to 2002 the Department for Education and Skills in England and Wales (DfES) invested resources in ICT training for teachers and school librarians, the construction of a broadband network to

connect all schools to the internet, and the development of the National Grid for Learning (NGfL) both as a portal for curriculum materials and a forum for curriculum development.

At the end of this period the DfES engaged in consultation with a wide range of stakeholders, and produced the document, 'Towards a Unified e-Learning Strategy' (DfES/0424/2003). E-learning was seen as '*contributing to practitioner knowledge in all its forms*' (p.5). Innovation in teaching and learning would be developed by '*online communities of practice*' (p.49). Indeed, the National College for School Leadership has almost 30,000 school leaders registered for its Talking Heads online community.

Towards definitions of an online community of practice

Initial definitions of a learning community emerged in the USA from 1990 onwards (Gabelnick, MacGregor, Matthews, & Smith, 1990; Smith, 1991, 1993). They were seen as communities consisting of a large number of students and a small number of teachers, with the community supporting and developing the students' learning. In this context the learning community was a part of the wider community of a college or university in which the learning was situated. (Dana Press, 1990) In this context creativity and learning become synonymous: for those engaged in teaching, the experience of being a learner once more is a valuable corrective to what have often become 'professional reflexes'. The opportunity for creative collaboration within a learning space was seen in sharp contrast to the working environment of curriculum delivery, administration and meetings.

Stages in establishing a community of practice

Current models for e-learning and the construction of knowledge through online communities are predicated on stages that move from access and motivation, through information exchange and the construction of knowledge, to the development of links with other communities (the five stage model - Salmon, 2000; 2002). Preece (2000) similarly identifies five components of online community activities.

It would appear, therefore, that teachers would find these stages or components an integral part of community construction, and that the opportunity to develop online communities to build professional praxis could contribute to what the DfES identifies as critical to the knowledge society: '*the achievement of their potential for all learners; and an education workforce empowered to change*' (p.10).

Community?

Learning and the online community

The social phenomenon that is learning in the MirandaNet community is constructed from a number of elements. Cognition is distributed among exchanges contained within the listserv archive to which members have access. It is contained in the case studies and papers published in the various MirandaNet e-journals, and the peer reviews and reflections posted by members. The greatest store of cognition, however, is distributed among the members of the community, to which the individual has access (cf. Wertsch, 1991).

It is to be expected, therefore, that teachers would be able to map their own pedagogical skills, concepts and expectations into a online community of practice and build the skills required of twenty-first century educators.

Work with a range of online communities, however, suggests that a number of factors specific to teachers within England are likely to inhibit the early move towards communities of practice as the norm, and that the five-stage model identified by both Preece and Salmon may not necessarily be that most appropriate to teachers and their communities.

Active learners, Passive learners

A common observation is that one third of online community members are active, one third read postings and only occasionally contribute, and the final third are inactive. A term commonly mis-applied to those not termed 'active' is that of 'lurker'. It is possible for individuals to simply use an online community to off-load cognitive responsibilities: to throw in a question and then retrieve the answer when others have worked their way through it. The question about lurkers relates to this: if an individual is active, then shared cognitive labour takes place (Resnick, 1991). The question then arises as to whether the one third of members who are readers, or the one third who are not really engaged see themselves as not being part of the shared process. The participants in the working out of a problem are obviously engaged in shared cognitive labour (Salomon, 1993). The issue is how other members of the group perceive themselves.

Whilst those who are active participants are likely to benefit from what Salomon terms 'cognitive residues' – advances in their own competencies – those who have off-loaded responsibility (or who are simply passive observers) have the opportunity of following the discourse and develop their own higher-level cognition (cf Vygotsky, 1962).

It would be expected, therefore, that new members of a community are more likely to find themselves in the position of being a passive observer, or someone who off-loaded responsibility to the more long-established members. Where knowledge artefacts are made available to the whole of a community, newcomers assume that knowledge is either 'out there', or located among 'experts' (cf McShane, 1991). Gronn (2000) observes that mind and mindfulness are not simply restricted to the interior mental life of individuals, but are part of socially distributed cognition through collaborative activities and social relations.

Salomon's observation about the role of individuals in distributed cognition within a network has particular resonance here. The suggestion that those members of a community who read postings, but who rarely become engaged in active exchanges, have more opportunities to develop higher level cognition would appear to be substantiated by postings towards the end of the debate.

Traditionally, the mastering of cultural tools was mediated by an older generation (teachers) to the younger (students). There is no direct correlation between this process and the computer as cultural tool. Learning how and why to use a computer is a continuous process: there is no fixed point of mastery that can be transmitted from teacher to pupil (Cuthell, 1999b; 1999c; 2000). The understanding that learning is a continuous process, and that the computer is not only a cultural tool but a tool for learning, should therefore effect a shift in the praxis of teachers.

It is, perhaps, this last factor that provides the key to our understanding of the ways in which cognition can be distributed in an online learning community. Using the environment stimulates further learning, and this in turn shapes the way in which the environment is used. The debates about lurking provided the key for this: that active learning is about participation, and engagement with the online learning environment counts as participation. The act of signing up to an online community and reading the postings provides access to the cognition distributed within that organisation.

Of Practice?

Those who are active within a community, in that they contribute to postings, initiate debate and synthesise the submissions of others, are increasing the sum of the cognition distributed within the artefact/environment. This artefact/environment, consisting of hardware, software and what Lovink (1995) refers to as 'wetware', exists on a server, on people's hard drives as an archive but, most importantly, within the collective consciousness of the people – the 'wetware'. The cognition may be centrally stored by hardware, but it is distributed between the users' hardware and the users' consciousness.

In the 'real world' there is constant interplay between artefacts, users and the cognition that is distributed through society and its members. In an open society this dynamic shapes the ways in which we work and think.

Interactions within five very different types of communities of practice may provide some indicators as to those factors that determine their effectiveness: MirandaNet; the GTC Discussion Forum; the GTC e-facilitator forums; History Teaching and school professional development forums.

MirandaNet

Mention has previously been made of MirandaNet, which was was established in 1992 as "an international Fellowship of educators, … who have been using Information and Communications Technology (ICT) to change their teaching and learning practice and to develop innovative models for continuing professional development." (Preston, 2000) The mission statement was developed by its on line community: "MirandaNet strives to enrich the lifelong learning of professionals involved in education. Using advanced technologies the Fellowship spans social, vocational, cultural and political divides to create lifelong learning solutions for the education market place." What MirandaNet does is to provide an innovative and inclusive forum for the agents of change. This is achieved through peer mentoring and action research strategies (Cuthell, 2001). Underpinning the research and evaluation is on-going discussion. This supports good practice and the sharing of enabling strategies.

The central research interest of MirandaNet is in the use of action research methodology as a means of empowering teachers using ICT in the classroom. Dissemination and publication are central to the Fellowship process. In addition to organising conferences MirandaNet publishes on its website (www.mirandanet.ac.uk). Mirandalink is its closed conference system.

A community discussion on 'lurking' produced a range of responses from members, with much discussion focusing on the role 'lurkers' play in defining a community. Simply 'knowing that they are there', was thought to play a large part in the sense of community. The identity of any community - physical or virtual – encompassed a range of members, not all of whom could be expected to be active. The facility of

many communities to see a list of members was important in 'getting to know' a community (socialization, in Salmon's model).

Further, many communities contain a number of background conversations, where people communicate directly, rather than through the public forum. Even though they appear to be 'lurking' they are, in fact, 'active'. People who are members of online communities of practice are often members of several, with varying degrees of activity. The transfer of ideas, information, hot topics, requests for help and so on between communities is often undertaken through private, rather than public, online exchanges.

The concept of information transfer from one community to another, facilitated by individuals who may be active in one community whilst lurking in others, provides an illustration of the concept of off-loading cognitive responsibilities in order to benefit from higher-level cognition. At the same time, it introduces the possibilities of shared cognitive activities which, although facilitated through Mirandalink, take place away from the main MirandaNet arena. It is likely that these activities will be the ones which are likely to yield 'cognitive residues'.

The range of interests shared by members of the MirandaNet community is such that, as a community of practice, it contains sufficient diversity of voices to prevent the forums being dominated by a few. The MirandaLink forum is democratic, requires relatively light moderation and is self-regulatory. It runs though I listserv and is distributed via email. This is, perhaps, the central difference between this community and the others.

The General Teaching Council

When the General Teaching Council for England was established an online presence was seen as an integral part of its services to members: policies could be published and updates, news communicated and online discussion forums would enable members to contribute to debates on GTC policy and educational issues. The discussions would be supported by e-facilitators, and archives would be available as discussions closed. From the GTC's inception, then the concept of an online community of practice was central to its operation.

Issues surrounding the use of GTC teacher registration data to verify online participant details meant that individuals could register pseudonymously. This, combined with resentment amongst some teachers at the government imposition of the GTC on teachers, resulted in a number of debates being hijacked by individuals who had a vested interest in the Council being less than successful. Strategies were developed in other online forums by individuals who acted as trolls, who disrupted debate and in general provided disincentives for other members to participate in debates or, even, visit the site. Some debates were successful: 'Research of the Month' always managed to attract sufficient contributors to ameliorate the efforts of those who would otherwise have dominated the discourse. On other forums, however, the role of the e-facilitator was reduced to that of firefighting, like a teacher attempting to control a willfully ill-disciplined class.

The critical factor was that many of the teachers who successfully contributed to the debates only did so after school hours: in many cases, quite late in the evening. The asynchronous nature of these posting meant that there was often little sense of dialogue, but rather a series of position statements.

The GTC e-facilitators

In an effort to support the voice of the ordinary teacher in these debates the GTC invested in the recruitment and training of a cohort of e-facilitators. The training was developed by MirandaNet in conjunction with the Institute of Education, University of London, and led to a post-graduate diploma for those completing the course. An Action Research project into online learning or communities formed part of this.

After the first five months of the project an analysis was carried out of the use of the online forums by those teachers undergoing training as e-facilitators. Table 1 indicates the number of posts to the closed e-facilitator forums. Thirty-three e-facilitators formed the cohort.

Table 1. Number of posts to the e-facilitator forums

No. of posts	0	1 - 9	10 - 19	20 – 29	30+
No. of contributors	5	5	3	12	8

(n=33)

Thirty percent of those training to be e-facilitators made fewer than ten contributions to the online forums. In these the expectation would be that they would at least have reached level three – Information Exchange - and four – Knowledge Construction – of Salmon's Five Stage Model. The anomaly is even more marked when we examine interactions in the public GTC Discussion Forums. Table 2 indicates the spread: whilst following the course for e-facilitators, only eleven members of the group contributed to the open GTC discussion forums, and of those only five participants contributed on six or more occasions. Clearly, then, the nature of participation must include more than a count of the number of times an individual posts to a forum. The 3:3:3 ratio does not apply to this cohort.

Table 2. Number of posts to public forums

No. of posts	0	1	2	3	6+
No. of contributors	22	1	3	2	5

There would appear to be a number of factors that either inhibit, or limit, participation in the GTC Online Community by e-facilitators. The first is that of access. There are currently very few schools in the UK in which most teachers have their own computer, with online access, on their desk during working hours. Those lucky enough to have a computer will be using it for curriculum work. Participation will therefore be restricted by having to share computers with other colleagues, or by using a computer from home – usually at the end of the day, after schoolwork has been completed.

A significant factor that limited contributions to the general GTC forums was that they were dominated by a small group of disruptive and aggressive people (teachers?) who allowed no space for views other than their own. Newcomers were often driven away. The perception of many of the e-facilitators was that they had no wish to become embroiled with anti-social discourse. Debate in the forums was often at the level of personal opinion backed by anecdotal experience, with little sense of achievement when the forum closed.

The software used for the forums often led users to expect that there would be new messages when, in fact, message threads had moved to the right, leaving postings tagged as 'New' when, in fact, they were simply the final post in that thread. This created the expectation that there would be new contributions to a forum: these were often not met.

History Teachers Forum

The History Teachers forum is a moderated online forum with almost 700 members. Any member can establish a new discussion forum or a new thread within an existing forum. Most postings, however, are made between eight and ten in the evening, and the member profile would suggest that the majority of those active in the forums are in the 22 – 30 age group. Although the site has almost 700 members registered, during the period of research fewer than 50 made regular contributions to forums, with a handful of members initiating new forums. In a number of cases the initial post to a forum was designed to be provocative and draw a response from others. This troll-like activity often had to be moderated both on- and off-list. Given the commonality of interest – most of the members are History teachers in secondary schools – one would expect that these forums would become a significant community of practice. This expectation had yet to be met during the period it was studied.

An in-school community

The final group studied constituted a much smaller community with a much narrower focus of practice. Its members formed the Teaching and Learning group in an 11 – 16 comprehensive school in the North East of England. The group met regularly, held staff development events for the whole staff and supported one another in their curriculum development work. An online community of practice seemed to be a natural extension of the work of the group: asynchronous discussions and contributions would support their work, and a body of expertise and material could build online to become an engine of distributed cognition for all teachers in the school. The teachers therefore decided to build an online discussion space: the Teachers Talking Online project.

This project was predicated on the assumption that staff who were engaged in collaborative work to develop teaching and learning across the curriculum would extend this to include an online community of practice. This built on a simple initiative that saw staff working on a Word document on the school network and which developed into a collaborative document that consolidated ideas and techniques to be incorporated into teaching. A series of problems with the school network brought this to a premature end. The allocation of laptops to those staff without a machine at home was seen as a way of resolving those issues and moving

towards an online community of practice. It was assumed that teachers would seize the opportunity to take charge of their own learning and work autonomously. All of the laptops provided to staff were equipped with a modem. It was further assumed that school ICT support, together with expertise across the school, could advise on the choice and installation of a suitable ISP using dial-up facilities.

What happened was that instrumental factors precluded an easy take-up of online communities on the part of teachers. There were, however, other factors. An online community presupposes an acceptance of the notion that knowledge is constructed, both socially and communally. Many teachers, however, conceive as knowledge as being 'out there'; something that has to be sought, or transmitted. In the context of an online community the assumption is that the community is something that contains distributed cognition, rather than a creative space in which all participate.

ICT access during working hours

Access to ICT during the working day is a problem for all teachers. School resources are usually fully utilised: staff facilities often under-resourced. When teachers use school facilities outside teaching hours the use is usually tied to administrative tasks and the preparation of teaching resources. The use of online communities, the engagement in dialogue and the integration of these into individual professional development are activities that take place after working hours at home – if at all. Few teachers have their own school email address: most use web-based email systems at school. Furthermore, the imposition of area-wide security systems by network administrators inhibits a wide range of uses and restricts the integration of web-based computer use in both classroom learning environments and professional practice: the 'permissible technology practice in schools' (Tashner et al., 2004) becomes restrictive.

Observations

None of the barriers identified in this school survey are insuperable. Individually they would be irritants: cumulatively they are often enough to prevent the take-up of the elements of elearning that are critical to it becoming embedded in individual praxis and institutional policy. The use of web-based communities of practice; regular access to DfES, QCA and NGfL resources; the constant updating that is a feature of other professionals' lives; regular participation in the General Teaching Council forums and use of the Professional Development Framework: all of these are predicated on the use of ICT and online services as an integral part of professional practice. Institution-based online communities remain problematic: the physical environment of the school obscures the need for a virtual space for dialogue and collaboration. It is almost as if daily face-to-face contact with colleagues removes any perceived need for online contact. Furthermore, such barriers as are encountered with ICT become reasons for most teachers not engaging with a new environment.

In many ways the integration of online communities of practice within the working praxis of teachers is based on the assumption that, because teachers all work in the same occupational area they share similar interests. Since an online community is dependent on access and motivation, builds on socialization, generates real worth through information exchange and knowledge construction and becomes a repository of distributed cognition when it reaches its final stage there is rarely a time when any of the teacher communities can be said to have stabilized. The very nature of communities of practice, their fluidity and flux means that they can manifest all the stages seen in the models of Preece and Salmon. Furthermore, the disruptive individuals who have been observed in a number of the forums preclude the online socialization that is an important factor of communities.

The infrastructure of schools significantly limits online access: most of those who contribute to online communities do so from home, in the evening, or at weekends. There are obvious gender implications in this, and it is perhaps significant that those who were classed as 'trolls' by moderators were male, posting in the late evening.

The most successful educational communities of practice of those examined, however, are contained within MirandaNet. There are a number of factors that contribute to this. The first is that its members, although predominantly UK-based, include a number of international colleagues. Its members are drawn from education, teacher education, research, the media and industry. The second is that, because it is based on a listserv, items appear in people's email in-boxes: they don't have to log in, enter passwords and scroll through old messages before they find relevant contributions. The third is that MirandaNet is supported by regular face-to-face socialization.

The final and perhaps most significant point is that identified by Stuckey (2004) – that successful communities are led. It can't be assumed that a Community of Practice can happen spontaneously: it must be established, nourished, facilitated and led, all of which involves a considerable amount of work. Leading and managing an online community requires time; participating in an online community requires time. Given all

of the demands made of educators participation in online communities should not be seen as another imposition, another task to be completed at the end of an overstretched day. Communities of Practice should provide the reflective space that has for so long been missing from the lives of teachers.

Communities of Practice for teachers are in their early stages in the United Kingdom, and their use and uptake is fragmented: indeed, the range of forum topics on some sites is a patchwork, with insufficient contributors to make a significant impact on information exchange and knowledge construction. In these early days the danger is that dogmatic or hostile voices will claim the territory as their own; the more hesitant will be reluctant to contribute to debate, and the silent audience will find nothing to claim their interest.

Only the understanding that online communities of practice form a commonwealth, rather than areas of vested interest, will help to embed them in teacher praxis and build a new pedagogy for this century.

3. The re-conceptualisation of learning: beyond collaborative learning

Communal construction of knowledge in an online environment; learning as a participatory activity

Developing e-facilitators

Mention has previously been made of the experience and expertise contained within the MirandaNet community, and the MirandaNet Fellowship is increasingly seen as an important stakeholder in e-learning and teacher continuous professional development. The Department for Education and Skills engages MirandaNet in its consultations; the General Teaching Council commissions the Fellowship to train its e-facilitators; industry partners such as Promethean commission MirandaNet to establish action research projects.

This section of the chapter describes the work of MirandaNet in extending the concept of online collaborative learning. In spring and early summer 2004 a group of teachers from diverse backgrounds engaged in an intensive course in e-facilitation techniques. This paper adopts an ethnographic perspective to describe how they learned and were taught, and evaluates the ways in which an online collaborative environment enabled the development of the basic skills required for e-facilitation.

The project had been initiated by Select Education, an agency specialising in solutions for the teaching workforce. The main focus of their work is to recruit and provide supply (relief) teachers to schools with manpower shortages. The role of a supply teacher is complex, and yet many of the support mechanisms available to full-time teachers are not available for temporary staff. This is particularly so in the case of professional development: the majority of supply teachers do not enjoy the same entitlement to professional development as those teachers employed in schools. To this end Select Education formed a partnership with MirandaNet. The aim of the project was two-fold: first, to provide a professional development opportunity for their teachers, and second, to then use the expertise gained to staff online professional development forums on the Select Education website.

The eight teachers had been awarded scholarships by Select Education. MirandaNet provided a blended learning course consisting of a face-to-face component, an online discussion forum, an e-journal for the submission of coursework and case studies, and access to a range of educational discussion forums. The learning environment, therefore, provided both theory and practice: student assignment tasks were designed to demonstrate both knowledge and performative evidence.

The students, from Bulgaria, the Caribbean, Nigeria, the United Kingdom, Russia and Zimbabwe, had all worked as supply teachers in the United Kingdom. Two had PhDs, four were working towards, or had, Masters-level qualifications and two had Graduate qualifications. Although most had at least functional ICT competence, none had worked as an e-facilitator.

The learning process

The course was entitled 'The role of the moderator in ecommunities' and consisted of three workshops at approximately monthly intervals. Each workshop consisted of input, discussion and application and generated an assignment task that incorporated critical elements of theory and practice. The final assignment ran for almost two months: students had to present a project on e-learning.

The online discussion forums enabled the students to explore the assignment topics and to develop their understanding and application. The intention was that the majority of the learning would take place in the forums, and that students would gain personal experience of the communal construction of knowledge. This approach was a novel one for many of the participants: they expected to learn from being taught – by taking notes, using text books and writing essays.

It was also an interesting comparison with the ways in which they taught, and the expectations they had of their pupils.

The first workshop was an introduction to online communities and the MirandaNet Forum, in which ecommunities were linked with professional practice. Students built a skills list; identified their competences and discussed how they would be implemented. At this point there was a hands-on introduction to the MirandaNet forum they would be using for the course. Then followed the principles of efacilitation, with an introduction the to 5-step model (Salmon, 2002).

The students were then set their first task, which had to be submitted within two weeks. "Devise a Code of Conduct for participating in online communities." The requirement was to have at least three posts in the Code of Conduct forum, contributing their own ideas or commenting on their colleagues' ideas.

The first forum, Setting a Code of Conduct, contained 47 posts. It closed at 10:37 on 03-05-04. Towards the end of this period the students contributed a number of observations about their learning.

The second workshop was held four weeks after the first. The focus was on working in online communities and analysed online interactions. This was applied to theories of learning, and the use of the ejournal.

Task two required students to consider the skills needed for participation in an online forum. They were asked to consider technical, communication, inter-personal and management skills among others. Once again students had two weeks to complete the task. All had to have at least three posts in the 'What skills are needed for participation in an online forum?' strand, again contributing their own ideas or commenting on their colleagues' ideas. The second task generated 44 posts in the thread.

This to a certain extent overlapped with the next task, the third, in terms of timing. Students were asked to investigate a range of online educational forums and use their postings to exchange information about the online forums that they found. They had to participate in at least three, evaluate the ways in which they work, record their contributions and comment on them.

There were 61 contributions to this thread.

The final task related to the workshops re-examined the relationship between theory and practice. "Use Salmon's 5-Step theory to evaluate your progress and learning on this course. How effective was it for you? How did it relate to your own learning style? How does it relate to the ways in which children and young people learn?"

Salmon's 5-Step theory – Access & motivation; Online socialization; Information exchange; Knowledge construction; Development – posits a progression from one stage to another throughout the learning process of an online course. All course participants should have reached Step 4 – Knowledge Construction, and the completion of the assignment should have enabled them to reach Step 5: Development.

This learning critique generated 47 posts, all of which were highly detailed and analytical. The ideas generated by the students formed the basis of long discussion in the third and final workshop, held in mid-July. This examined the models of efacilitation and lessons and examples from the forum and other communities. Salmon's 3 management issues: Time; Emotion; Participation were examined in the light of personal experience, as was the 5-step model.

Constructing new knowledge

Participant experience

The students initially focused on the first two stages of Salmon's model: access and motivation; online socialisation. It could be said that, by applying for and being accepted on the course the first step had been achieved, but in fact for some students throughout the course this first step kept emerging as a hurdle to be overcome. Socialisation was a constant in each of the thread, and some of the students set up their own threads to pursue this element. The third of Salmon's steps, information exchange, was one of the components built in to each of the activities – and this led to knowledge construction. This was particularly apparent in the fourth task. The final step that Salmon identified, development, occurred at a number of stages in her model, as students participated in online forums as e-facilitators.

It was in the area of knowledge construction that the development of the students was particularly marked. The final two tasks, and the Learning Critique in particular, led to the communal construction of knowledge – and although this was led by five of the group the other three participants all contributed.

The first task was a relatively straightforward one, in that students had to research codes of conduct for online communities and devise one of their own. Posting to the forum thread tended to demonstrate what had been found. However, towards the end one student commented:

I found your discussion points very helpful. Thank you and thanks to our support network - I have now happily completed my code of conduct! Like you I am very busy and get tied up, yet I have found that

using this method of support can speed things up!! I can't believe it. Usually a task like this would take me ages, whereas with group support I have completed it to my satisfaction! Now I feel motivated, perhaps I should consult the model and discover what is happening? (SG)

Another student wrote:

I think number 5, 'working towards an environment where all users feel comfortable' is perhaps, the whole reason for creating a code of conduct. Do this make sense? Yes or no? What do others think? (SW)

The thread for the second task was set up by one of the students:

Hi everybody, As I can see many of us have already finished the final copy of the Code of Conduct, so I decided to start with Task 2. I am not sure that I have the right to start a new topic, probably John should start it in a due course (if so , I am sorry) but I would like to share my ideas with you and need a proper place in the forum to do it. I've done some research and some thinking and worked out some points just for the beginning of our discussion on the skills for participation in on-line forum. (AP)

From this point onwards a group identity formed, and the interactions between students became more cohesive.

Thanks A and S for your interesting and very valid points:

a) deciding to accept that many of the skills overlap in terms of category

b) further developments in ideas re: time management

And for your positive feedback.

I am returning to my writing for the moment but will be in touch soon. Just out of interest, where do you think we are now, in terms of Salmon's five Steps? Or is this question not relevant? What has happened to E? Has he gone away? (SW)

Another student replied:

I am going to think about where we might be on the steps during my day. We have socialised to an extent and we are now starting to exchange ideas and information which helps the group develop and moves us on...but are we inclusive? - A few days without hearing from a member seems an age, yes, I am too wondering where E is and hope he is OK. I know he has studies and as you know this is the time of year when assignments start to pile up. (SC)

At which point he returned.

Sorry for my unduly unexpected absence . I must confess that I am in workup to the neck. But I am determined to emerge triumphantly singing and dancing and clapping my hands. Thanks for your concerns while I was away.

I have perused the postings on task #2 and must admit that you have all made tremendous contributions. The kind of work I am seeing here indicates an unparallel commitment to hardwork and enthusiasm. Being so late in contributing to this task. I feel indeed privileged to read your postings. (CHEERS GUYS)

I really don't know where to start but just to say this forum is in league with Valerie Burr's principles of social construction. interpersonal communication, social interaction etc. will elab. on this later Thanks again guys (ER)

Towards the thread a number of messages devolved into the Step 2 Socialisation mode: the sun was shining and people were keen to enjoy it whilst it lasted.

Postscript from S, having started my last post with "Me too!": Reading in the sun, (not the newspaper - !) this afternoon, I found that it was a sort of taboo in Netspeak to say "Me too!" unless you are also offering something else of your own as well. I think I did... but would like to add that I am finding that what we have been discovering through our experiential process is coming up and being confirmed in the literature ...such as the co-incidence above! (SC)

The thread related to the third task witnessed a shift in contributors, as individuals began to take charge of their own learning.

"I've been investigating BECTA and experiencing the truth of needing to be familiar with the software of the online forum. Also, adapting to the ethos of the forum- The initial messages I've come across at BECTA seem open and friendly. Some of the participants here seem to know each other already. At the moment I'm just a 'lurker' at BECTA, as I try to navigate my way through the software to get to the discussions and then participate. I will get back to this thread when I've investigated further." (SW)

" I am looking forward to the discussion here, everyone..."

"has any one of you worked out how to register onto the Select Behaviour Management thread? ...I've tried but to no avail. Any advice, please?" (SC)

 "Once you've registered with the Select forum, all the threads should be available. Or so it seemed to me. Will investigate further and get back to you on this one." (SW)

"I've just registered with Select Management Behaviour thread. Actually it's a very interesting topic for discussion. It seems that teachers are eager to share their experience regarding classroom behaviour management. I've already expressed my point of view there and am looking forward to reading your opinions." (AP)

"have successfully registered with both the Select Education and the G.T.C. discussion forums and the process reminded me of some of the skills required for on-line participation. My user name for both forums is "Dunamis". K (and everyone else) read my response to your contribution to the Select Education forum. I shall come back later to share some views." (BS)

"One observation I have made from some of the forums I have participated in is that they have numerous topics under discussion at any one time, with the result that most of them are under subscribed. The most popular topics have no more than three people exchanging views among themselves, while some are reduced to an exchange of views between two people. The least popular do not receive any postings at all.| (BS)

"But there is also the fact that we all met before in real life before exchanging information in the MirandaNet forum. Even as I read your postings I am able to picture you physically and almost hear your voice. Other forums do not have this facility, though I noticed at the BECTA forum that some contributors were able to insert photos of themselves alongside their postings." (SC)

" I liked your observation B, that some discussion forums are just two or three people exchanging view amongst themselves. The fact that some of the discussions are undersubscribed is as interesting as the ones which are popular, because these are clear indications of the interests of the users of the forum." (SC)

 "So, S and E, how do we encourage lurkers? I do not have all the answers but people seem most encouraged to respond to messages which are relevant to their lives and opened ended. Like K, I think that we should constantly seek to develop as efacilitators and that observing experienced helps in this. I noticed at the Select forum that when people posted messages and had no response to their message (often because it was vague, appeared poorly presented or a closed message rather than a question) then an administrator of the site uses a humorous message and emoticons to call for responses to the original message." (SC)

This shift in learning became even more marked in the final task. Although the associated thread contained fewer postings than others, the contributions were much more detailed, thoughtful and inter-wove ideas to achieve their conclusions (Holmes, 2001). At this stage the Five Steps intertwined and became the learning process.

"I feel that in any subject (but especially in the online environment) knowledge is more often ever changing and the boundaries constantly shifting. For example, I thought that the discussions at MirandaNet were all open (at the time of writing they seemed to be...) I would even have gone so far as to say that this was a significant difference between MirandaNet and other online educational forums. Yet, threads are closed here and my own knowledge of online educational forums is constantly changing." (SW)

This reflection focuses on the ways in which assumptions are revised in the light of experience, and feedback both from the system and peers (Cuthell, 2002).

"Although I have seen some practical implications, I have found that model too simplistic to be applied to so complex process as "learning", because first of all 'online learning' is 'learning' and secondly 'online'." (KT)

"I have also observed what everyone seems to have observed. I am referring to the following statement: " In summary the five-stage model provides an example of how participants can benefit from increasing skill and comfort in working, networking and learning on line, and what e-moderators need to do at each stage to help them to achieve this success." (KT)

When we began participating in several discussion forums I found it difficult to switch from one forum to another because of the different formats employed by the different forums, which I found confusing. I am sure you have all noticed that they even use different terminology. For example, whereas the MirandaNet forum gives you a personalised message saying "Reply To This Message", with the box for your message provided, another forum gives you a tab saying "Add A Reply", which you click on, then the message box appears and you type your message. After typing your message, in the MirandaNet forum you click on "Post" to send your message, but in the other forum you click on another "Add A Reply" to send your message. There are many other little differences like these that were a nightmare to me. I survived by using trial-and-error tactics, but on one occasion it backfired because a message I intended to post to the forum was converted into a personal message for the Editor!" (BS)

In many classrooms errors, mistakes and failures are things to be avoided or, at worst, suffered in silence. Here, however, B reflects on all of the mistakes and failures and uses them as the basis of his own learning. Other students shared this.

"Thanks for your comments. I guess that the exercise in participating in other forums was geared to get us used to working with different forms. I found that some were quite confusing to access, often because there was so much material in them." (SW)

This reflection leads to a comparison of ways in which learning takes place. At this point E is able to refer to his own struggles and reflect on the ways in which failure can either enhance, or inhibit, learning.

"It's interesting to see how we have all adapted to the skills and gained confidence. It seemed like a daunting task at first but I think that throwing us in there on the first day and successfully logging us in so we could interact between us was a well structured part of the process. Imagine if we had been given a lecture on it and sent off to try it for ourselves. Like kids, we need to experience to understand. Hope you're well, hello to everyone." (SC)

"Adults tend to be less prepared to be engaged in failure. Children with their 'don't care attitudes' are strategically placed to take advantage of learning in the information age? Is this a fear statement to be making at this point? What do you think? What is paramount though is that perfectionists would have a real difficult time coping, based on the fact that they are more concerned with getting things right, preferably at their first attempt." (ER)

S tried to conceptualise the learning process that she has experienced in diagrammatic terms and relate it to the 5-step model – and then realises that the process is, in fact, an existential one.

"When I first saw the model I thought it was simplistic but now we have experienced the process of learning for ourselves I think it is very relevant to online learning. The fact that the technical skills and access run alongside the stages of development make it practical as well as theoretical. I'm not sure how

one could design a diagram which shows a kind of developmental movement up and down the steps - a circle doesn't seem quite right either. I'm coming down in favour of accepting it the way it is." (SC)

The discussion then focuses on the nature of the learning community, and whether face-to-face meetings are necessarily an integral part of the process.

"The whole point of online forums is that participants can communicate and discuss their common interests asynchronystically and with no geographical boundaries (apart from places where there is no signal etc.) I think maybe Salmon's comments about face-to-face meetings mean to state that they are not essential or necessary. As we know from our international forum searching and participating, of course, they are not essential at all. That the face to face meetings we have experienced have enhanced our functioning as a group is a positive bonus, and it was possible because we are a small and mainly fairly localised and focused group." (SC)

From this point onwards the students move to a more abstract, theoretical level.

"The following shows how I am going to approach Salmon's model analysis. There are various moderation models being presented to assist teachers to understand the fundamental concepts of e-facilitation. Some of the more notable are: Salmon's Five Stage Moderation Model; Collison, Elbaum, Haavind and Tinker's Facilitation model; Paulsen's Function model; Hootstein's 'Four Pairs of Shoes' Model. Each model presents the concepts of learning and facilitation interactions in a different way and provides useful techniques, and each has made a contribution to the computer-mediated communication.

As participants in the current on-line course we have been required to master certain technical skills, learning facilitation skills and e-moderating skills. As Salmon's model calls at each stage for different e-moderating skills requiring participants to master certain technical skills and steps learners through a logical process of induction before developing deeper level interactions, it would be interesting to analyse how this model has worked for our on-line community." (KT)

The online discussion became more detailed, with students commenting and reflecting on their peer group's contributions. The varied background of the students provided a wide range of references.

"I felt too that most of the skills we developed in the first two stages carried us through into the subsequent ones. I became quite interested in Vygotsky's scaffolded learning process, especially since it seems to be mentioned in every teaching practice assignment on integrated projects I marked! I see that we, too, have been taught as a group, learnt from each other and gradually been encouraged to work more independently so I do this as a useful school teaching model as well. What I thought was simplistic at first has proved to be quite complex and well structured." (SW)

"Thank your also for your plan of analysis of Salmon's model in application to our process of learning. I am doing practically the same at the moment, doing the analysis step by step observing the stages of the model and our experience of e-learning. But the thing is I don't quite understand the second part. I am not sure whether we should describe all the ways in which children or young people learn or we should describe how Salmon's model works in application to their learning. May be you or others see it more clearly." (AP)

The final stage is one in which the students are able to provide the theoretical framework for their own learning.

"K, I like your model very much. Your analysis of task 4 contains very good arguments but I have a bit different point of view. You wrote, "If we look at our Task 1, 2, 3 and the way we built our knowledge we can provide many examples showing that we successfully moved through Stage 3. (I am going to describe some examples taken from our on-line forum contributions to confirm this)" and you also consider our project and work on case-studies to be stage 5. I think that doing the tasks and the project we have gone each time through stages 3,4,5 gradually. To my mind, this scheme of implementing the activities (Salmon's model) has been repeated with doing all the tasks but each time on a new higher level of understanding and performing as we have been gaining the experience of this learning strategy and the knowledge of the subject and it has added a higher quality to our work. All the time we were provided with the learning resources. Our e-moderator supported us on each stage of learning, providing the information and assessing our work. It seems to me that the realisation of the model in our course

appeared to work as a spiral where the technical support and e-moderating work as a background and motivation and online socialisation go through all the process, all the stages along with the growth of interactivity of participants." (AP)

By this point all of the students were able to produce assignments that included all of the points that would enable them to fully understand and implement the e-facilitation process. Their subsequent performance in the online forums was grounded in this experience.

e-facilitation and the construction of knowledge

The aim of the course was to develop the eight supply teachers to become e-facilitators in the online forums of Select Education, and to provide support for supply teachers. This provided both the focus of the course, and the rationale for the approach. In that sense the students expected to be able to contribute to the building of a knowledge resource that could be considered an artefact of distributed cognition (Cuthell, 2002). The process of e-facilitation, with students acting as e-facilitators at the same time as being facilitated by others, enabled all the individuals to construct new knowledge, both with and for others.

An interesting consequence of participating in a course of this nature is that perceptions of teaching, learning and knowledge change. The vexed question is whether these perceptions can follow through into the daily praxis of the teachers (Cuthell, 1999a). The implications for teaching and learning in a range of educational environments were identified and explored by some of the participants.

What was significant was that most of the students saw the process as being rooted in an online environment: the supposition was that the learners needed to be relatively mature and self-motivated. Even though all of the participants reflected on the ways in which their own learning had been grounded in the process – of socialisation, information exchange, application to tasks and the final communal construction of knowledge, none of the students was able to visualise how the model could be translated into the classroom. The presupposition was that the vehicle for learning had to be the online environment. The existential experience remained personal (Cuthell, 1999b).

Having said that, however, a constant theme running through the discussions was that of the ways in which children and young people learned. In that sense, then, the experiential learning of the e-facilitators generated insights into the learning of young people.

The final insight was the way in which the course participants matched the outcomes of Salmon's 5 Steps.

Salmon's 5-Step theory	
Access & motivation	100%
Online socialization	100%
Information exchange	100%
Knowledge construction	75%
Development	50%

Whereas all participants were motivated and worked out how to access the various environments and programs that the course required, all socialized and exchanged information, only 75% of participants were able to construct knowledge for themselves from the forum discussions and the materials their colleagues had found. Only half the group were then able to take that socially constructed knowledge and apply it to a context that related to the ways in which young people learned in school. It may well be that, whilst all learners can engage in the first three stages of this model, fewer are able to construct new knowledge, and fewer still to apply it.

But that, of course, is an issue for the whole of society, not simply for those of us engaged in web-based communities such as MirandaNet.

4. The communal construction of knowledge in an online environment.

Online forums as learning resources: some case studies from MirandaNet.

Since its inception MirandaNet has developed online forums as both learning resources and a medium for learning. MirandaNet Fellows have conducted evidence-based research projects evaluating the ways in which online environments can contribute to, and enrich, a range of learning situations.(Stuckey, 2004). Many of these have been written up as case studies and can be downloaded from the MirandaNet site (www.mirandanet.ac.uk).

The work in the United Kingdom was undertaken as a response to the problem faced by many educationalists – that of implementing effective e-learning strategies. Virtual, and managed, learning environments had been introduced in the UK since 200, but many teachers struggled to integrate them into their own activities (Cuthell, 2004; Cuthell & Preston, 2005). These environments were often seen as top-down content management systems with built-in assessment and recoding tools: not necessarily the affordances that would support a constructivist approach to learning. The schemes described here are, in essence, small scale, even though each may be part of a much larger project.

These case studies cover five main areas – although they are not equally weighted – and there are obvious overlaps, and findings and conclusions can be applied across a wide range of learning contexts. The largest set of studies looks at the ways in which classroom teaching and environments can be enhanced through online work. A number of these look at Think.com and Grid Club (available free of charge to educational institutions from Oracle) and the ways in which they can be used as a focus for both classroom and out-of-school activities.

The issue of home-school links builds on some of these studies. Ways in which young learners can use such environments for their own learning communities is explored. Other case studies look at the ways in which online forums and environments can be used to support staff in their continuous professional development (CPD). Some of these look at uses within an institution, others, within a specific curriculum context, and another, at the ways in which evidence can be gathered and analysed to contribute to our understanding of concept formation in children.

The final case study uses observational evidence to reflect on the ways in which e-learning contributes to the overall pedagogical and developmental process.

Enhancing classroom teaching and environments

A number of these studies utilised Think.com, a web-based environment available from the Oracle Corporation that is free to schools. Think.com underpins Grid Club, a freely available resource for Primary pupils.

Fanning (2004) used this environment in his school during one school term 0f about twelve weeks and evaluated the impact on both the pupils and his own teaching. He found that the use of think.com in the classroom changed teaching methods. During the time span of the project teachers used the system to distribute teaching materials via class web pages; they collected and returned homework by email; they set up online assessment tasks for students. A move towards a constructivist method, where teaching becomes more learner centered and the teacher assumes the role of facilitator, required appropriate training for teachers, a change in classroom/school organisation and new methods of assessment. His full case study can be downloaded here:

Turvey (2003) also used a Think.com environment for his study, based in a one and a half form entry primary school with Year 5/6 children. The aim of this project was to investigate the perceived advantages and disadvantages of an online community within the primary school setting. He examined the use of discussion forums to facilitate the construction of knowledge in a range of contexts, bringing together individuals with common ground to share and exchange information. Much has been established regarding the stages of progression within online collaborations through socialisation to knowledge construction and development (Salmon, G: 2002). Turvey was keen to determine whether these models of e-learning could be successfully emulated within the context of the primary school, and whether they herald the introduction of a potentially new teaching and learning style. Download the study:

Riley (2004) used the online discussion forums available in World Ecitizens (www.worldecitizens.net), available from MirandaNet. His case study focused on e-learning as a tool for extending and enriching pupils' learning through the dialogical learning that online forums support, and the concomitant key life-skills that are developed. In embedding e-learning into the curriculum the existing practices of communities of enquiry provided guidelines for implementation. By using online discussion environments pupils were given opportunities to develop the exploratory talk required to promote collaborative knowledge construction through dialogical learning. Evaluation and assessment of learning required the use of innovative techniques of concept mapping and content analysis of discussions based on phenomenography theory.

The case study established that critical learning and key skills development took place to a significant degree. Analysis of attitudes and intentions towards e-learning established that pupils were highly motivated and found e-learning to be a valid and valuable learning tool. The use of the Internet as a resource as well as a forum and publication interface aligns with Stephen Heppell's model of e-learning as a library, forum and publishing house.

Robinson (2003) looked at the ways in which Think.com could extend and enrich student learning outside the timetabled structures of a large secondary school. The core group of students that became part of this study were all year nine students, aged 13 to 14 years old. As a major emphasis was the role of the Gifted and Talented student, the students he chose to concentrate on were primarily from the Gifted and Talented register in year nine, based on teacher assessment, test scores and identification of specific learning skills. The register identified two levels of gifted students, 'A' students, seen as gifted and talented in more than one subject area, and 'B' students, seen as having a talent in an individual subject area. There was a conscious effort to obtain a gender balance within the core group.

To create a form of control students who were not considered gifted were chosen either because they had been part of a writing group through their enthusiasm for English or had particular interests that were felt would motivate them to be part of the group.

Home-school links

The use of an online environment to support student learning through homework activities was the focus of the work of Hanrahan (2004). She used an online forum on World Ecitizens to establish an environment to encourage pupils to develop independent communication skills in Modern Foreign Languages. Each strand in the discussion forum constituted a homework task: pupil threads within each strand were contributions to that task.

The project involved two groups of Year 7 students (a French class of 29 students and a German class of 28) within a large 11-18 comprehensive school in East Sussex. The idea for this project germinated from two distinct and (fairly common!) difficulties she had encountered, namely access to the IT suites in school and the setting of meaningful yet interesting homework. Therefore, the project's aims were to investigate the viability of students' use of ICT for Modern Foreign Languages at home (including their response to their own private forum) and whether this had any impact on their attitude to language learning. In addition, she proposed to examine her own e-learning throughout the project.

The homework tasks included visiting different language websites to complete various activities, writing reviews and reports of chosen language sites and games which students would then email to her, and participating in a language forum that was set up specifically for the project on the MirandaNet site. Her findings examined ways in which online homework could be monitored, and the effects of e-learning projects on students' attitude to language learning. The final analysis looked at the success of the Year 7 discussion forum and ways in which it differed from an adult forum.

Continuous Professional Development

Thomas' (2003) study was initiated by the need to ensure that CPD gains from short school-based activities could be embedded into professional practice. Continued professional development (CPD) through professional dialogue is difficult to maintain over diverse groups. Groups such as PGCE, GTP and existing teaching staff of varying levels of experience have a valid contribution to give any professional development group. Time to talk within any stage in the profession is always at a premium. His aim was to enable staff to develop professional dialogue after focused professional sessions on issues. The time to talk is sometimes difficult or impossible to find as the groups of people involved are diverse and on different time allocations and levels of professional experience. Dai was keen to change the reflective professional dialogue that in part takes place as a plenary of a session to an asynchronous online activity

Dai used open source solutions such as PHP BB, which allowed him to develop his own online community with little or no funding, and also to control and customise his community solution to the needs of his organisation and its users. He also used solutions such as Mambo Server technology, Moodle groupware, Groove Workspace and PhpWebsite.

McDonald (2004) also looked at CPD, this time through the impact of a subject association online community on his own professional development, and on others. He describes the community as 'the largest history department in the UK', and examines the ways in which its users contribute, and draw from the community.

Dave Wallbanks and Neil McDonald both collaborated on the forum. The separate study by Wallbanks (2004) describes ways in which the teachers used the forum for e-learning.

A slightly different professional development forum was examined by Semwayo (2005). The discussion forum formed part of a joint project between MirandaNet and Select Education to train supply teachers as e-facilitators. These e-facilitators would then work on the Select Education discussion forums to support supply teachers and contribute to online CPD. Ben's study examined the ways in which the discussion forum progressed and how it compared with other discussion forums.

A project of a rather different type was initiated by Witherington (2004). The project, conducted over a six-week period in the summer term, involved setting up and facilitating an online discussion forum for all 200 staff at his school. The project aimed to establish the feasibility, effectiveness and sustainability of such a forum and to investigate whether it could help to build a one-school ethos in a school created from two institutions. Evidence from questionnaires, interviews and from the analysis of transcripts was used to form some conclusions. The processes necessary to set up a forum were clearly established and a community of mutually supportive staff, reflecting on professional issues began to develop. Although only a small number of staff were actively engaged in the forums, the support for the idea and its potential was much more widespread. Barriers to wider use were the inevitable 'lack of time' and a number of other tensions for staff in a school facing challenging circumstances. The school has now formed a hard federation with two other schools and the need for such a forum for sharing of good practice within the federation is enhanced.

Pushing boundaries

The issue of virtual CPD activities was examined by Worthington (2004), whose research question was whether working with a colleague online (from the same setting) supported both individual's learning. The study explored ways in which context and language supported learners in constructing understanding, and assessed the impact of involvement in collaborative discussion, on classroom practice. A further concern was to evaluate the extent to which e-learning provides an effective means of professional development. Innovative online facilities were used within a MirandaNet discussion forum to enable staff to exchange and critique images of children's work.

e-learning

Work with pupils engaged in online activities led Smith (2005) to investigate the reality of what constitutes e-learning, and it concludes with a model of e-pedagogy, and the specific ways in which it can be related to the school environment. From a case study of the observation and description of a pupils' online community, phases in the e-learning process are identified. A key theme is transformational learning. E-learning is seen as an emancipatory knowledge creation process in which teacher and pupil interchange roles in a collaborative learning environment. The teacher as facilitator guides the learners through the process of acquiring skills to the collection of information, which is then developed into knowledge streams for group analysis. The Internet offers a global information network and ICT hardware assists in maintaining an interactive learning environment. An important part of successful e-pedagogy is effective e-facilitation.

The MirandaNet Academy

A number of MirandaNet Fellows have developed projects that they originally published on MirandaNet and have submitted them for post-graduate accreditation through the MirandaNet Academy, working in conjunction with Bath Spa University, whose innovative post-graduate programme enables teachers to obtain postgraduate qualifications for evidence-based curriculum and development work they are undertaking in their schools. This association provides the final link in the professional development process: teachers are in charge of their own learning, their own, and the institution's, professional development, and their own academic accreditation. The concept of autonomous learning becomes a reality for these professionals: the MirandaNet Fellowship has become a true learning community.

CONCLUSION

What these case studies illustrate is the effectiveness of online forums as a vehicle for local e-learning activities in schools. At the core of all of these case studies is the need for teachers to use an environment that can be customised for their specific project. In all case the main focus was on dialogic spaces for learning that afforded the greatest number of possibilities: when assessment of learning took place is was a formative process that did not need the sophisticated tracking and assessment tools provided by the major commercial e-learning platforms and managed learning environments. Large-scale online environments, centrally administered and imposed on schools and teachers, assume a 'one size fits all' solution. The key to successful implementation of e-learning, therefore, would appear to be the provision of tools that enable teachers to customise the environment to their interests and the needs of the learners, rather than having to work with a centrally-imposed and managed 'learning platform'.

The evolution and iterations of the MirandaNet community – building in community events, face-to-face meetings, collaborative research projects, the distributed cognition embedded in its listserv and web site, its e-journals, with member-publishing and peer-review – have all contributed to the communal construction of knowledge and the professional development of MirandaNet members. Indeed, the developing affordances of mirandanet.ac.uk contain many of those elements of Web 2.0 technologies. To paraphrase Lovink (1995) it is not the hardware or software that is important in the ways in which the web-based community functions,

but the wetware – the flesh and blood members of the community, their interactions with one another, and the development of ideas.   And knowledge.

ACKNOWLEDGEMENTS

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