# Theory and Design of Distributed Networked Learning Communities

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## ABSTRACT

The current interest in distributed networked learning communities may be explained, in part, by our need to feel we belong to a group of like-minded people who share out values and beliefs. Distributed networked learning communities focus on developing a culture of learning where members support each other and where no one individual (teacher or student) is responsible for knowing everything.  Lifelong learning practitioners (and those involved in continuing professional development) have consistently had an interest in designing for learning communities. The move to Web-based learning environments is now exercising their minds around the question of theoretical designs for networked learning environments that support those values and beliefs they hold to be so important in their practice. Through an in-depth analysis of the theory underpinning the design of an existing distributed networked learning Masters degree course, this paper shows how practitioners involved in lifelong learning courses delivered entirely via the Web can integrate features of computer supported collaborative learning theory into the design to support the educational value of community.

## INTRODUCTION

The current interest in Internet-based communities (eg Jones, 1995; Rheingold 1993) might in part be explained by our need to feel we belong to a group of like-minded people – people who share a set of values and beliefs about the world we live in. In educational circles, the idea of community has been a central design feature of many lifelong learning practitioners. A learning community is one where the focus is on members supporting each other in a culture of learning. The community tries to work towards shared understandings. There have been many attempts to characterise learning communities in the educational literature (see, for example Beaty et al, 2002; Fox, 2002; McConnell, 2002 (c); Paloff and Pratt, 1999; Perriton et al 2002; Renninger et al, 2002; Reynolds and Hodgson, 2002; Wenger, 1998). A key feature of the idea is that responsibility for learning is 'shared' among community members.  No one individual is responsible for knowing everything; rather, the shared knowledge and skills are distributed among members.  Individually, each contributes to the group endeavor, enabling the group to accomplish more that the individual members might separately, with the key gain of deepened understanding of both content and processes by individual members of the group.

The move to Web-based learning and teaching is now exercising the minds of lifelong learning practitioners and those involved in continuing professional development. A key question to answer is: how do we draw on learning theory to design distributed networked learning so that it supports those values and beliefs of a community of learners we hold to be so central to our practice?

## DESIGNING FOR NETWORKED LEARNING COMMUNITIES

A the University of Sheffield, our work has involved us in running a variety of distributed networked learning events and courses, all of which have been underpinned by a pedagogy aimed at developing and sustaining virtual learning communities.

Perhaps the most well thought-out example of this is the Masters in E-learning, which is run as a completely virtual learning community. It is offered entirely via the Internet using WebCT, a Web-based virtual learning environment. WebCT supports asynchronous and synchronous communications and has a wide variety of tools which can be used to support distributed learning. The Masters has been running since 1996 and is taken by a wide variety of professional people who wish to develop their understanding of, and expertise in, this new form of learning. The Masters is a global programme, with students from the UK, Eire, mainland Europe, South Africa, Hong Kong, Singapore, Japan and Australia and Canada.

Current participants include:

- professional trainers and developers, self employed or in public and private sector organisations

- teachers and lecturers in Secondary, Further, Higher and Open Education

- adult continuing educators

- people working in libraries and resource centres

- open and distance learning educators and developers

In the design of this distributed networked learning course, we aim to help course participants appreciate and understand the ways in which they can use the Internet and the Web in their professional practice, and how they can design and evaluate learning events which focus on group and community work, and which are based on sound principles of active, problem based learning (McConnell, 2002a) We emphasise the implementation of innovatory online practice by creating a supportive and creative research learning community where participants feel free to experiment and "learn by doing", while constantly holding a critical perspective on their practice and the theory underpinning it. The course design draws on various theoretical perspectives to emphasise the educational need for learners to work in social learning environments which stress both the situated nature of learning (Koschmann, 1996; Lave and Wenger, 1991; Packer and Goicoechea, 2000; Salomon, 1998) and the importance of co-production and co-participation (McConnell, 2000; 2002a).

This is linked to the capability of the Internet and the Web to support group work and provide a virtual environment for learners to work together, share resources and collaborate. Within this virtual research learning community perspective, participants have opportunities to:

- have a wide choice over the content and direction of their learning

- manage their own learning, and cooperate with others in theirs through processes of negotiation and discussion

- take a critical perspective on learning and academic issues with strong relationships to their professional practice

- focus on their own learning and development from a critical, reflective perspective, combined with an understanding of relevant academic ideas and concepts.

Typically, in lifelong learning contexts, communities of this kind exhibit a variety of learning characteristics which have to be taken into consideration in the design and implementation of any networked learning course (McConnell, 2002c):

- The problems and issues researched by the groups are defined by the groups themselves through processes of negotiation. The problems are usually complex, often ill-defined problems which are fertile ground for the production of mutual understandings and the construction of "shared resolutions" (Schon, 1983).

- The problems and issues have a personal and professional focus: They are important to the members of the group, arising from concerns and interests they may have about their professional practice. The outcomes associated with the group work will be of benefit to the members in their professional practice.

- They require negotiation and communication to understand them: because the issues researched are invariably complex and ill-defined, the members of each group have to engage in considerable communication in order to understand them and in order to negotiate changes in their perception of the 'problem' and its resolution as their work progresses. Communication is both task oriented and socially centred. The groups function both as learning communities (Pedler, 1981; Snell, 1989) which have an interest in sharing, supporting and learning collaboratively in a social context, and communities of practice (Wenger, 1998) in which members are actively constructing understandings of what it means to be professional networked learning practitioners.

- The problems require an action research approach to investigate them: The groups are encouraged to view their research and learning as "action research" (Carr & Kemmis, 1986; Elden & Chisholm, 1993; Whitehead, 1989; Winter, 1989), and they are introduced to the concept of action research in an earlier e-seminar. This provides them with a model of how to work together, which helps guide them in their collaborations.

- They require a journey of learning: There are no specific pre-defined learning outcomes. Each group embarks on a learning journey which requires collaboration but which does not define in exact detail how they should work together or what the outcomes of their learning should be. In this respect, the groups are following a long tradition of adult-learning which supports openness and exploration (Boot & Hodgson, 1987; Cunningham, 1987; Harris, 1987), and which has a history in experiential learning groups (Reynolds, 1994; Davis & Denning, 2000).

• They involve a high degree of reflexivity: Learning in these groups is highly experiential, and the groups are therefore encouraged to be reflective and to use this as a source of learning (Boud and Walker, 1998; Moon, 1999).

A means for achieving this is exposure to other participants' development within the learning community. Members participate in developing the learning community perspective, which is based on participants and tutors taking collective responsibility for the design and evaluation of the programme, via constant review and modification of the design, procedures and ways of working.

## RECRUITMENT AND COMPLETION

Participants are recruited annually via a variety of methods that include extensive course information on a dedicated web site (http://www.shef.ac.uk/e-learning/). This web site contains full details of the course, course brochures and application forms and it has an extensive list of student endorsements and course evaluation information. We also advertise the course in a national newspaper and send out email adverts to various lists.

All participants complete an application form and present a short written statement outlining their reasons for wishing to take the course. Prospective participants are not normally interviewed, though if necessary we do this by 'phone or email. We reply on good references to support their application. Those taking the course are required to have a first degree or equivalent professional practice.

Those taking the course often remark that they chose this particular course because of it's innovative approach to learning and teaching, the opportunity to work in collaborative e-groups and e-communities and the collaborative assessment process.

We estimate that there is an 85-90% completion rate.

## TWO TYPES OF LEARNING COMMUNITY

As we have seen, the course design supports the concepts of learning community and community of practice. In this design, we encourage participants and tutors to engage in meaningful practices through cooperative and collaborative learning processes, and to ensure that knowledge developed is demonstrated in the context of the participant's professional practice. We develop a climate where commenting on each other's work, and giving and receiving feedback is an integrated and normal part of the community's day to day work (McConnell, 2002b). There is a high degree of experiential learning (eg learning about working in distributed problem based learning groups by taking part in such groups), and participants are encouraged to be reflective and to use this as a major source of learning (Boud, 1998; Moon, 1999).

## THE PLACE OF THE TUTOR

There is a team of tutors on the course who collectively plan each workshop and make decisions about the effective running of the course. Each tutor has a learning set where they work closely with course participants.

The place of the tutor in this learning community is complex. The tutor exists between the boundary of the institution, which s/he represents, and that of the learning community. In the learning community the tutor adopts the 'role' of tutor-participant. This implies at least two things. The first is a sharing of power with the course participants in which the tutor has to work at ensuring power is transferred to participants in the community, who in turn have to come to trust the tutor in that process. Power is shared along a series of dimensions such as decision making about the focus of the design of learning events, and assessment, which is collaborative involving the learners themselves, their peers and the tutor (McConnell, 2002b). The second aspect which this tutor-participant perspective implies, is the view of the tutor as learner. Although the tutor has particular expertise which s/he brings to the learning community as the representative of the institution, the tutor also presents her/himself as a learner, someone who is genuinely interested in learning and developing through participation in the community. The concept of the tutor as "tutor-participant" is important as it signals to the participants that everyone on the course is a member of the learning community, and that the idea of community implies a different kind of learning relationship between tutor and participant. Tutors and participants relate in highly personal ways, and this relationship shapes a great deal of the learning on this course (McConnell, 2002a & b).

## PROBLEM BASED LEARNING

Problem based learning is carried out through an action research mode of learning, and is based on a philosophy that acknowledges that people learn in different ways. The action learning/research focus allows participants to make choices about the management, focus and direction of their learning. Participants work in small groups where they are encouraged to view their research and learning as "action research" (Carr and Kemmis,1986; Elden and Chisholm, 1993; Whitehead, 1989; Winter, 1989). The earlier e-seminar on action research provides a conceptual model for realising this.

The issues or problems researched are defined within each group through processes of negotiation. This usually takes place in the synchronous chat rooms of WebCT, followed up by more in-depth discussion in the asynchronous forums. They are usually complex problems which are sometimes difficult to define. Participants have to share their resolutions of the problems in an effort to come to mutual understandings.

Two types of learning are supported:

*Collaborative learning*: where course participants work in small learning sets to define a problem relating to the practise of distributed networked learning which is amenable to collaborative group work. The purpose of this is to help participants:

• experientially understand and critically evaluate the nature and complexity of collaborative group work in virtual learning environments. This understanding contributes to the development of their own professional practice in networked learning

• work collaboratively on a shared problem which will lead to a portfolio outcome which can be shared with other learning sets

• critically reflect on the experience of using a set of self analysis tools. The outcome of this critical reflection is then made available to the learning set members, who also offer their 'assessment' of each participants' self analysis.

*Cooperative learning*: where individuals within a learning set define an agenda for carrying out a course assignment chosen by themselves in consultation with their peer learners and tutor. This assignment is designed around a real problem or issue that they face in their professional practice (or which their organisation faces) which is amenable to being carried out by action research. The focus of the problem is always around some aspect of networked learning. This form of learning is based on principles of self-managed learning, as well as principles of cooperative learning (McConnell, 2002a)

Participants work cooperatively in virtual learning environments to help and support each other in:

• defining the problem and its overall scope

• considering its appropriateness as an assignment for the Masters which will both illuminate some aspect of problem based professional practice and also contribute to an understanding of networked learning.

• offering each other support in finding resources that may be useful in considering theoretical underpinnings for analysing the problem or issue being researched, and in considering the implications for professional networked learning practice.

• participating in collaborative (self/peer/tutor) review and assessment procedures where each participant brings a set of criteria which they would like members to use in making judgements about their assignment, in addition to the use of a set of criteria which are offered by the tutor.

The review is an opportunity for participants and tutor to read each other's assignment and critically discuss and examine the issues in it. They offer insights into the meaning of the assignment as a method for examining the original problem, suggest additional references and resources that might be useful, and finally offer comment on the extent to which the assignment meets the writer's set of criteria and those offered by the tutor (McConnell, 2002b).

> Participant's work on the course takes place in a series of four e-workshops on different themes, culminating in a research dissertation in year two. They are organised into groups of between 6 – 10 members, plus a tutor. They are given a very broad brief to work to in which they have to agree on a particular issue to investigate which is acceptable to all members and which requires collaborative learning within the group. The issue is defined as anything which is important to the development of the members' professional practice and which will allow them to use the outcomes in real work settings.

## THE VIRTUAL LEARNING ENVIRONMENT

The course has gone through several major designs since its inception in 1996. It was originally designed to support the professional development of staff in a local further education college who were involved in trialling the use of telematics learning. At that time we used email, and then migrated to Lotus Notes. Participants met face-to-face at the start of each workshop throughout the two year period. The course was then re-designed to be offered to the general public, still using Lotus Notes but with reduced face-to-face contact: participants and tutors met face-to-face at the beginning of each year in a one week residential meeting. The third major re-design was carried out in order to make the course available to anyone in the world ie without any face-to-face meetings. This completely virtual re-design was implemented in 2000 and at the same time we migrated to the WebCT virtual learning environment.

In designing the two-year course, we have taken great care to provide a simple yet effective WebCT "home page" which contains links to the course resources. In the current WebCT Home Page design there are three sections offering participants a variety of different kinds of resources.

• **Resources**: this has hyperlinks to a wide variety of useful resources, including pictures and biographies of each participant, tutor, course secretary and technician; access to the University of Sheffield library, CD-ROMS, e-journals (individual papers can be downloaded in PDF files to one's own PC); links to all major search engines with evaluations of their effectiveness; access to specific e-learning Web resources and so on. We continually up-date and add to these resources.

• **Content and Participation**: here we provide detailed information on the structure and content of each workshop, and access to a wide variety of asynchronous and synchronous forums for community work, the work of learning sets and café areas. These forums are the most important areas on the WebCT site since it is here that negotiations, communications and production of course work takes place.

• **Notices**: here up-dated information about the course, the outcomes of community decision making and the like are posted.

In addition to providing a wide range of online resources, we still send participants a resource pack of paper copies of journal articles, books and so on.

## COLLABORATIVE ASSESSMENT

Assessment often determines students' orientation to learning. If it is summative and unilaterally carried out by the teacher, students often seek to find out what the teacher is looking for, and work towards that. In CSCL we must design forms of assessment which support, and reward cooperation. The need to get assessment "right" cannot be over emphasised. Collaborative assessment strives to bring different viewpoints, and therefore different values, to the assessment process and in doing so helps to make the process of assessment more open and accountable (McConnell, 1999; McConnell, 2002b).

Assessment is part of the learning process on the course, and forms a major part of the content of the course (by this I mean that assessment is seen as a formative learning process).Participants' course assignments are submitted for triangulated assessment i.e. assessment where they, their co-workers in the learning set and the set tutor read, comment on and assess the assignment. Assessment is on a pass/fail basis. We feel this approach to assessment is consonant with, and supports, the overall aims and values of this course. Our research (McConnell, 2002b) indicates that students involved in networked collaborative assessment actively and critically reflect on their learning and on the benefits of collaborative assessment. It also shows that these new Web-based electronic learning environments are well placed to support the complexity of this form of assessment. The architecture of networked/e-learning systems such as Web-CT supports students in the reflective learning and assessment process.

The openness of the collaborative assessment process is crucial to its success. Whereas most assessment techniques are closed, involving only the student and their teacher, collaborative assessment has to take place in an open environment. (cf Ames, 1992 (as quoted in Boud, 2000) who thinks all feedback should be private). Learning relationships have to be fostered, and trust developed and maintained in order for collaborative assessment to succeed. The balance between critique and support is very important, yet at times very fragile. Peers and tutors are involved in collaborative learning and support throughout this course. But they are also called on to review and assess each others work. In a learning community or community of practice this is not only possible but it is desirable. The community has to be able to reflect on its work, and be critical of each member's learning. This I think is achieved with some success in our context. Participants are aware of the possibility of deluding themselves. But it is my experience that the openness of this form of assessment, when carried out thoroughly and conscientiously, maintains a strong check on that.

Overall our research shows the importance students attach to learning and assessment processes which take place in a social environment (McConnell, 2002b). This is a major theme constantly referred to by participants. It is not only a major factor in supporting and motivating distant, distributed learners and in helping them overcome feelings of isolation. It also points to the benefits of social constructionism and social co-participation in learning, especially in lifelong learning and continuing professional development contexts. Not only do adult learners enjoy learning in social settings, they are quick to appreciate the potential benefits afforded by collaboration in the learning and assessment process. No less so in distributed networked collaborative learning environments.

## QUALITY ASSURANCE

The quality of the course has been assessed as part of a wider quality assessment exercise recently carried by the UK QAA. In this general assessment process (the final score was 24/24 excellent) the MEd was critically scrutinised as an example of new forms of course delivery. In their assessment, the assessors declared that the course is a highly innovative and creative example of e-learning.

## CONCLUSION

Through an in-depth case study of a distributed networked learning course , this paper has shown that practitioners involved in running lifelong learning courses via the Web can integrate theoretical features of CSCL designs to support their educational value for community.

The complexity of networked group learning and the need for negotiation and communication among learners and teachers in the lifelong learning process requires a learning design which is open and flexible, and which is supported by assessment processes which in themselves reflect a sense of community and promote and reward collaboration. With such a clear understanding of what is required educationally, it has been shown that it is possible to design such theoretical features into networked learning environments in ways which allow for distributed networked learning communities to function effectively and appropriately.

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