

Chapter 1

Networked Learning: A Brief History and New Trends

David McConnell, Vivien Hodgson, and Lone Dirckinck-Holmfeld

Introduction

The chapters in this book emerge from selected conference papers given at the Networked Learning conference 2010 in Aalborg. In this chapter, we first offer a short review of the history of networked learning. We examine how it has developed in both the UK and Denmark as well as in other parts of Europe and the USA. The chapter first outlines the philosophical and pedagogical roots of networked learning and, in addition, describes some of the history of the development of the Networked Learning Conference itself.

It considers how developments in the World Wide Web and Web 2.0 in particular have given fresh impetus and support to the basic principles and ideas behind networked learning as a pedagogical approach. That is, an approach that takes a critical and inquiring perspective and focuses on the potential of information and communication technology (ICT) to support connections and collaboration.

The chapter concludes with a summary of the structure and content of the rest of the book.

D. McConnell (✉)

Independent Consultant in Higher Education, Stirling, Scotland, UK
e-mail: dmccconnell@blumail.org

V. Hodgson
Lancaster University Management School,
Lancaster University, Lancaster, UK

L. Dirckinck-Holmfeld
Faculty of Humanities, Aalborg University, Aalborg, Denmark

A Short History of the Theory and Practice of Networked Learning

The development of networked learning has largely been influenced by understanding of developments in technology to support learning alongside thinking stemming from the traditions of open learning and other radical pedagogies and humanistic educational ideas from the likes of Dewey, Freire, Giroux and Rogers.

In the UK, the tradition of open learning was an influence on early thinking associated with the development of networked learning. After Coffey (1977), open learning can be considered from the perspective of removing administrative and/or educational constraints to learning. “Administrative” constraints include the location, timing and cost of study. “Educational” constraints include the setting of learning objectives, methods of study, assessment methods, etc. Harris (1987) in an analysis of the development of the UK Open University (OU) demonstrated, however, that much of the early open and distance learning (ODL) initiatives and courses, such as The UK Open University established in 1971, were more about administrative openness than educational openness. As Morrison (1989) explained, distance education in its then stage of development was not addressing or overcoming cultural, economic or educational barriers to learning.

In work being developed at places like Lancaster University and the then North East London Polytechnic, there were however programmes that sought to reflect greater degrees of educational openness. Boot and Hodgson (1987), in a study of the pedagogical principles and assumptions that separated these more educationally open programmes from administratively open programmes, claimed that there were essentially two orientations to open learning: one that took a dissemination orientation to open learning (and in practice offered “administrative” openness) and those that took a development orientation (i.e. offered more educational openness).

In their analysis, they identified “other people as an inherent part of the learning venture, providing challenge and collaboration in the construction of personal meaning” and, in addition, assessment as being “part of the learning process, based on collaborative assessment against mutually agreed criteria”. Their analysis identified what were to become important principles for networked learning; together with the idea that the tutor role within a development orientation was one of facilitator, “resource person and co-learner. Meanings he/she attribute to events no more valid than anyone else’s”.

Technology-Mediated Learning Experiments and Initiatives

At the same time, while the UK Open University was predominately offering administrative openness in its approach, there was some interesting experimental work taking place there. This included pre-Internet experiments with innovative ICTs with a view to evaluating their potential to support student learning. An early

development was the Cyclops shared screen telewriting conferencing system that was trialled as a means of supplanting face-to-face tutorials, which were the norm. Cyclops allowed groups of students in study centres to link with other groups throughout the country via a teleconferencing network. Students could talk to each other and share ideas on a TV screen through the use of a light pen. Teaching material could be prepared in advance on cassettes and distributed to all groups via the TV screen during the tutorial. The meetings were synchronous and were facilitated by the tutor (McConnell 1982). These early pioneering trials indicated the real, practical possibilities of ICT to support learning. They demonstrated that students and tutors could adapt to new technologies and methods and showed the potential of such technologies in the teaching and learning process. The research drew on theory from the social psychology of telecommunications (Short et al. 1976) and pointed to ways forward in our understanding of the effects of these technologies on social presence, tutorial processes and learning outcomes (Howe and McConnell 1984; McConnell 1983, 1984, 1986; McConnell and Sharples 1983), issues that were to re-emerge in the networked learning era.

Trials of early versions of computer conferencing as a practical means of supporting distant learners, and as a vehicle for facilitating cooperative student–tutor design and collaborative assessment of in-service teacher education, were also being conducted at the OU. These early trials of the emerging technologies were underpinned by the humanistic values and radical pedagogy of Carl Rogers and Malcolm Knowles (values that were later to underpin the pedagogy of networked learning) with a view to overcoming some of the factors that limit meaningful learning:

when we put together in one scheme such elements as a prescribed curriculum, similar assignments for all students, lecturing as almost the only mode of instruction, standard tests by which all students are externally evaluated, and instructor-chosen grades as a measure of learning, then we can almost guarantee that meaningful learning will be at an absolute minimum (Rogers 1983).

The aim of the trials was to establish if it was possible to engage in a radical pedagogy in the context of distance learning mediated by technology and to support learning, where students were able to make personal decisions about their learning (Knowles 1975, 1985) in a cooperative and collaborative learning context. These trials foreshadowed some of the thinking about learning using technology that developed into what we now call networked learning. The outcomes indicated that students were quick to see the potential benefits of learning via new technologies as a means of supporting them at a distance, offering them opportunities to interact, participate in discussions, share ideas and support each other (Emms and McConnell 1988; McConnell 1988a, b), characteristics that later became important aspects of networked learning processes.

Despite these early exploratory ideas and research projects showing that the use of new ICTs in learning could be as effective as traditional face-to-face methods in terms of achieving tutorial tasks and outcomes (McConnell 1986), some tutors and students felt that the new methods could not fully match the rich experience of face-to-face meetings that they were used to. This foreshadowed similar concern voiced at the introduction of computer conferencing and Internet-based learning systems

that began to emerge in the late 1980s and early 1990s. For many present-day networked learning students and tutors, the perception that learning technologies lack social presence and do not match the experience of face-to-face meetings still persists, and despite much evidence to the contrary (as the contents of this book testify) it remains one of the major barriers to the widespread uptake of networked learning in higher education.

Information Technology-Supported Open Learning

Following on from these early studies and trials, there was a UK Training Agency-supported Information Technology-Based Open Learning (“ITOL”) project. This was an innovative project that set out to optimise and research the growing potential and possibilities of rapid developments in ICT to offer greater degrees of educational openness (Hodgson et al. 1989). The ITOL project became a precursor for a whole series of projects and initiatives that was to encapsulate the pedagogical approach and model of learning now known as networked learning. It led in 1989 to an early trial case study based on an existing part-time MA in Management Learning at Lancaster University (Hodgson and McConnell 1992).

Figure 1.1 shows the model of the electronic environment that was subsequently developed and adopted for the MA based on the trial. As Hodgson et al. (1989) explained, ITOL was a working model where all the parts, actors and objects relate to each other and:

... allows any individual to communicate with a tutor, or tutors, or facilitator(s) (most likely University based people, but not exclusively) with other learners and with a series of collections of both University and non-University based resources (p. 139).

It is important to note that it was not the technology itself that made the MA more educationally open but the way it was able to contribute to implementing the learning design and processes that underpinned the programme. The key features of the design of the MA were and remain: (1) a learning community approach, (2) an open structure and curriculum, (3) learning sets, (4) free choice of topics for all course work and (5) peer involvement in feedback and assessment of assignments.

A significant follow-up project to ITOL was the European-funded Framework 3 DELTA project, JITOL, followed by a Joint Information Systems Committee (JISC) of the UK higher education funding council project. The JISC project’s working title was “*Networked Learning in Higher Education*”. It began in January 1999, and was based on the original ITOL model. It offered what has turned out to be a surprisingly enduring first definition of networked learning, i.e.:

We define ‘networked learning’ as learning in which information and communications technology (ICT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources.

This definition has persisted remarkably well and was reiterated in the book that came out of that project (Steeple and Jones 2001) and confirmed by Goodyear et al. (2004). But as Goodyear (2001) commented, “while the richest examples of

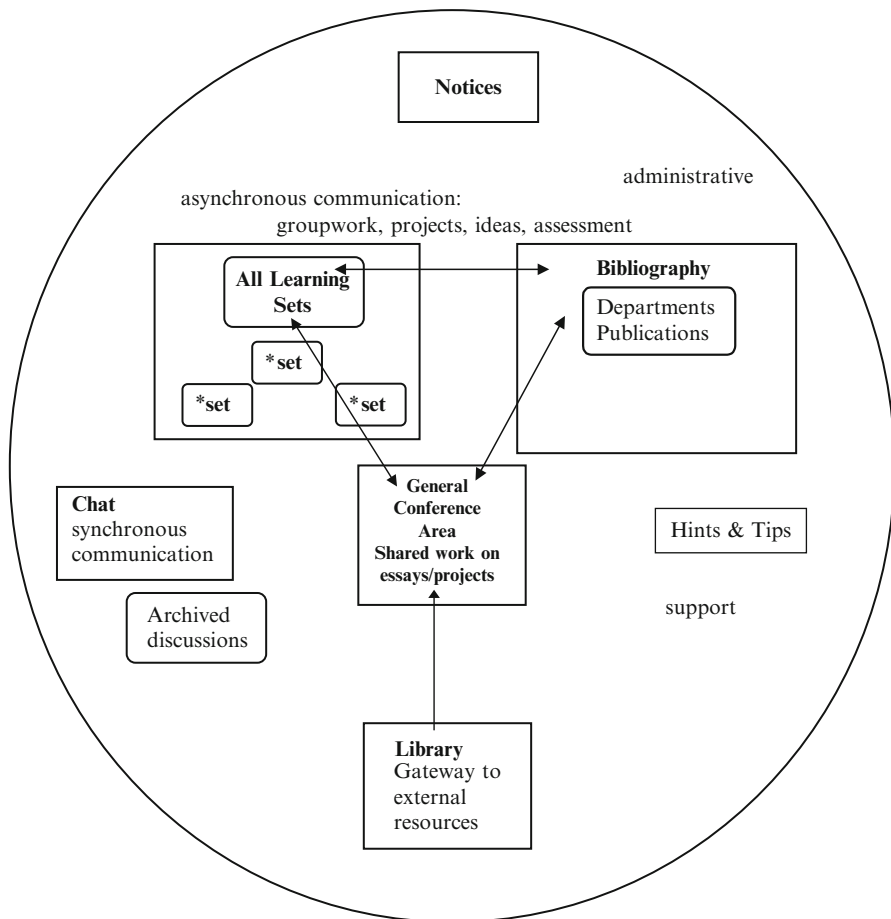


Fig. 1.1 CM MAML – electronic environment

networked learning involve interaction with on-line materials *and* with other people. But use of on-line materials is not a *sufficient* characteristic to define networked learning”.

The principle not emphasised in this early definition of networked learning, but which was always present and has become to be seen as an important and integral aspect of networked learning, is the one of collaboration. Collaboration and cooperation were identified in the early research and trials as important features of a development orientation to open learning. They were significant aspects in the early literature of “networked learning” and were explicitly identified in the writing of, for example, Hodgson and McConnell (1992) writing about the ITOL model and Goodyear and Steeples (1992) writing about the JITOL model. Hodgson and

McConnell (1992) explain that the aspirations of the ITOL project were, as described in Hodgson et al. (1989), to strive to pursue an approach to open learning, where:

We have sought to take a ‘developmental’ orientation to our work and see open learning as allowing learners to define their own learning and personal development needs through processes of negotiation, collaboration and cooperation (p. 137).

To all intents and purposes, the ITOL model they depict and describe in that paper was an early variation of a VLE but underpinned by an identifiable and distinct pedagogy which assumed “*negotiation, collaboration and cooperation*”.

That cooperative and collaborative learning was always seen as an important feature in the work of both ITOL and JITOL is clearly stated by Hodgson and McConnell (1995) when describing the work of “cooperative learning and development network” (CLDN). The CLDN was another initiative that was conducted as part of the JITOL project, where the “very purpose of the trial was to set up a cooperative learning and support group” or network.

A Pedagogic Framework for Networked Learning

Drawing on the above work and the evaluation of online learning courses, and associated theory of education and computer-supported collaborative learning (CSCL), McConnell attempted to provide a pedagogic foundation for the application of the emerging ideas on networked learning (1994, 2006). Posing the question “what constitutes a “useful design” for networked learning, and what issues need to be addressed in designing such courses”, he suggested six broad areas of pedagogy that need to be addressed when designing networked learning courses.

Openness in the educational process. The Learning Community: Being open in the teaching and learning process was seen to be a key factor in the design of networked learning. Openness leads to meaningful learning and can be facilitated by the development of a learning community, where one works for oneself and for others and where development occurs. Learning is seen to occur in a social context, and as a consequence learners begin to address learning from a qualitatively different, meta-level. When asked about their willingness to work collaboratively in groups, 96% of students said it depended on the degree of openness in the group (McConnell 2006, p. 72).

Self-determined learning. Self-determined learners take primary responsibility for identifying their own learning needs, and help others in determining theirs. In these processes, learners become aware of how they learn, and develop deep approaches to learning. When asked, a large proportion of students (91%) say that studying in this way has made them more aware of the strengths and weaknesses of their own learning processes (McConnell 2006, p. 80).

A real purpose in the cooperative process. Much higher education learning is abstract and often unrelated to real situations, and many students struggle to see the purpose of it. If learners have a real purpose in learning, they engage with the

learning process in a qualitatively different way. Problem-based learning (PBL) and action learning/research are two ways in which learners can define the focus of their learning in meaningful and relevant contexts. This promotes positive interdependence:

Positive interdependence is the knowledge that you are linked closely with others in the learning task and that success depends on each person working together to complete the tasks ... (McConnell 1994, p. 94).

Outcome interdependence – the desired goals of learning – provides learners with a means of relating to the group and its tasks. Means interdependence is the action required by each group member.

A supportive learning environment. A supportive learning environment is one where learners encourage and facilitate each other's efforts. Being supportive does not, however, mean a lack of intellectual challenge. Learners need to be able to work without fear: where there is a cloud of uncertainty, they act with caution.

Collaborative assessment of learning. Collaborative self–peer–tutor assessment processes are central to networked learning; they are a corollary of cooperative learning and support the cooperative process. Reflection on the process of collaborative assessment helps those involved learn from the process and helps them be better prepared and skilled for the next assessments (McConnell 2006). With experience, collaborative assessment is often the most positively thought of aspect of networked learning.

Assessment and evaluation of the ongoing learning process. Assessing and evaluating the networked learning course is also a cooperative tutor–learner process. Learners must feel that there is a real opportunity to change the design of the course; this can be achieved by the tutor and learners working together in regular group processing. The norms and roles associated with networked learning groups help eliminate some of the competitive nature of traditional educational environments. Learners need to work at mutual acceptance, and develop skill in working cooperatively.

Using this framework, the first virtual Masters in Networked Collaborative Learning was launched in 1996 at Sheffield University (McConnell 1998). The course ran completely virtually and was offered globally. It developed and changed over the years as a consequence of the cooperative tutor–learner evaluation process (McConnell 2000, 2006) and was the basis for the design of a TEL doctoral PhD programme first offered at Lancaster University in 2007.

The Networked Learning Conference

As the practice of networked learning developed and research emerged, the need for a good academic outlet for this new field became apparent. The Networked Learning conference was founded in 1998 by David McConnell with the specific purpose of offering an international conference that focused primarily on the educational

aspects of learning that is supported by new information technologies, rather than a focus on the technology itself, as was the case with many other conferences at that time. McConnell made specific mention to the importance of collaboration to a learning approach based on networked learning. In the special issue of JCAL that published a selection of papers from that conference, he explained in his editorial:

What is Networked Learning

Many terms are emerging to describe the use of electronic communication and the Internet in education and training. My preference is for 'networked learning' since it places emphasis on networking people and resources; and on collaboration as the major form of social relationships within a learning context. The emphasis is empathically on learning and not on technology (McConnell 1999).

By the third networked learning Conference in 2002, this was a firmly embedded aspect of the Networked Learning Conference calls for papers. The 2002 call stating:

We invite you to the above conference which is an opportunity to participate in a forum for the critical examination and analysis of research in networked learning i.e. learning and teaching carried out largely via the Internet/Web which emphasises collaborative and cooperative learning, learning through dialogue and group work together with interaction with online materials, and collaborative knowledge production.

At that conference, a Manifesto called "*Towards E-quality in Networked e-learning in Higher Education*" was presented from the work of the participants of an ESRC seminar series on Understanding the Implications of Networked Learning for Higher Education.

In the 2002 Manifesto, the working definition of networked learning offered was:

Networked e-learning refers to those learning situations and contexts which, through the use of ICT, allow learners to be connected with other people (for example, learners, teachers/tutors, mentors, librarians, technical assistants) and with shared information rich resources. Networked e-learning also views learners as contributing to the development of these learning resources and information of various kinds and types (E-Quality Network 2002).

While again the idea of collaborative learning does not appear in the definition in the Manifesto itself, the Manifesto states very explicitly that technology used to support e-learning affords two significant capabilities:

1. Its ability to support distributed collaborative interaction and dialogue
2. Its ability to support access to information-rich resources

These were two capabilities which the signatories of the manifesto felt had been considered unequally. One of the aims of the manifesto was to rebalance the debate on e-learning to give greater attention to the processes which support interaction and dialogue – or in other words "*collaborative and cooperative learning, learning through dialogue and group work together with interaction with online materials, and collaborative knowledge production*" (c.f. NLC 2002 call for papers).

To this date, the Networked Learning Conference series refers to networked learning as an approach that emphasises dialogical and collaborative learning, the NLC 2010 call for papers saying much the same as the 2002 call, i.e.:

The conference is an opportunity to participate in a forum for the critical examination and analysis of research in networked learning i.e. learning and teaching carried out largely via

the Internet/Web which emphasises dialogical learning, collaborative and cooperative learning, group work, interaction with on-line materials, and knowledge production.

McConnell (2006) explains that collaboration can help to clarify ideas and concepts through discussion, develop critical thinking and provide opportunities for learners to share information and ideas. He further suggests that it “also helps to develop communication skills, provide a context where the learners can take control of their own learning in a social context and offer or provide validation of individuals’ ideas and ways of thinking through conversation (verbalising); multiple perspectives (cognitive restructuring) and argument (conceptual conflict resolution)” (McConnell 2006).

Cousin and Deepwell (2005), like other writers in the field, make a direct connection to the overlap between the collaborative pedagogic values of networked learning and Lave and Wenger’s theory of situated learning within communities of practice. The connection to the idea of learning as described by Lave and Wenger (1991) as emerging from collaborative and situated practice was recognised early in the development of networked learning (cf. Goodyear and Steeples 1992; Hodgson and Fox 1995). Taking this further within the context of networked learning, Ferreday et al. (2006) claim that online collaboration that adopts a critical relational dialogue perspective can provide learners with opportunities to articulate their social and cultural experiences and to develop critical thinking.

At the NLC 2010 conference on which this book is based, Beaty, Cousin and Hodgson “revisited” the E-Quality in Networked e-Learning in Higher Education Manifesto stating:

In the paper we argue that the time is right to simply use the term networked learning and drop the ‘e’ in networked e-learning. This is because we think it is more important to foreground connectivity as a specific and important pedagogical feature of networked learning. We claim that an updated definition of networked learning should not only refer to being a pedagogy based on connectivity and the co-production of knowledge but also one that aspires to support e-quality of opportunity and include reference to the importance of relational dialogue and critical reflexivity in all of this (2010).

They also alluded to networked learning as being a “pedagogy of inquiry” and one suited for the twenty-first century.

Networked Learning in a Danish Setting

This far, we have focused essentially on the development of networked learning in the UK and how this influenced and led to the Networked Learning Conference series and current networked learning definition.

At the same time, however, similar pedagogical ideas and practices were being developed elsewhere. In a Danish setting, the primary educational exploration of ICT at university level was also linked to developments within open–distance learning.

In the late seventies and beginning of the eighties, Jutland Open University, in a joint initiative between Århus University and Aalborg University, was established. The objective was to offer university programmes as open–distance learning. This initiative was especially taken up by the faculties within the Humanities. Denmark has not had a long tradition of distance education as the other Scandinavian countries, and this gave a kind of freedom to the learning approaches adopted. Where many international distance learning programmes at that time were based on a delivery mode, Jutland Open University was based on a critical educational tradition building on critical investigations and dialogues. At the same time, developments within ICTs provided the opportunities for new infrastructures for learning. Jutland Open University became, in the Danish setting, the spearhead to explore these opportunities; and especially computer conferencing was seen as an interesting tool to explore due to the focus on many-to-many communication, which provided an infrastructure for dialogues and for collaboration as a prerequisite for an educational approach of critical enquiry and dialogue.

There were strong contacts to Hiltz and Turoff, two networked learning pioneers from New Jersey Institute of Technology, who developed the idea of the networked nation (1978) and the virtual classroom (Hiltz 1990) based on the design and use of computer conferencing. But due to practical circumstances, it became PortaCOM, a computer conferencing system originally developed by the Swedish Government's Defence Research Institute (Palme 2000), which was used in the first development projects in Denmark (Dirckinck-Holmfeld 1990). Jutland Open University and the PICNIC group at Aalborg University became some of the pioneers in a Scandinavian setting. PICNIC was the acronym for "Project in Computer Networks in Distance Education Curricula" – a project supported by the Danish Research Council running in the late 1980s (Lorentsen 2004).

A particular focus in the Danish setting, originally developed by the PICNIC team and further developed within the Human Centred Informatics group (later e-Learning Lab) at Aalborg University, and also in the national research network on Multimedia and Learning with partners from most of the Danish universities (later the MIL-group), was the focus on how problem and project-based learning could become the pedagogical foundation for the integration of ICT in a pedagogy of open–distance learning (Danielsen et al. 1999; Dirckinck-Holmfeld 1990; Dirckinck-Holmfeld and Fibiger 2002).

The pedagogical framework, which we labelled (POPP) as an abbreviation of problem-oriented project pedagogy, has its roots in critical pedagogy and socio-constructivist and socio-cultural approaches to the understanding of ICT and learning. It incorporates a series of integrated didactical principles as basis for the design of a learning environment: problem formulation, inquiry of exemplary problems, participant control, interdisciplinary approaches, joint projects and action learning (Dirckinck-Holmfeld 2002; Kolmos et al. 2004). In this approach, (1) students have to go through different systematic stages: preliminary inquiry, problem formulation, theoretical and methodological considerations, experimentation and reflection; (2) the learning content is related to the real world and to the learners' experience – which promotes the students' motivation and comprehension; (3) the projects are

carried out in collaboration with companies and public institutions and (4) learning takes place by doing, and through dialogue, communication and collaboration in joint groups (Coto 2010).

Along the way, there were of course other inspirations for the development of POPP. One of the greatest inspirations was the work of Lave and Wenger (1991) and Wenger (1998). In the early nineties, scholars from Aalborg University had an opportunity to engage with the Institute for Research on Learning in Palo Alto, where the principles of learning in communities of practice were being shaped. It became obvious that the principles of learning within communities of practice (Wenger 1998) together with the principles from the critical educational tradition around problem and project-based learning provided a theoretically productive framework to understand principles of collaboration, meaning making and identity within an open–distance learning landscape (Dirckinck-Holmfeld 1995).

Since the early experimentation in the beginning of the eighties using computer conferencing to support problem and project-based learning, the pedagogical approach was further developed theoretically and practically through the early nineties. A great number of educational master programmes have been established and are now being offered on a regular basis. This has provided a solid background for the development of sustainable pedagogical practices integrating the principles of problem and project-based learning and communities of practice.

One of these master's programmes is the MIL-programme, Master in ICT and Learning. It was established in 2000 and has been running for more than 10 years. It is itself a network based on mutual and equal collaboration between five university institutions, and as such a forerunner for the organisational principles of the networked society and new institutional set-ups as described by, among others, Castells (2000).

The Master of ICT and Learning can in a Danish context be seen as a prototypical example of a networked learning environment. Even if it has not from the beginning defined itself within the networked learning framework, it has become evident that it shares some of the same values and principles. ICT has never been a goal in itself. On the other hand, ICT is viewed as a many-fold and complex learning infrastructure, which mediates the learning taking place and which enables the students, students and supervisors and coordinators to work together on shared enterprises to build up shared repertoires and engagements through promoting connections between one learner and other learners, between learners and tutors and between the learning community and its learning resources (Goodyear et al. 2004). In the POPP approach to networked learning, it is however not so much "connections" which are viewed as the core motor for development as more engaged interdependencies between the group members that is seen as the driving force for meaningful learning (Fjuk and Dirckinck-Holmfeld 1997).

Given this opportunity to look back into the history of networked learning in a Danish context, it seems as if the pioneers of networked learning in Denmark have been following many of the same paths as the pioneers of networked learning in the UK. In periods, they have also been engaged in shared activities. The New Jersey Institute of Technology was a kind of shared anchor point at that time and so were activities and seminars organised around Open University in the UK (Mason and Kaye 1990).

Later researchers from Denmark engaged in EQUEL, a European project, and at the Networked Learning Conference in 2004 the EQUEL participants presented five symposia that each explored a dimension of “E-quality in e-learning”. Each symposium shared ideas and perspectives and theoretical principles on various practices and experiences of networked learning. Some of the same actors got an opportunity to engage in the European Research Team on “Productive Learning within Networked Learning” within Kaleidoscope, a Network of Excellence on Technology Enhanced Learning, supported by the EU Framework programme 6. This work, reported in Dirckinck-Holmfeld et al. (2009), researched networked learning practices within higher education and continuing professional development to provide a meso-level perspective.

Finally, through the collaboration organising the 7th International Conference on Networked Learning, which took place in Aalborg in 2010 and this book, we have become much more aware of the parallel histories, which have been going on in the various academic communities in the search for productive ways to engage with ICT to serve meaningful learning. In this work, the International Networked Learning Conference along with other conferences in the field, among others the international conference on Computer Supported Collaborative Learning, has played an important role in bringing scholars within education and technology and practitioners together.

Impact of World Wide Web Developments on Networked Learning

Developments of the World Wide Web in the mid 1990s stimulated the emergence of new practices within networked learning and more broadly within e-learning (electronic mediation of learning). The WWW provided new services, graphical interfaces and more user-friendly and accessible environments, and most important the Web has become used by many people for many and various different purposes. The first generation of WWW was dominated by a content delivery metaphor and to make information accessible. Within education courses, delivery systems, such as Black Board, Fronter and Web CT, became widespread. These systems were, due to their design and their focus on content delivery, not so supportive of networked learning approaches. Networked learning communities have been more oriented towards community-oriented systems, as FirstClass, Quickplace or Moodle (Pilkington and Guldberg 2009; Tolsby et al. 2002). With the development of social software sites, first My Space, later Face Book, Second Life, etc., there was a real breakthrough in the use of the Internet. It was estimated (for 2010) that more than a quarter of Earth’s population use the services of the Internet (<http://www.internetworldstats.com/stats.htm>).

Web 2.0 technologies have given unprecedented access to both information and the world and ways of being and interacting. The diffusion of Web 2.0 has given a dramatic rise in the integration of ICT for social and leisure activities. As well as

within all kinds of professional activities, Web 2.0 principles are being used. The basic design principles of Web 2.0 are set within a social and participative perspective of interaction that does not depend on expert's meaning and understanding so much as that of members and participants, who negotiate the meaning of the design and the content (Ryberg and Dirckinck-Holmfeld 2010). As such, the Web 2.0 technologies are more in line with the basic pedagogical principles of networked learning focussing on engaged connections and collaborations.

From the history of networked learning, it becomes evident that the focus on engaged connections and collaborations is not caused by the emergence of Web 2.0; however, Web 2.0 technologies may be used in ways, which are more in line with the basic pedagogical principles of networked learning. Thus, Web 2.0 may provide the support for a shift in learning infrastructure, and bring networked learning out of the research lab and into practice providing many different learning designs.

Summary of the Development of Networked Learning

We can begin to delineate more clearly what networked learning is from this review and history of its development. The various scholars and practices associated with networked learning have an identifiable educational philosophy that has emerged out of those educational theories and approaches that can be linked to radical emancipatory and humanistic educational ideas and approaches. It can on the one hand be seen to emulate and reflect principles associated with areas of educational thinking, such as critical pedagogy (cf Freire 1970; Giroux 1992; Negt 1975) and democratic and experiential learning (cf. Dewey 1916; Kolb et al. 1974). While on the other hand it is seen as an approach and pedagogy within the general field of technology-mediated learning especially exploring the socio-cultural designs of learning as mediated by ICT and enacted by networked learning participants.

Structure of the Book

In the previous section, we considered the evolution of networked learning and highlighted some important theoretical, conceptual and practice issues that have occurred over the past 30 years and which have in many ways shaped the way in which networked learning has developed and is practiced today. This section now considers the main recent developments in the theory, practice and pedagogy of networked learning which form the basis of the chapters of this book. There are five sections, followed by a concluding chapter by ourselves. The sections are: developing understandings of networked learning; new landscapes and spaces for networked learning; dynamics of changing tools and infrastructures; understanding the social material in networked learning, and identity, cultural capital and networked learning. The final chapter attempts to consider what has gone before in the book and some important questions addressing the nature of networked learning.

Section 1: Developing Understandings of Networked Learning

In his chapter on “*Networked Learning, the Net Generation and Digital Natives*”, Chris Jones looks at the ways in which young people at the end of the twentieth century have undergone a step change in the use and perception of new technologies in their everyday lives. It is often assumed that the net generation have a fundamentally different orientation to the use of new technologies, and are able and appreciative users. It is also often assumed that because of this, they are or will be positive about the potential use of new technologies in the learning and teaching process and that this has implications for networked learning. In comparing the situation in the year 2000, when broadband was still a novelty and mobile devices relatively sparsely used by young people, with that 10 years later when there is ubiquitous use of the Internet, Web 2.0 and social networking systems, Chris Jones concludes that little has changed in young people’s perception of the potential use of these technologies in the learning process. There is no generational divide. Young people use technology in modest ways, focussing on simple tasks of accessing course materials and resources provided by universities. Students are not seeking radical changes in pedagogy that require innovative uses of technology. Jones concludes that self-report and interview studies of the past, often suggesting simple dichotomies and crude determinism, now need to be complemented by in-depth studies looking at the actual use of technology in the learning process. By doing this, we will be able to gain greater insight into the potential for student learning of new technologies.

The chapter by Thomas Ryberg, Lillian Buus and Marianne Georgsen on “*Identifying Differences in Understandings of Networked Learning Theory and Interactional Interdependencies*” asks some fundamental questions about the nature and purpose of networked learning in relation to emerging ideas on “connectivism”, which has strong links with Web 2.0 and social networking. They indicate that ideas, such as collaboration, sharing, creation and production, which are commonly associated with Web 2.0 can also be seen in the practice of networked learning. Connections and networking appear to be shared notions in networked learning and “connectivism”. The authors explore the theoretical challenges to networked learning by new ideas emerging from “connectivism”, and they explore the subtle but important differences in the meaning of shared terms that may point to important differences in pedagogy and the values that underpin learning and teaching in networked learning and in “connectivist” contexts.

Section 2: New Landscapes and Spaces for Networked Learning

The chapter titled “*Mediators of Socio-Technical Capital in a Networked Learning Environment*” by Dan Suthers and Kar-Hai Chu considers the restrictions of existing virtual learning environments (such as WebCT) in supporting what they call overlapping communities: that is, communities of learners that exist between different courses of study. They suggest that the potential for developing wide-ranging social capital is

lost by the use of VLEs. They draw on the concepts of “bridging” (Granovetter) and “boundary spanning” (Levina and Vaat) in order to show how the design of a new software environment (called disCourse) can be used to facilitate inter-group communication. They call this “bridging socio-technical capital”. Here, users can develop networks of weak ties *outside of their specific course circle* that provide access to a greater number of potential collaborators and resources that often are not available in strong tie circles. They call these “transcendent communities” and suggest that they provide useful networked learning opportunities for higher education students that are additional to those normally embedded communities designed into courses.

Panagiota Alevizou, Rebecca Galley and Gráinne Conole write about *“Collectivity, performance and self-representation: Analysing Cloudworks as a public space for networked learning and reflection”* and describe how the Web-based Cloudworks is a specialised networking site that uses the interfaces of social media within an educational context to permit participants to share resources and exchange ideas in a public space. The authors suggest that Cloudworks is an example of “productive network learning” and it is a place for collective intelligence and expressive interactions. The use of Cloudworks blurs formal and informal cultural learning and networked learning. Cloudworks exists somewhere between micro-blogging practices and the use of Twitter communications. It supports the link between the personal and the community, and provides a location for individuals to meet, discuss personal and collective issues and share resources. The networked learning practices evident in Cloudworks are informal in nature and often have a short lifespan. The chapter shows that issues of performance and identity, the transcendence of boundaries, processes of negotiation of the private and the public and resource sharing are all evident in Cloudworks.

The complex issue of networked learning processes between communities from different language and cultural backgrounds is examined by Juliana Raffaghelli and Cristina Richieri in their chapter titled *“A classroom with a view Networked Learning strategies to promote intercultural education”*. The authors suggest networked learning as a place to bring about intercultural education and as a place to meet equal-but-diverse people: a place of interculturalism rather than one of multiculturalism, where relationships are of mutual respect that may lead to cultural exchange. They suggest that instructional design principles and the management of diversity in networked learning are not enough and do not in themselves lead to greater intercultural learning. The authors conclude by inquiring into the possibility of influencing teachers’ practices towards creating greater intercultural teaching in networked learning environments, and suggest some interesting future research that may realise this concern.

Section 3: The Dynamics of Changing Tools and Infrastructures

Working from the position of a “technology steward”, that is someone who takes a leading role in considering which tools to introduce into a community, Patricia Arnold, John David Smith and Beverly Trayner in their chapter titled *“The challenge*

of introducing ‘one more tool’ – a community of practice perspective on networked learning” examine the intricate relationships between communities and technologies. Their research shows that the social fabric of learning is made up of communities and networks, and both enhance social learning processes. The introduction of “one more tool” – the focus of their work – with the aim of supporting and extending a community’s learning – can blur boundaries and create new ones. They show that the interplay among domain, practice and community is affected when “one new tool” is introduced in the community, bringing about changes in identity with the community and methods of engagement.

The chapter on “*Identifying the appropriate network for learning*” by Tom Nyvang and Ann Bygholm considers the conditions under which an institution decides on which ICTs are adopted for supporting networked learning. The authors focus on the shift from the use of one particular learning platform to another in order to show the intricacies of decision making in the process of change. By focussing on three main users of technology – students and teachers, management and support personnel – the authors show that there are various motives, goals and conditions that surround the use of learning technologies by each group. The case study approach adopted by the authors shows that the requirement for change is complex and at times contradictory. They argue that dissatisfaction with the existing system may not be addressed by changing to a new system. The reasons for change of the existing system are around user dissatisfaction in the use of the system, whereas the reasons put forward for adopting a new system focus on the operation, support and management of the system. This apparent contradiction is explained by the authors in terms of poor institutional guidance in the use of the existing system and an absence of explicit policy in the educational purpose of the system. They suggest that issues such as these will not be addressed solely by moving to a new system.

Section 4: Understanding the Social Material in Networked Learning

Terrie Lynn Thompson’s chapter “*Who’s taming who? Tensions between people and technologies in cyberspace communities*” adopts a socio-material approach to the exploration of various online networks in which self-employed people interact with Web technologies. With more people looking to the Web as a place for seeking human–human learning opportunities in online communities, concern is rising over the ways in which they negotiate the *materiality* of the net: that is the human–non-human pathways through the various discussion boards, chat forums and access to social networking systems and so on. The author shows that there is a series of passages through which users move, and in doing this they experience stabilising and disrupting community relations. It seems that users’ attempts to “tame” the technology are counteracted by the technology attempting to “tame” users. These relationships can be described as entanglements of hybrid or socio-technical constructions, which raise a series of interesting questions which the author addresses.

The focus of the chapter by Linda Creanor and Steve Walker titled “*Learning Technology in context: a case for the sociotechnical interaction framework as an analytical lens for networked learning research*” is socio-technical approaches in networked learning, and how they can provide useful concepts that are underutilised in the networked learning literature. Widespread technological determinism often describes relationships between people, technology and learning, contributing to gaps in our understandings of the use of learning technologies and learning. The authors argue for the use of socio-technical interaction network (STIN) (Kling) as a little used but useful method for understanding the complexities of contemporary learning. They argue that there is good reason to approach the examination of networked learning through the lens of social agency, ownership and control. Although there is a call for an emphasis on epistemic fluency (Goodyear et al.) in networked learning, existing theories (e.g. networked theory; actor network theory; communities of practice and so on) seem to have little widespread utility in mainstream HE practice. The chapter argues for a better balance between understandings of social agency and individual autonomy in the networked learning field. The authors feel that socio-technical frameworks can complement the use of socio-cultural theories, and help us make sense of the new interactions and analyse their consequences.

Section 5: Identity, Cultural Capital and Networked Learning

The advent of the use in higher education of blogging, reflective e-portfolios and other forms of online communication requiring high levels of reflection and disclosure raises serious questions about the kinds of new literacies required by students who are asked to use these tools as part of the formal learning and teaching process. This leads to the need to assist students in developing new forms of digital literacies which they can draw on in their course work. This concern for developing in students new forms of digital literacies is the subject of the chapter titled “*Just what is being reflected in online reflection? New literacies for new media practices*” by Jen Ross. The background to the chapter is a study examining how students and teachers negotiate issues of identity, authenticity, ownership, privacy and performativity in high-stakes online reflection in higher education. Jen Ross shows how the wider cultural societal context of blogging, where there is often a high degree of risk taking and personal disclosure, affects expectations in the use of these tools in higher education contexts. Conflicting expectations and norms are often associated with blogging, relating to authenticity, risk, pretence, commodification, othering and narcissism. Student and teacher assumptions and practices are affected, which suggests that we need to give greater consideration to the nature of online reflective writing and to the associated tensions that as a consequence arise.

The study by Laura Czerniewicz and Cheryl Brown titled “*Objectified cultural capital and the tale of two students*” examines the ways in which students use cell phones as a central and important means of accessing higher education resources. The authors explain that in South Africa, there is considerably greater ownership of

cell phones by students than there is of personal computers. They take this as their impetus to examine the digitally mediated worlds of South African students, and to explore how the identities of students are forged through the use of cell phones as they access and contribute to the resources of higher education.

The chapter provides two students as illustrative cases of mobile-centric and computer-centric digital practices. Bourdieu's concept of cultural capital (in its objectified and embodied forms) is used as a lens to examine the students' differences and similarities, their convergences over time and their disparate histories. The different types of objectified cultural capital available to each student are described, as are the processes of appropriation of embodied cultural capital. The relationship between these different types of capital and their influence on the students' attitudes to and choices about using ICTs for learning is especially relevant. Of particular note is the role that the cell phone as objectified capital plays. The case studies surface complexities, which need unravelling, and point to the research questions to be explored when grappling with participation in higher education in a digital age.

The focus of the chapter by Sue Smith titled "*How do SME leaders learn within networked learning? The situated curriculum and social identity*" is a networked learning programme set up for the owner-managers of small businesses (SMEs). It draws on the ideas of communities of practice and situated curriculum in particular to discuss how the owner-managers through participation in the "LEAD" programme acquire/construct an identity as LEAD delegates. The chapter argues that through the process of participation and constructing an identity as a LEAD delegate the programme participants learn and acquire an identity of leaders of their SMEs. What is significant in this process is that the participative pedagogy and networked learning approach of the programme are used to encourage critical reflection through dialogue. It is claimed that the pedagogical approach and spaces for learning that the programme provides, enabled by the programme facilitators, encourage the delegates to become leaders that are critically reflective and are open to challenging their own taken-for-granted assumptions and practice. Sue Smith concludes that given the importance of the enablers' roles in this process, critical reflexivity is essential for this networked learning role.

How do higher education practitioners develop new designs for learning in online settings in the face of widespread changes in higher education that require learners to acquire new digital skills, and for teachers to produce high-quality learning experiences and learning outcomes in the context of increased demands for productivity? The chapter by Karin Tweddell Levinsen and Janni Nielsen titled "*Innovating Design for Learning in the Networked Society*" attempts to address these and other important, but difficult-to-answer, questions. The authors note that their study is situated in the widespread social, political and economic changes in society brought about by a move from the industrial to the networked society and that these changes have a profound effect on education and on the identities of teachers and students. They ask the question: How can the educational system meet the challenge of the changing conditions? Is there a conflict between the call for higher education to be more productive while also continuing to produce high-quality learning, which takes time? Within the context of a system where teachers have to produce more

with fewer resources, the authors explore the development of what they call a “Design for Learning Model” intended to provide forms of networked learning that support learners in the new demands they face in taking on heavier workloads in the context of greater pressure on their time.

In Jorgen Lerche Nielsen’s and Oluf Danielsen’s chapter titled “*Problem-oriented project studies – the role of the teacher as supervising the study group in its learning processes*”, the authors consider an emerging change in the role of the teacher in supporting PBL students (or students involved in problem-oriented project studies, as they prefer to call their form of PBL) from that of the teacher who acts as expert and decides on the curriculum to be followed by students, provides lectures, sets tasks and unilaterally assesses learning outcomes to that of a supervisor and facilitator, supporting students in examining problems that they themselves have adopted and wish to focus on. This new teacher role produces a shift in relations between the student and the teacher, the latter now focussing on processes and methodological issues and ensuring a strong reflective element of the overall process, rather than ensuring that students follow “correct” and accepted procedures for examining problems. In the chapter, the authors explore the challenges for teachers and students in this new relationship, drawing on the literature to inform practice and to suggest ways of understanding what these new relationships may mean for the learning and teaching process.

The many transformative experiences encountered by academics in adjusting to, and participating in, networked learning environments is discussed in the chapter by Stuart Boon and Christine Sinclair, titled “*Life Behind The Screen: Taking the Academic Online*”. The transition by academics from contexts of familiar practice to the new one of being an online practitioner results in some disconnectedness. Academics continue to have a stake in existing practices as they become immersed in their new, virtual environments. This has implications for identity as they find themselves operating in both kinds of environment simultaneously. Identity, language, time and engagement are viewed as both barriers and enablers in the movement from behind the screen to full participation in networked learning environments. In exploring sites of transformation and highlighting the process of transition involved in taking the academic online, the authors identify potential challenges and opportunities experienced in stepping out from behind the screen and projecting themselves into networked learning environments.

Concluding Chapter: The Theory, Pedagogy and Practice of Networked Learning

In the final chapter, we reflect on what has gone before in the central chapters of the book and consider four important questions concerning the theory, pedagogy and practice of networked learning. These questions are:

1. Is networked learning a theory, practice or pedagogy?
2. What are the pedagogical values that underpin networked learning?

3. What is the relevance and challenges of networked learning to mainstream higher education?
4. What new possibilities and challenges is Web 2.0 bringing to networked learning?

References

- Beatty, E., Cousin, G., & Hodgson, V. (2010). Revisiting the e-quality in networked learning manifesto. In Dirckinck-Holmfeld, L., Hodgson, V., Jones, C., McConnell, D., & Ryberg, T. (Eds.), *Proceedings of the 7th International Conference on Networked Learning 2010*. Aalborg, Denmark: Aalborg University. ISBN978-1-86220-225-2.
- Boot, R., & Hodgson, V. (1987). Open learning: Meaning and experience. In V. Hodgson, S. Mann, & R. Snell (Eds.), *Beyond distance teaching: Towards open learning* (pp. 5–15). Buckingham: Open University Press.
- Castells, M. (2000). *The rise of the network society* (2nd ed.). Oxford: Blackwell.
- Coffey, J. (1977). Open learning opportunities for mature students. In C. Davies (Ed.), *Open learning systems for mature students, CET Working Paper 14*. London: Council for Educational Technology.
- Coto, M. C. (2010). *Designing for change in university teaching practices. A community of practice approach to facilitate university teacher professional development in ICT and project-oriented problem pedagogy*. PhD thesis, Department of Communication and Psychology, Aalborg University, Aalborg.
- Cousin, G., & Deepwell, F. (2005). Designs for network learning: A communities of practice perspective. *Studies in Higher Education*, 30(1), 57–66.
- Danielsen, O., Dirckinck-holmfeld, L., Sørensen, B. H., Nielsen, J., & Fibiger, B. (1999). *Læring og multimedier [Learning and multimedia]*. Aalborg: Aalborg University Press.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education (1966 edn)*. New York: Free Press.
- Dirckinck-Holmfeld, L. (1990). *Kommunikation på trods og på tværs [Project pedagogy and computer-mediated communication in distance education]* Dissertation, Aalborg University, Aalborg.
- Dirckinck-Holmfeld, L. (1995). Tilbage til praksis [Back to practice]. *Humaniora*, 9(2), 25–27.
- Dirckinck-Holmfeld, L. (2002). Designing virtual learning environments based on problem oriented project pedagogy. In L. Dirckinck-Holmfeld & B. Fibiger (Eds.), *Learning in virtual environments* (pp. 31–54). Frederiksberg C: Samfundslitteraturs.
- Dirckinck-Holmfeld, L., & Fibiger, B. (Eds.). (2002). *Learning in virtual environments*. Frederiksberg C: Samfundslitteratur.
- Dirckinck-Holmfeld, L., Jones, C., & Lindström, B. (Eds.). (2009). *Analysing networked learning practices in higher education and continuing professional development*. Rotterdam: Sense Publishers.
- Emms, J., & McConnell, D. (1988). An evaluation of tutorial support provided by electronic mail and computer conferencing. *Aspects of Educational Technology*, 21, 263–270.
- E-Quality Network (2002). *Towards e-quality in networked e-learning in higher education 'manifesto'*. Presented at the Networked Learning 2002 Conference, Sheffield. Retrieved August 7, 2011 from <http://csalt.lancs.ac.uk/esrc/manifesto.htm>
- Ferreday, D. J., Hodgson, V. E., & Jones, C. (2006). Dialogue, language and identity: Critical issues for networked management learning. *Studies in Continuing Education*, 28(3), 223–239.
- Fjuk, A., & Dirckinck-Holmfeld, L. (1997). Articulation of actions in distributed collaborative learning. *Scandinavian Journal of Information Systems*, 9(2), 3–24.
- Freire, P. (1970). *Pedagogy of the oppressed*. New York: Continuum.

- Giroux, H. (1992). *Border crossings: Cultural workers and the politics of education*. New York: Routledge.
- Goodyear, P. (2001). *Effective networked learning in higher education notes and guidelines*. Retrieved August 7, 2011 from <http://csalt.lancs.ac.uk/jisc/>
- Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (2004). Research on networked learning: An overview. In P. Goodyear, S. Banks, V. Hodgson, & D. McConnell (Eds.), *Advances in research on networked learning*. Dordrecht: Kluwer.
- Goodyear, P., & Steeples, C. (1992). IT-based open learning tasks and tools. *Journal of Computer Assisted Learning*, 8(3), 163–176.
- Harris, D. (1987). *Openness and closure in distance education*. Lewes: Falmer Press.
- Hiltz, S. R. (1990). Evaluating the virtual classroom. In L. Harasim (Ed.), *Online education: Perspectives on a new environment*. New York: Praeger.
- Hiltz, S. R., & Turoff, M. (1978). *The network nation: Human communication via computer* (1st ed.). Reading, MA: Addison-Wesley.
- Hodgson, V., & Fox, S. (1995). Understanding networked learning communities. In P. Held & W. F. Kugemann (Eds.), *Telematics for education and training*. Proceedings of Delta 94 Conference, Dusseldorf, Germany.
- Hodgson, V., Lewis, R., & McConnell, D. (1989). *IT-based open learning: A study report*. ESRC InTER Programme Occasional Paper 12/89, Lancaster University, Lancaster, England.
- Hodgson, V. E., & McConnell, D. (1992). IT-based open learning: A case-study in management learning. *Journal of Computer Assisted Learning*, 8(3), 136–158.
- Hodgson, V. E., & McConnell, D. (1995). Co-operative learning and development networks. *Journal of Computer Assisted Learning*, 11(4), 210–224.
- Howe, A., & McConnell, D. (1984). The use of the Cyclops telewriting system for teaching electronics. *International Journal of Electrical Engineering Education*, 21, 234–249.
- Knowles, M. (1975). *Self-directed learning*. New York: Associated Press.
- Knowles, M. (1985). *Andragogy in action*. San Francisco: Jossey Bass.
- Kolb, D. A., Rubin, I. M., & McIntyre, J. M. (1974). *Organizational psychology: A book of readings* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Kolmos, A., Fink, F. K., & Krogh, L. (Eds.). (2004). *The Aalborg PBL model: Progress, diversity and challenges*. Aalborg: Aalborg University Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lorentsen, A. (2004). Quality in master programmes in continuing education through problem based project work. In A. Kolmos, F. K. Fink, & L. Krogh (Eds.), *The Aalborg PBL mode 1: Progress, diversity and challenges* (pp. 263–283). Aalborg: Aalborg University Press.
- Mason, R., & Kaye, A. (1990). Towards a new paradigm for distance education. In L. Harasim (Ed.), *Online education: Perspectives on a new environment*. New York: Praeger.
- McConnell, D. (1982). Cyclops telewriting tutorials. *Teaching at a Distance*, 22(Autumn), 20–25.
- McConnell, D. (1983). Sharing the screen: Cyclops teleconference tutorials. *Media in Education and Development*, June, 59–63.
- McConnell, D. (1984). Cyclops shared-screen teleconferencing. In A. W. Bates (Ed.), *The role of technology in distance education* (pp. 139–153). London: Croom Helm.
- McConnell, D. (1986). The impact of Cyclops shared-screen teleconferencing in distance tutoring. *British Journal of Educational Technology*, 17(1), 37–70.
- McConnell, D. (1988a). Computer conferencing in teacher inservice education: A case study. In D. Harris (Ed.), *World yearbook of education, 1988: Education for the new technologies* (pp. 199–218). London: Kogan Page.
- McConnell, D. (1988b). Co-operative student/tutor design of an educational technology and development course for adults. *Aspects of Educational Technology*, 21, 64–71.
- McConnell, D. (1994). *Implementing computer supported cooperative learning*. London: Kogan Page.

- McConnell, D. (1998). Developing networked learning professionals: A critical perspective. In Banks, S., Graebner, C., & McConnell, D. (Eds.), *Networked lifelong learning: Innovative approaches to education and training through the Internet* (pp. v.1-v.x11). Proceedings of the International Conference, University of Sheffield, DACE, Sheffield, England. ISBN 1 899 323 05 1 (pp. 430). Retrieved August 7, 2011 from <http://www.networkedlearningconference.org.uk/past/nlc1998/>
- McConnell, D. (1999). Networked learning [Guest editorial]. *Journal of Computer Assisted Learning*, 15(3), 177–178.
- McConnell, D. (2000). *Implementing computer supported cooperative learning* (2nd ed.). London: Kogan Page.
- McConnell, D. (2006). *E-learning groups and communities*. Maidenhead: SRHE/OU Press.
- McConnell, D., & Sharples, M. (1983). Distance teaching by Cyclops: An educational evaluation of the open university's telewriting system. *British Journal of Educational Technology*, 14(2), 109–126.
- Morrison, T. R. (1989). Beyond legitimacy: Facing the future in distance education. *International Journal of Lifelong Education*, 8(1), 3–24.
- Negt, O. (1975). *Sociologisk fantasi og eksemplarisk indlæring* (B. Nielsen et al., Trans.). Frederiksberg: Roskilde University Press. (Original work published 1971)
- Palme, O. (2000). *History of the KOM Computer Conferencing System*. Retrieved January 19, 2011 from <http://people.dsv.su.se/~jpalme/s1/history-of-KOM.html>
- Pilkington, R., & Guldberg, K. (2009). Conditions for productive networked learning among professionals and carers: The WebAutism case study. In L. Dirckinck-Holmfeld, C. Jones, & B. Lindström (Eds.), *Analysing networked learning practices in higher education and continuing professional development*. Rotterdam: Sense Publishers.
- Rogers, C. (1983). *Freedom to learn for the eighties*. Columbus, OH: C. E. Merrill.
- Ryberg, T., & Dirckinck-Holmfeld, L. (2010). Analysing digital literacy in action: A case study of a problem-oriented learning process. In R. Sharpe, H. Beetham, & S. de Freitas (Eds.), *Rethinking learning for a digital age* (pp. 170–183). New York: Routledge.
- Short, T. J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: Wiley.
- Steeple, C., & Jones, C. (Eds.). (2001). *Networked learning in higher education*. Berlin: Springer Verlag.
- Tolsby, H., Nyvang, T., & Dirckinck-Holmfeld, L. (2002). A survey of technologies supporting virtual project based learning. In S. Banks (Ed.), *The third international conference on networked learning* (pp. 572–581). Sheffield: University of Sheffield.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. New York: Cambridge University Press.