Networked Learning - a social practice perspective

Chris Jones

Institute of Educational Technology, Open University, UK. c.r.jones@open.ac.uk

Abstract

This paper proposes a social practice perspective on networked learning. Networked learning doesn't privilege any particular view of learning and the paper does not claim any special status for a social practice view but it sets out a clear agenda and demarcation for this area of study. The suggestion is that social practice can provide a theoretical lens that allows researchers to examine learning, and networked learning specifically, in ways that other perspectives do not and that a social practice approach is especially appropriate for research focused on the kinds of changes that are taking place around what has been termed Web 2.0.

Keywords

Networked learning, situated learning, social practice, Web 2.0.

Introduction

What do we mean by networked learning? The most common definition is that provided by the CSALT team at Lancaster University:

> Networked learning is learning in which information and communication technology (C&IT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources. (Goodyear et al. 2004)

This definition arose out of a series of projects in the late 1990s and it is associated with the emergence of the Networked Learning Conference in 1998. Ten years on it seems an opportune moment to reflect on the meaning a central term in the definition, but one that has received relatively little attention – learning. The clearest exposition has come from one of the originators of the definition of networked learning Peter Goodyear. His chapter Psychological Foundations for Networked Learning (Goodyear 2002) elaborates one source of thinking about learning in this field. Goodyear notes a number of important features about the debates about learning. He notes the distinction drawn by Laurillard between psychological approaches to learning and the outlooks of those concerned with education and educational research (Laurillard 2002). Goodyear also notes the growth of a socially situated understanding of learning in the works of Lave (1988), Brown et al (1989), Suchman (2007) and others. It is this area that I wish to develop, not as a rejoinder to the psychological approach adopted by Goodyear but as an addition to his account. Goodyear, for example, sets out the case for what he calls an 'indirect approach to learning'.

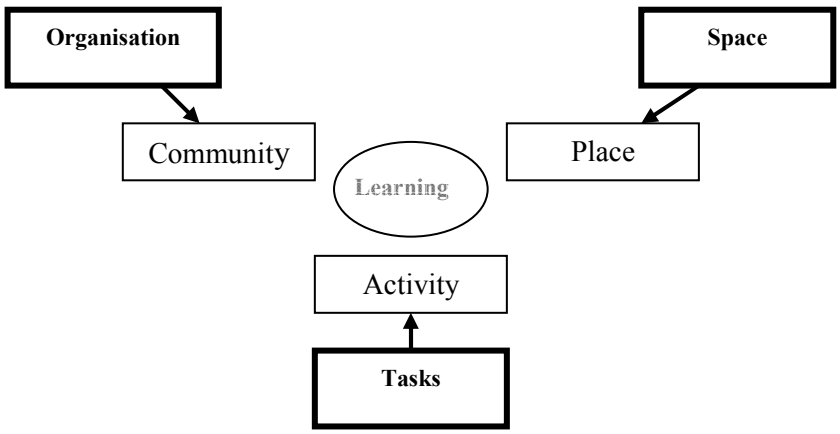

Figure 1 Three aspects of the Educational Design Problem Space (Goodyear 2002 p 65)

This indirect approach suggests that we can design organisations, space and tasks but the enactment of these is only indirectly designed for. This is because community, place and activity are mutually constituted by the design and the activity of participants as the design is brought into use. All of this is situationally specific and locally constituted by a range of contingent factors. Learning is even further removed from the design process in this account, suggesting that while we can design for learning, by encouraging but not directly designing productive activity, convivial community and accommodating places, we cannot actually design for learning itself. This focus on the socially situated nature of design points directly to the theory of social practice and away from Cognitivist understandings of learning. In relation to the Cognitivist tradition Goodyear himself states that:

> "I will be drawing particularly on works from the Cognitive psychology tradition, but will also be drawing on aspects of work which have more to say about social aspects of learning" (Goodyear 2002 p 51).

This paper takes this further by drawing on works from the social and situated tradition and suggesting a research agenda that focuses on the issue of learning as a social practice.

Social Practice

Social practice is a term that competes with several others to identify a particular view of how learning can be understood. It stands alongside learning as a cultural practice for example, though the emphasis here is firmly materialist (though many view culture as a material practice too) and has a less marked focus on history (see for example Crook 2002). It also sits alongside the use of activity in the Vygotskian tradition of activity theory (Engeström 1987). Practice in the view presented here subsumes activity as activity points to actions oriented to an object, a difficult term to use in English as the English word 'object' can seem to point to static 'things' rather than the notion of an objective contained in the technical term object used in activity theory. Practice does not have the same sense of intention and future orientation. Practice can be habit, not so much something done for a purpose, more just something done. Activity theory of course has a third term for such kinds of doing, operations, but these are seen as automatic and subsidiary to activity, whereas in social practice habitual and routine doings are on a more equal footing. I am thinking of the way Bourdieu uses habitus as something more than just habit, understood as a mechanical or programmed way of doing. Habitus retains the idea of unifying and ordered activity in a way that need not be oriented towards a specified or specifiable outcome. My action might be part of the activity of cooking with the object of eating a meal, but it may be habitus that unifies the way I do this with an entire class of others in terms of what I choose to eat and how I choose to eat it (Bourdieu 1977).

Practice then at minimum covers arrays of embodied materially mediated human activities, including the skills, tacit knowledge(s) and presuppositions that underpin activity, Practice theory provides a framework for research that covers all analyses that:

> 1. Develop an account of practices, either the field of practices or some sub-division thereof (e.g. science), or
> 2. Treat the field of practices as the place to study the nature and transformation of their subject matter
> (Scahtzki et al. 2001 p2)

Practice theory conceives of practice as materially embodied in arrays of human activity organised around shared understandings. In this sense *materially embodied* signals a focus that is both on physical and technical artefacts and the human body. A clear general exposition of the area can be found in an edited collection The Practice Turn in Contemporary Theory (Schatzki et al. 2001).

In education social theories of learning have been developed under the banners of activity theory (more particularly Cultural Historical Activity Theory) (Nardi and Kaptelinin 2006, Engeström, 1987); socio-cultural theory (Säljö 1999), social and situated learning (Brown, Collins and Duguid 1989, Lave and Wenger 1991) etc. In my experience many students in the field have trouble mapping this complex field and also in clearly distinguishing between the at times competing overarching paradigms of psychological and social theories of learning. This paper sets out to distinguish social practice as a distinct approach and to set out ways that social practice offers a significant framework for research in networked learning.

Practice

Practice in education has a number of interrelated meanings. There is for example a strong current interest in 'practice based learning' and this is often related to professional learning, either in the traditional professions of medicine and law or in the 'new professions', areas such as social work and learning technology. The Open University for example hosts the Practice-based Professional Learning Centre for excellence in Teaching and Learning for the UK (http://www.open.ac.uk/pbpl/). The home page defines their area of work in this way:

> "By 'practice-based learning' we mean learning which arises out of, or is focussed on, working practice in a chosen job, voluntary work, career, or profession."

Practice in this sense implies a vocational emphasis, though how strong this might be is heavily contested. It can influence both the process of education and the intended outcomes. In terms of outcomes a distinction can be drawn, for example, between the part-taught PhD in Educational Research at Lancaster University and the EdD at the Open University in that the latter is explicitly intended for students who will use their higher degree in a practice situation whereas the outcome of the Lancaster degree is located in a more standard academic route. This usage also points towards another commonly used array of ideas in relation to practice, the much discussed theory-practice divide (Eraut 2003). In education practice has been used to distinguish between the practical mundane activity of teachers and learners and the theories of teaching and learning. The theory-practice divide is a well worn path in educational research and Eraut notes the various origins of theoretical knowledge both in terms of accredited academic knowledge and in terms of personal theories based on experience. Whatever the source of theory practice depends upon more than simply knowing and an understanding of theory, fundamentally it will depend on the contexts in which theories have been used and the capacity to use theoretical resources in future contexts.

For the purposes of this paper I would want to highlight two aspects of this approach. Firstly to clearly separate social practice from this particular use of practice and secondly to note that whatever the intentions of theorists using social practice, their use of practice will inevitably carry with it an implication with regard to the way practice relates to theory. This concern also connects to the long philosophical history which distinguishes between different ways of acting, between poiesis and praxis, terms that might imprecisely be expressed as making something and doing something. Poiesis is related to techne, technical knowledge or expertise and the making of things whereas praxis is related to an ethical dimension of doing good and the action of doing something rather than making a product (Carr 1987 and 1993). Common use of the term practice can still carry with it a sense of moral purpose and of process rather than product.

In this paper we are using the term social practice in relation to developments in social theory and to locate a view of networked learning in relation to those developments. However we have to be aware that in whatever way we intend to use the term practice it will come with an overlay of other meanings which we summarise below.

- Practice relates to process and activity rather than product and output
- Practice relates to work and more particularly to professional kinds of work
- Practice is in tension with abstract forms of knowledge, often characterised as theory
- Practice may carry an ethical implication in terms of doing the right thing

This paper goes on to explore beyond these historical origins locating a current theory of social practice in relation to networked learning.

Networked learning and social practice

Networked learning has proved to be a durable expression and the definition provided by Peter Goodyear and CSALT has proved robust at a time when expressions used in relation to digital technologies in education have come and gone in a succession of fashions and policy initiatives. Computer Assisted Learning, Online learning, Computer Supported Collaborative Learning (CSCL), e-learning and more recently Technology Enhanced Learning (TEL) all have their followers and have become more or less popular so why insist on yet another term? By placing an emphasis on connections between people and between people and resources networked learning is naturally open to a social practice perspective. It is distinct in that unlike some earlier terms it does not focus on the computer, a focus less useful now that activity spans many devices and centres more specifically on the network. It does not focus on any particular kind of relationship as the term connections does not emphasises community and collaboration nor does it claim the special status of enhanced. Finally perhaps the most useful earlier term Online Learning is itself superseded by the development of the online-offline practices of mobile learning. In

education this is signified by Blackboard Backpack and the development of 'Moodle on a stick', both ways in which VLEs can be made portable with synchronisation over the network as and when that is available.

Unable to explore all the issues surrounding using a social practice perspective this paper explores how it can be applied in networked learning by taking two key concepts, artefact and affordance and using these to illuminate how social practice perspectives can assist in the research and development of networked learning.

Learning outside the head

A crude characterisation of psychological theories is that they focus on learning inside the head, an individual and potentially private activity whereas social theories focus on the external, the material, physical and social aspects of activity beyond the individual mind. This is of course a crude distinction and some social theories of learning are interested in embodiment for example, the way in which learning can be inscribed into the material body in terms of the brain and in bodily forms and routines and in terms of semi-automatic and automatic actions (Blackler 1995; Dohn 2006). Furthermore the implication is not that nothing happens in the brain during learning, rather the suggestion here is that we need to be concerned with several distinct levels in terms of learning and that the social practice level is a particularly important one for networked learning.

There are also borderline areas, for example the notion of distributed cognition and Vygotsky's original work which spans both the social and psychological domains. Social practice does not exclude psychological and individually based accounts of learning but it signals a shift away from accounts in terms of mental entities, mental models for example, and towards externalities and embodied capacities such as artefacts, skills, habits, and understandings. In networked learning this might suggest a way to reconfigure the classic concern with 'transfer' in a social practice framework that would emphasise the situated practices of dis-embedding (exporting) and re-embedding (importing) of styles, repertoires and 'immutable mobiles' (Wenger 1998; Brown and Duguid 2001).

Social practice points to learning as an activity, an activity to be understood not only in terms of objectives and outcomes but also as a set of located practices in which contexts for action are mutually constituted by the different participants and in relation to the discernable material conditions in which the field of practice is constituted. Learning in this sense takes place over time, is located in spaces both material (including the virtual) and social and forms part of a wider array of social practices. Networked learning in particular focuses on the activity of learning when it is located in spaces infused with digital networks, and in social interactions heavily mediated by a range of technological forms.

What's so special about networked Learning?

The definition we provided for networked learning identifies two characteristics that make a social practice view of learning particularly appropriate for research in this area. Networked learning is concerned with connections, connections between people and connections between people and resources. Social relations of whatever kind, whether cooperative or in conflict, involve activity in the world and that activity is commonly mediated by some form of artefact. Historically learning has involved the word, firstly as memorised and debated and then later as the written word and more recently in printed forms. Networked learning signals another set of steps based on digital networks. From a relative scarcity of information we have moved to the potentially ubiquitous availability of digitised texts and information in other forms. There has also been a parallel shift in emphasis away from the purely written word to the wider use of graphical representation and to the use of sound. Though still in its infancy networked learning may signal a shift in learning towards a wider use of other forms of academic literacy that go beyond written text. All of these aspects are not simple either/or oppositions, written text will not disappear in either its digital or traditional forms. The balance between the different elements, however, is still unclear and the traditional forms and practices of education and learning are being undermined by the new technological forms. Jones and Dirckinck Holmfeld (2008 forthcoming) provide the following list of characteristics:

- Time shifts - Computer networks used in education affect the usual time patterns of education. Many courses delivered across networks are asynchronous.

- Place - The introduction of mobile and ubiquitous computing devices have begun to make the idea of education taking place anytime, anyplace, anywhere seem more attainable.
- Digital preservation - The outputs of synchronous and asynchronous activity are easily preserved in transcripts, logs and a variety of other forms including the archiving of web casts and audio interviews/podcasts.
- Public/Private boundaries - The preservation of what would otherwise be ephemeral materials alters the boundaries between what is public and what is private. Tutors can now view and preserve the details of student's interactions in group activities, making them available as tools for assessment.
- Forms of literacy - The still largely text based world of networked learning has generated new forms of writing that are neither simple replications of either informal conversation or of formal written texts. The use of images and audio integrated into digital environments has suggested new forms of multimedia literacy.
- Content – The boundary between content and process is shifting. Blogs and Wikis can provide elements of content and cut and paste re-use is common practice. The idea that there is a clear distinction between activity/process and artefact/content is becoming strained.

Learning and artefacts

Learning has always had a strong relationship to artefacts, certainly since the development of written language and arguably prior to then in various kinds of symbolic tools (for a further take on artefacts in networked learning see Zenios and Goodyear, 2008 in this symposium). In Wenger's terms learning involves reification into a variety of forms, texts, maps, diagrams etc (Wenger 1998). However these reifications do not act in and of themselves, they have to be brought into use (Suchman 2007, Hutchins 1995). Someone has to interpret and take meaning from the artefacts in which ideas and concepts have been reified. At times this can appear seamless, a form of invisible work, because the interpretive skills are widespread. Who for example needs to be trained in decoding an advertisement in a modern capitalist society? At other times decoding an artefact involved in learning can require highly specialised skills. How many of us could read and interpret the output of a medical scanner for example? A key area for research in networked learning involves the changing nature of literacy in a networked and digital environment. What are the kinds of skills that are not picked up naturally by the so-called 'digital natives' that may need to be developed in future learners (Prensky 2001)? Indeed what are the characteristics of this new generation of learners and do the literacies they bring with them alter the way in which they approach learning? This can apply both in terms of their use or non-use of traditional artefacts (e.g. books) and in terms of their use of artefacts beyond the scope of normal academic practice (YouTube or Wikipedia as sources for research – see for an interesting example http://www.mediatedcultures.net/)

The way in which artefacts are incorporated into the definition of networked learning is as 'learning resources'. This could imply that we are only interested in those kinds of artefacts intentionally brought into the process of learning, course handbooks, journal articles, course web sites and material etc. However we need to be careful when using the term learning resources because all interactions in networked learning are mediated and in some senses the tutor and a learner's peers also appear through artefacts rather than in person. The message in a Forum or conference is a text in the same way as a piece of academic writing, a Blog or wiki are also often largely textual forms despite their web native form. In networked learning all interactions using digital networks are mediated through a series of artefacts, not only the textual or graphical forms into which the information is encoded, but also the devices through which the network is accessed, a desktop computer, a small handheld device or a smartphone can all be used to access and display resources held and distributed over networks for learning purposes. Social practice expand beyond the idea of learning resources and provides a perspective on the place of artefacts in academic practice and it can provide a useful way of thinking about how digital technologies and networks redefine patterns of learning.

Recently in his presidential address at the EARLI Conference Roger Säljö has argued that digital and networked technologies take the reification of information one step further:

> To a large extent texts are externalizations that convert human experiences into information. But digital technologies in a fascinating manner also imply that human cognitive functions are externalized. (Säljö 2007)

The basic example he provides is the electronic calculator but he goes on to illustrate the way in which in all walks of life we now not only access information in reified forms but we process it too; in diagnostic tools, route planners and often this external processing is done remotely at a distance. This distinction is

of course relative and artefacts have previously had a processing capacity that involves the artefact in a complex social process, double entry book keeping for example or the slide rule. It is the sheer ubiquity of these aids in digital technologies, from the mundane and continuous checking of ones spelling whilst using a word processor to the more esoteric uses of CAD in engineering. Such externalisations raise important questions about what learning involves. Memorisation and the re-presentation of ideas are still basic ideas in terms of how we assess student learning. The implication of externalised processing of information is that learning may come to have a greater relationship with the skilful and appropriate use of an externalised process, rather in the way that a competent professional might be assessed, than is still generally the case in tertiary education.

Arguably this process has gone a step further in what has been called Web 2.0. The process is best captured not in words but in a short YouTube video produced by Michael Wesch at mediatedcultures.net Kansas State University. I can only encourage you to follow this link to "The Machine is Us/ing Us":
http://youtube.com/watch?v=NLlGopyXT_g
The text associated with Web 2.0 is also available but it fails to capture the sense of the changes underway that the video clip does (O'Reilly 2005). Web 2.0 suggests a displacement of cognitive activity not just outside the person in artefacts beyond the skin but in socio-technical systems that are not in any simple sense human anymore. Cyborg doesn't quite capture it in that this is not simply the extension of the human individual this change is taking place at the collective level of society. The idea of Web 2.0 however vague and imprecise points to a shift away from content towards process and participation, what makes Web 2.0 a phenomena is less the technology than the processes enabled by the technology. Notions such as critical mass capture the idea that for the services that characterise Web 2.0 to mean anything they have to engage large numbers of users in activity. What is Facebook without its users? Education has yet to fully engage with this shift towards viewing students less as consumers and more as co-producers of their own learning. Oddly this sentence could have been written during the first phase of using Internet technology in education, before the Web, when communications technologies, though limited, had a similar set of implications. What better focus than social practice to research this change?

This approach to Web 2.0 highlights the importance of horizontal and multidirectional connections in social relations. I have previously used the metaphor of networks as a non-biological metaphor to try and capture a similar sense of the kinds of relationships emergent around the deployment of digital and networked technology (Jones 2004). What I think the use of metaphor in this context represents is the difficulty researchers are having in capturing not only the detail of what is taking place but the overall sense that they feel these changes add up to. Capturing some of this spirit Ryberg (this symposium, 2008) proposes the metaphor of patchworking to suggest the ways in which young people are taking materials and reprocessing them in complex ways. What has been a great fear for governments and policy makers in universities, student plagiarism, is transformed using this metaphor into the added value that students bring to found materials in the process of patchworking. Students may not be simply cutting and pasting materials rather they can work in complex ways with found materials to recombine them into new and informative forms. Social practice can provide ways of thinking about the processes that students are beginning to engage in as they navigate networked technologies and Web 2.0.

Learning and affordances

A social practice view of affordance builds upon the relational and non-dualist approach of Gibson (1977) and suggests a way to understand the enactment process that surrounds an artefact when it is brought into use (Jones et al. 2006, Dohn 2006). The idea has its origins in the work of Gibson (1977) who was interested in the psychology of perception. Gibson argued for a non-dualist understanding of perception. His main interest was studying perception as an integrated or ecological activity. Affordances in Gibson's view might vary in relation to the nature of the user but they were not completely flexible as they were embedded in a material form. Different observers might see the affordances of an object differently and have different needs in relation to an object but the characteristics of the object which become available in perception to others, including researchers, constrain the uses to which an object can be put. A paperclip does not afford drinking for example.

A relational view of affordance would suggest that we could analytically discern features of the setting apart from the perceptions of particular groups of users. Any actual group of users would have varied understandings of, and draw out different meanings from, the setting. In most cases, apart from outliers, understanding will vary but there are likely to be a limited number of variations. This of course accords

with an indirect view of learning and the phenomenographic or relational tradition of research. As designers can only have direct influence over those abstract elements that may become affordances in the relationship between the task and the participants understanding the kinds of variation in understanding likely to occur would be an important factor for successful design. An example of such relational thinking can be found in Kreijens and Kirschner (2004). They point to the affordance of proximity in encouraging face-to-face interaction such as that associated with coffee machines/water coolers. They point to the need for teleproximity in computer networks, a simulacrum of actual proximity using designed features in digital environments. The affordances of both proximity and teleproximity rely on the relationship between participants rather than being a feature of any particular participant or a feature of the digital or physical environment.

Concluding remarks

This paper has proposed the development of a social practice perspective for research in networked learning. The term social practice has been developed in relation to commonly used meanings of practice and other available alternatives in academic discourse. It is suggested that social practice should not be viewed as an exclusive or singular perspective. Instead it is suggested that social practice should be thought of as a theoretical lens, particularly suitable for examining certain levels of activity in relation to learning and networked learning specifically. Social practice offers a materialist account that places an emphasis on externalities and artefacts rather than processes of learning that take place within the 'head', either as brain functions or as cognitive processes of the mind. This materialist emphasis also stands in contrast to some cultural accounts of practice that emphasise discourse at the expense of other factors. In order to illustrate the kinds of issues that a social practice perspective can assist in researching an account was provided of those aspects that make networked learning a distinct research area. This was then focused on two issues in particular, the place of artefacts in learning and the role of affordances.

It can be argued that artefacts have always played a role in learning and that this role was related to the externalisation of information. In early periods of human development memory and the oral tradition dominated learning and the practices that supported learning. An ability to memorise exactly what was handed on was a key element in preserving and disseminating knowledge and tradition. In later periods the written language provided a repository of knowledge in written texts and knowledge and learning were related to the specialist skills of reading and writing alongside mathematics and arithmetic. Learning still retained a large component of memorisation and repetition as the means to store and reproduce texts were extremely limited. In the modern era with the advent of print technologies texts could be produced and reproduced with much greater ease and reading and writing skills were spread more widely in society. Increasingly memorisation became less important and the ability to understand and deploy conceptual knowledge became more central. This material account of learning as a history of the relationship between social knowing and the technological means available to support social practices is a backdrop to the central argument of this paper.

Networked technologies provide a new set of possibilities that can affect the forms of practice that support knowing and learning. These technologies shift traditional conceptions of time and place and make available large quantities of traditional texts alongside new forms of reification that preserve what has previously been peripheral and ephemeral. It was noted that digital technologies shift the boundary between the externalisation of information and the externalisation of cognitive processes. Increasingly those processing and conceptual skills once important to education and learning are delegated to machines and services supplied over the network. The current phase of development captured by the phrase Web 2.0 arguably reasserts the primacy of process over content in that what is externalised is a part of a much greater whole, indeed a characteristic of Web 2.0 is that engagement and participation are the added value in the system. That is the value for learning does not lie in the technology, nor in content supplied by a central service, rather it lies in the emergent properties arising through the aggregation of many parts in which the whole becomes greater than the sum of its parts.

References

Blackler, F. (1995). Knowledge, Knowledge Work and Organizations: An Overview and Interpretation. *Organization Studies*(6), 1021-1046

Bourdieu, P. (1977) *Outline of a Theory of Practice.* Cambridge: Cambridge University Press.

Brown, J.S., and Duguid, P. (2001) Knowledge and Organization: A Social-Practice Perspective. *Organization Science*. Vol 12 (2) pp198 – 213.
Brown, J. S., Collins, A., and Duguid, P. (1989). Situated Cognition and the Culture of Learning. *Educational Researcher*, 18(1), 32 -42.
Carr W (1987) What is an educational practice? Journal of Philosophy of Education, 21 (2), pp. 163-175. Reprinted in M. Hammersley (Ed) (1993) Educational Research: current issues Vol 1. London: Paul Chapman Publishers.
Crook, C. (2002) Learning as cultural practice. In Lea, M. R., and Nicoll, K. (Eds) *Distributed Learning: Social and cultural approaches to practice*. London: RoutledgeFalmer and the Open University Press.
Dirckinck-Holmfeld, L., Jones, C. & Lindström, B. (Eds.) (2008, in press): *Analysing Networked Learning Practices in Higher Education and Continuing Professional Development*, Sense Publishers.
Dohn, N.B. (2006) Affordances – a Merleau-Pontian account. In S. Banks, V. Hodgson, C. Jones, B. Kemp, D. McConnell and C. Smith (eds) Proceedings of the Fifth International Conference on Networked Learning 2006. Lancaster: Lancaster University. Retrieved 5/11/07 from: http://www.networkedlearningconference.org.uk/
Eraut, M. (2003) The many meanings of theory and practice. *Learning in Health and Social Care*, Vol 2, No 2, 61–65
Engeström, Y. (1987). *Learning by Expanding - an activity theoretical approach to developmental research*,. Retrieved 17/09/07 from: http://communication.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm.
Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (Eds.). (2004). Advances in research on networked learning. Dordrecht: Kluwer Academic Publishers.
Goodyear, P. (2002) Psychological Foundations for Networked Learning. In Steeples, C., and Jones, C. (2002). (Eds) *Networked Learning: Perspectives and Issues.* London: Springer.
Hutchins, E. (1995) *Cognition in the Wild.* Cambridge, MA: MIT Press.
Jones, C., Dirckinck-Holmfeld, L., and Lindström, B. (2006). A relational, indirect, meso-level approach to CSCL design in the next decade. *International Journal of Computer Supported Collaborative Learning*. 1 (1), pp. 35-56.
Jones, C. (2004) Networks and learning: communities, practices and the metaphor of networks. .ALT-J, *The Association for Learning Technology Journal.* Vol. 12 No. 1 pp 82-93.
Kreijns, K., and Kirschner, P. A. (2004) Designing Sociable CSCL Environments. In J-A, Strijbos, Kirschner, P.A., and Martens, R.L. *What We Know About CSCL: And Implementing It In Higher Education.* Boston: Kluwer Academic Publishers
Laurillard, D. (2002). *Rethinking University Teaching: A conversational framework for the effective use of learning technologies*. 2nd Edition. London: Routledge.
Lave, J. (1988) *Cognition in Practice*. Cambridge: Cambridge University Press.
Lave, J., and Wenger, E. (1991). *Situated Learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
Nardi, B., and Kaptelinin, V. (2006) Acting with Technology Activity Theory and Interaction Design: Cambridge Mass: MIT Press.
O'Reilly, T. (2005) What is Web 2.0 – Design Patterns and Business Models for the Next Generation of Software. [Online] Retrieved 2nd November 2007 from:
http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html
Prensky, M (2001) Digital Natives, Digital Immigrants. On the Horizon. NCB University Press, Vol 9 No 5, October 2001
Schatzki, T.R., Knorr Cetina, K., and Von Savigny, E. (eds) (2001) The Practice turn in Contemporary Theory. London: Routledge.
Säljö, R. (2007) Learning, technologies and social memory: Transformation of learning practices and units of analysis in research. EARLI Presidential Address, Budapest, August 2007.
Säljö, R. (1999) Learning as the use of tools: a socio-cultural perspective on the human-technology link. In Littleton, K., and Light, P. Learning with Computers: Analysing productive interaction. London: Routledge.
Suchman, L. (2007) *Human-Machine Reconfigurations: Plans and Situated Actions* 2nd expanded edition. New York and Cambridge UK: Cambridge University Press.
Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.