Supporting knowledge development in communities of practice or developing knowledge in communities of interest?

Graham Attwell and Alan Brown

Contact details:

Graham Attwell   Knownet, Wales

graham@theknownet.com

Alan Brown   Institute for Employment Research, University of Warwick
alan.brown@warwick.ac.uk

Supporting knowledge development in communities of practice or developing knowledge in communities of interest?

Graham Attwell (Knownet, Wales) and

Alan Brown   (Institute for Employment Research, University of Warwick)

Introduction

For the last seven years we have been involved in various experiments and projects linked to the use of Information and Communication Technologies (ICT) for collaborative knowledge sharing and knowledge development. We have moved progressively towards projects that link innovative development agendas, network-based knowledge sharing and the construction of virtual platforms. We have, however, in the past, had difficulties in engaging sufficient participants in our practice. At times, we felt like Kevin Costner in the film 'Field of Dreams'. He built a baseball stadium on his farm in the prairie after hearing voices whispering 'build it and they will come.' We heard the same voices, but so far….we are still waiting for the people to come.

We felt at one time it was because we were trying to manufacture 'communities' (of ICT teacher trainers; VET researchers and so on) so that they could participate in our networks. We thought we might have more success with supporting knowledge development for a 'community of practice' (of careers guidance practitioners) with common goals and shared practice. After working with the 'community' for some time it is clear that 'shared practice' is a problematic issue. In that case, 'community of practice' too becomes problematic. Maybe it would be better to consider those researchers, practitioners and policy-makers we are working with as a 'community of interest' with much looser ties than a 'community of practice.' As our arguments are still evolving, we thought we would share with you some of the background to the development of some of these ideas.

Some problems

First up, it has to be said that the use of ICT support for knowledge sharing and development has failed to deliver the promised benefits. It is like the start of the film 'The English Patient' from afar the landscape looks spectacular but close up you seem it is mainly a desert with occasional oases of success. Whilst email has become the preferred method of communication for academia and business, and the web spawns technical, academic and leisure bulletin boards, web sites and list servers, there is a marked lack of collective and collaborative knowledge development. What spaces there are for sharing knowledge tend to be used as collective file repositories or areas for shorter discussion. There are of course, exceptions. Technical and software developers use the Internet as a means for co-development of software, especially in the growing Open Source Software Community. The public Human Genome project was largely made possible through intense networked collaboration using computer-based communication. (In the first draft of this paper a typo meant it was called the Human Gnome project – a nice image!). Yet, it is the exception which proves the rule: the limitations in daily work and research practice of networked collaboration, even

amongst those involved in dispersed communities and engaged in common European projects. Of course, software development, despite the inertia of the larger companies, remains a dynamic and innovative industry, with new developments appearing all the time. It is possible that the softwate industry will produce a 'killer application' for knowledge sharing. The recent upsurge in web logs (blogs) is an interesting case where, whilst not invented for knowledge development, there are signs of emergent practice in sharing knowledge. But networked collaboration is a social activity and the use of ICT can only support social interactions.

Seizing upon this idea many of those in the field (including us) thought that there may be some value in adopting and/or adapting ideas about 'communities of practice' to the notion of developing ICT support for knowledge development. However, many researchers appear to have forgotten Lave and Wenger's original assertion that communities are always emergent. ICT based solutions often appear to approach communities as being monolithic and time bound. Support for knowledge development and collaborative practice lacks the flexibility for changing group membership or for changes in the roles, authorities and actions of members of a group. This difficulty is compounded by the problematic understanding of 'group' by computer software developers (at least in the way in which a group is expressed or represented in their software). Furthermore, and more critically, at some point the idea emerged of communities of learners. That learners may form a community is neither here nor there. The problem is that they do not form a community of practice, Practice in learning is not strong enough in generating shared experience and day to day practice to develop a community of practice. The very word 'community' has become devalued in relation to discussions of collaboration and the use of ICT. It has become a synonym for any group sharing a common space through the Internet.

From the above it is apparent that we often have problems with both 'community' (who are they and what goals, values and practices do they share?) and 'practice' (what is the practice being shared?) when considering ICT support for knowledge development. If that is the case, then maybe our ideas need to be informed by something other than 'communities of practice' (although the 'of' looks ok at first glance). The difficulty in this work, and the attraction, is that it is interdisciplinary, involving a wide range of knowledge and skills drawn from a wide range of different disciplines and more importantly practices. Maybe we should stick with the 'boundary crossing' analogy? We need to evolve and develop new forms of collaboration in order to support collaborative processes and to realise new forms of knowledge sharing and we feel we need some representation to help that process!

One final problem should be acknowledged and that is that discussion based facilities for knowledge sharing can become divorced from the formal tenets of (vocational) subject based knowledge. That there is a corpus of knowledge around different practices seems clear, even in these days of rapid change. A challenge is how to present and interpret that body of formal knowledge in an accessible way relevant to the practices of different communities and to facilitate interaction between the informal knowledge generated in the communities with more traditional forms of knowledge. Web based text books, manuals or formal training courses are useful but not enough. Good search engines are essential. But, we also need to develop new ecologies and taxonomies (or even ontologies) which can describe and structure that knowledge in a way that is useful for those participating in the knowledge development process.

Supporting practice

The ideas outlined by Lave and Wenger in relation to 'communities of practice' describe how knowledge and skills are developed and exchanged within different communities, the social interactions and rules by which those particular communities of practice operate and how communities evolve and change. We cannot replicate those communities either through face to face or computer mediated networks. We can, however, develop processes and tools to support the different processes and practices which occur in the 'communities' we seek to support. We need to remember, however, that members of 'our community' may belong to a variety of very different 'communities of practice' with each community having evolved different cultural and historical practices.

There is therefore a degree of choice in what practices we decide to support. In reality, most ICT based systems claiming to support communities of practice are technologically driven, based on what is seen as feasible with present technologies. However, in so doing they often infringe other practices or processes that members of 'our community' see as important. Similarly, the idea that communities are emergent and dynamic has escaped the designers of computer based support systems. The idea of emergence covers a number of different spheres – membership, activities, rules and practices. We need to develop flexible systems that recognise the way communities evolve and change and allow different people to play different roles within those systems at different stages in their development. In particular we need to allow branching – in terms of new conversations or work areas branching from the main threads or even new communities breaking out. We also need to allow those communities and branches spaces and mechanisms to re-enter the original trunk. In this respect, it is interesting to examine the practice of Open Source Software development and communities. These communities share a common work purpose, are dispersed (very often members having never met face to face) and evolve over time.

One way to move forward, suggested above, was to use the notion of 'boundary crossing' as a way of supporting the development of knowledge within 'our communities'. So far, most approaches pursuing this line have looked at how communities can be introduced or confronted with practices drawn from different communities, in order to promote reflection and knowledge development. This may not be the best approach. Instead, we should look at how different ideas developed within communities can be allowed to branch, just as commonly happens within the Open Source Community, whilst retaining a relationship to the main stem. The importance of this has become clear through our project with the Careers Guidance Community in the UK, where we have been asked to provide functionality for groups of members to develop and follow ideas outside the mainstream of the discussion, whilst remaining in the 'system'. It may well be that it is in the process of defining the relationship of such schisms to the original main 'idea set' that new knowledge can be created. KnowNet are in the course of adapting the Open Source PLONE application to support this process.

Community of interest

For us, 'our community' (interested in careers guidance research and practice) could best be described as a 'community of interest': a group interested in sharing a discourse; sharing thinking; sharing values to some degree. Group identification, however, may not be strong. They have fairly loose ties. Indeed perhaps one reason

why people may value a 'community of interest' in this area is that the 'community of practice' associated with careers guidance is fragmenting. Maybe some people involved would like at least be able to construct a 'shared story' about what is happening in their professional field. Our community has interests in learning or practice or working and learning. With a community of practice you would expect a much stronger sense of mutual engagement, joint enterprise and sharing of goals with a common repertoire of shared practices.

From the developers' perspective we could emphasise the value in testing ideas in multiple contexts and of building awareness and understanding of the activities and perspectives of others. We could see an ideal (from our perspective as site developers) where we seek progress from passive awareness to engaged interaction of participants. However, we also need to recognise that for some participants the ideal is passive awareness.

(note: careers advisers and personal advisers (offering a range of advice to young people at risk of social exclusion) now have different knowledge domains. We, and they, are not sure where the boundaries are between different types of practitioners involved in giving Information, Advice and Guidance in different settings - are the boundaries clear, fuzzy, contested? How far do they share at least some domains of knowledge?)

Professional development
On our site therefore the intention is that professional development around research and practice should be grounded in the questions, concerns and enquiries of a group of practitioners, such that the aim is shared rather than individual development. There is a role for coaching, observation by colleagues (knowledgeable others) and examples of how practitioners can engage with research. For example, a journal article could be annotated to help practitioners 'break the research code' - how to make judgements about the conclusions or 'warrant'. There could also be value in collaboration on problem-oriented case-work (working on interpretations of a 'shared case'). One other issue relates to how to resolve emotional tensions arising from inability to perform in the way you think is appropriate (for example, if you have insufficient time to offer the quality of service you believe you should);.

Differing perspectives on learning and development
One important issue we will need to address is how we represent and relate to differing perspectives on learning and development. For example, learning can be represented as:
- conditioning and imitation (first level)
- personal acquisition of skills, knowledge and understanding;
- attainment (of qualifications);
- movement towards participation in a community of practice (situated cognition and specialist discourse);
- copying 'knowledgeable performers';
- construction of meaning (sense-making);
- accumulation of experience;
- investigation and internalisation (second level);
- experimentation;

- innovation;
- critical reflection;
- meditation;
- transformation (third level);
- revelation;
- leading to a significant change in attitudes, behaviour, knowledge and understanding;
- a cultural heritage;
- being embodied in a set of cultural practices;
- the basis for identity formation;
- a form of resistance to dominant values and practices;
- the means to knowledge building, creation, combination and transformation;
- a means to seek to achieve a degree of control, focus and direction in an area of work (or life);
- a perspective on living in a broad sense.

Knowledge-building perspectives

Knowledge combination is the key challenge for us. In distributed (computer-mediated) discourses conversations can often dwindle, so we are supporting the 'knowledge spaces' for our 'community of interest' so that they can contribute to the public life of ideas. For example, the evolution of a research project could itself be outlined as a way of representing the research process through public disclosure of plans, summaries, development etc. Ideas and concepts can be worked on by perhaps just a few members of the community in a public space, but then the wider community may benefit.

The inter-linking of discourses, and the facilitation of different 'views' of material, can help build (or highlight the disjunctions in) coherence, comprehensiveness and links between theory and practice within and between different areas. The use of summaries, syntheses, reflections and annotations in our heavily mediated environment can help with the transition between, to adapt Donald Schon's analogy, the cliff-top of critical analysis and the swamp of everyday practice;

One of the difficulties incurred by successful knowledge-building approaches is that ideas and contributions, and the space they take and the time to search them, starts to increase rapidly. We are pleased we have encountered this problem (to return to the Field of Dreams analogy at least the players have turned up and are actively participating, even if the crowd is not yet in sight.) Hence it is important that representations show relationships between topics and that these representations are to some degree under the control of participants in the 'community of interest'. Sharing of individual representations of knowledge relationships and how these relate to individual 'stories' may facilitate collaborative knowledge development and combination of different types of knowledge;

Our approach could be compared with the ideas of Scardamalia and Bereiter (1994) on growth of 'individual and communal knowledge resources', although our environments and resources are much more complex than those with which they were working. Their ideas revolved around the development of 'improvable ideas'; cultivating the abilities of synthesis and reflection as the basis for a 'disposition'

towards knowledge-building; and building a discourse aimed at knowledge transformation. They also sought to use linking narrative accounts of participants' learning goals, achievements and self-reflections with accounts of practice through activity reports and learning logs (on a daily or monthly basis); and they highlighted the value of 'rise above' sessions.

Our practitioner-researcher interactions are linked to wider concerns of the 'community of interest'. We have recognised the importance of scaffolding knowledge-building: helping to develop models and viewpoints and overcoming problems of isolated contributions. Maybe we have gone a little too far in this respect, and the clear sense of direction and development we have subsequently imposed upon the existing contributions may prove to be a little daunting for future prospective contributors. The new site we are currently building can be seen as a representation of the stage the 'community of interest' as a whole reached. Knowledge-building involves learning how to find different types of knowledge; and learning how to learn together with collective responsibility for developing expertise and conceptual ideas.

Boundary crossing
The emphasis of activity theorists is that there is value when working in a boundary zone of working on a 'shared object' leading to expansive learning and developmental transfer: e.g. joint development project. In the context of the careers research and practice site the challenge may not be to develop something jointly, but rather whether we can stimulate more 'information brokers' at the edge of their existing communities. Also in this context, 'activity systems' like 'communities of practice' may represent an over-socialised model where the communities and systems are quite large and distinctive. Our individuals belong to quite a large number of groups and communities, and from that perspective crossing boundaries (and coming back to a new reconfigured position) may be of value precisely because there is not a single community – except our 'community of interest.'

Benedict Anderson points out that all communities by their nature have initially to be 'imagined' and then people and ideas have to be mobilised to give the community a concrete existence. So maybe our 'community of interest' imagined as a much looser association with weak ties is a model to which we should aspire. Maybe we can keep the 'field of dreams' analogy too. Not everyone has to play, some people can come, be relatively passive but still get what they want – the spectators are important and involved even if they make only limited contributions.

Computer-supported collaborative learning
So what can we, drawing upon our most recent experiences, say about computer-supported collaborative learning more generally:
- Need for thoughtful mediation;
- Recognition that work-related learning may figure behind other aspects of private lives and working lives;
- Relative failure of ideologies and 'big ideas' may be because they are crowded out by lots of smaller but more immediate ideas and concerns;
- Value of existence of examples of co-operation 'scripts' regarding goals, types of activities, sequences, roles, format etc.;
- Goals regarding production of explanations, summaries, solving problems etc. should be made explicit;

- Identification of different message types;
- Value of prompts for comments, guided questioning ('what is the difference between…'; 'how does this work in practice…')
- Different ways of organising messages;
- What cognitive strategies are used in understanding relationships etc.;
- Activities could be clustered to support collaboration;
- Information pooling: may be explanatory or questioning;
- May be useful to represent the same information in different ways;
- Problems may be due to a loss of motivation; a loss of co-ordination or because of a lack of feelings of co-presence;
- Recognition that making contributions to discussions can feel rather demanding;
- Could be that there are a number of bases for common ground in a 'community of interest': shared understandings; shared meanings; shared opinions; shared positions;
- Awareness of process and what others are doing;
- Shared knowledge may build in common misconceptions;
- Cannot abstract general lessons from the complexity, context and goals of the particular situation.
- Collective meaning making may lead to development of certain 'voices' which may depress other voices - we all have different voices in different contexts;
- Inter-textual links (where different voices meet) are rich in terms of justifications, meeting of different discourses, explanations varied according to context etc.;
- Individuals were seeking direction, making meaning and establishing roles for themselves in their contributions over time.

Furthering research and development

This paper has tried to weave together ideas drawn from research and from our own practice in supporting the development of knowledge in communities of interest. The first is the need for a more focused research approach on collaboration and knowledge development in communities of interest that are underpinned by complex relations to a variety of work-related practices. We need much more experience of the use of ICT to support practice and to support communities that are interested in a range of practices, some shared, some competing practice, some within and some outside the participants' conventional occupational boundaries. We need a more profound understanding of the nature of practice and community and how ICT might support the evolution of both. We need to understand more of how communities emerge, evolve and change. We need to understand the different roles within our computer-supported communities and how these roles evolve and are passed on. We need to know more of the nature of informal learning and its relationship to knowledge sharing and development.

Secondly we need to look at the process of collaboration and design for software and for projects and research into knowledge development. As should be clear form the paper, we believe in the value in this context of forms such as action research, participatory research or accompanying research. The development process is very rapid in this field, but more importantly we need the research to feed into development. Research and development processes need to be modelled in common. Iterative and co-design of software applications and programs require participatory

design processes and at the same time informed reflections on the process. This is itself a process of collaborative knowledge development and also of boundary crossing. It implies the development of a new community (or communities) sharing (or perhaps exchanging) languages, practices and purposes.

Finally we are convinced that the development of the Open Source Community is an important potential model for further development. Open Source Software itself may allow the rapid collaborative development of new applications and platforms for collaboration and knowledge development. But, more importantly, the Open Source Community offers new models of collaboration and knowledge development that have the potential to be expanded into far wider spheres of knowledge and economic activity. There are already a number of OS initiatives for the collaborative development of software and platforms for e-learning and knowledge sharing. The communities behind these initiatives themselves need to be extended to include researchers and practitioners from outside the IT world in order to fully realise their potential.

Reference:

Scardamalia, M. and Bereiter, C. (1994) Computer support for knowledge-building communities, **Journal of the learning sciences**, 3, 3, 265 -28.

Appendix: Summary of the latest thinking on the development of the 'Careers' website (that may have to be called the 'Guidance Research Forum' because of the contested and politically sensitive nature of 'careers' in England, but not Wales, Scotland or Northern Ireland at the moment!)

A key feature of this development will be the construction of a shared knowledge base, not from an a priori comprehensive blueprint, but by being grown more organically from the contextualised problems that policy makers, managers, practitioners, researchers and trainers face. This will involve the formation of groups with relevant expertise that will form a centre of expertise for particular topics and have several tasks. These will include the identification of gaps, key areas or problems related to their expertise and provision of a mediated commentary on key documents and research findings on-line. The process will represent a major contribution to research capacity building within the guidance community. The proposed methodology involves a range of prospective users on an iterative basis in the project's progress. This will not only enrich the research process, but also validate and ensure the relevance of outcomes. The website will comprise three main sections:
Future Trends – consisting of labour market information focusing on labour market changes and skills needs.
A **Research Database** – which links to the National Learning Resource, based at the Centre for Guidance Studies at the University of Derby.
Effective Guidance – comprising six modules entitled:
- Equal Opportunities;
- Impact Analysis;
- Using Research in Practice;
- Improving Practice;
- Lifelong Learning;
- International Perspectives.