Approaches to Developing a Theoretical Understanding of Networked Learning: From personal inquiry to generic coding

The purpose of this symposium is to provide an opportunity to engage in a discussion of theoretical frameworks for understanding and methodologies for representing and investigating the nature of networked learning, grounded in instantiations of practice and experience of studying, teaching and researching networked learning.

The symposium brings together the work of four different researchers in this area, all of whom are developing their understanding of networked learning through analysis of networked learning interactions and/or from experiential accounts of participating in networked learning.

Specific aspects focused on: methodology; theoretical frameworks; learner and tutor experience; communication for learning; and participation in networked learning communities.

Organised by: Sarah Mann

Fast Coding of On-line Learning Behaviours using an 'Elements' Approach

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ABSTRACT

In this paper we outline and discuss a fast coding approach for the characterization of contextualized online learning behaviors as an interpretative aid for tutors and instructors working in Online Learning Environments [OLE's]

We use "elements' as a metaphor grounded in the periodic tables of chemistry, underlining the notion that the characterizations derive from the way the elements combine rather than from their individual deconstruction. Patterns generated by the various combinations of elements, give, we argue, telling insights into the character of learners and learning.

The "elements" generated by work in progress are 1) Organization, 2)Facilitation, 3)Dissemination, 4)Convergence, 5) Divergence and 6)Framing. Our approach involves cluster concepts and time-based patterning.

The symposium session will present the methodology as work in progress, welcoming feedback from other speakers and the audience.

Keywords

Fast, qualitative, fully contextualized, holistic, generic, interpretative, simultaneous, patterning, clusters

INTRODUCTION

This paper introduces an approach to the characterization of online learning behaviors, which varies in a number of essential ways from other recent approaches. Its purpose is to provide a simple, fast, descriptive approach to aid systematic observation of contextualized patterns of actions and interactions [participant behaviors] in the online learning environments [OLE's]

We've used "elements' as a metaphor to suggest the periodic tables of chemistry.. because we particularly want to underline the notion that the characterizations derive from the way the elements combine rather than from their individual deconstruction. The ease of coding derives from the limited number of coding decisions which need to be made in regard to any specific online action/interaction. The qualitative insights derive from the complexity of characterizations which are generated by the dense co-occurrence of multiple and "telling" combinations of elements.

The elements are developed as generic codes, and seek to account pragmatically for the full range of action and interaction which take up the legitimate time and effort of learners and tutors in this environment. Character is thus understood by reference to a wider range of matters than those with which we usually seek to characterize learning behaviors and the approach in this regard brings in clearly contextual considerations alongside of the cognitive.

A further distinctive feature of this approach is that it codes all messages as whole message for as many multiple elements as are thought appropriate whatever the degree to which they are judged present, so that the fullest possible 'flavor' of the characterizations are preserved.

Two separate propositions are contemplated within this approach. . The first concerns what the elements should be. The second concerns the proposed methodology of treating whole messages for multiple simultaneous behaviors and the extent to which this helps us deal with the considerable complexity of participant action and interaction in the online learning environment. The approach was developed using, NVIVO1.2.

CODING CONTEXTS

The elements approach has been developed in online higher education, principally in relation to two separate courses forming part of the MA ODE [Master Degree in Open & Distance Education] Open University UK, H804-1999, H802-2001, and also in collaboration with the Master Degree Education Sheffield 2000 [V.Lally]

All three courses which have been used in the development of the "elements" follow a social constructivist pedagogy and use Computer-Mediated Conferencing (CMC) as the principal learning environment for the course. The Open University conferences analyzed share typical OLE features in that they relate to groups of 12-14 learners and a tutor. The specific conference/forum areas are established for specified tasks/discussions, within curriculum blocks spanning 8 weeks approximately. The number of messages in each of such conferences typically ranges from 100-150. The Sheffield messaging comprised tutor selected discussion threads which represented typical engagement [Lally V, de Laat 2001] The conferencing software used for the 1999 Open University course was EBBS [a proprietary system derived from Frontier] and FirstClass for OU 2001 and Sheffield.

The particular conference used in this paper to demonstrate application of the 'elements', involved collaborative learning through discussions rather than more formal activities such as debates. This was preferred for analysis because learners were under less pressure [either peer or curriculum] to contribute much unless they wanted to. Further analysis is planned however in the immediate future to look at a range of group learning activities [including online debates] with this coding approach.

DESCRIPTION OF "ELEMENTS".

The ‘elements’ were initially derived from psychological theories of learning and were modified by reference to a range of current approaches to coding by educators working in the field and to the dictates of implementation in practice.

Reference is made to work by Piaget, Vygotsky, Doise & Mugny (1932)Wenger, E. Engestrom Y (1999) , and to Tolmie A, et al [2001], McAteer et al [this volume] Lally V & de Laat [2001] [Gunawardena C.N [1997] Anderson T et al [2002] Curtis D. et al [2001] Harasim L [2002] Roschelle J (1996) Bufree K.A (1999).

The proposed " Elements" are Organization, Facilitation, Dissemination, Divergence, Convergence, Framing

Elements	**Description**
Organization	The interactions between group participants designed to coordinate action related to task. Including discussion of deadlines, availability. Regulative Activities[Lally,V., de Laat (2001)] , Organizing [Wenger E (1998)] Organizing, Chairing, [Engestrom Y (1990b)], Design & Organization , [Anderson T et al (2001)] Planning ,[Curtis D.D et al (2001)]
Facilitation	Facilitation. Feel-Good-Factor] .[Rogers C., Freiberg H, J (1998)] Setting climate for learning, encouraging acknowledging. Facilitating Discourse, [Anderson, T et al (2001)]. Affective activities, [Lalley V., de Laat (2001)]. Social Glue [Tolmie et al (2001)] .Social Interaction [Curtis D.D. et al (2001)] . Also more practical support and resources
Dissemination	Proposal of idea, justification [Piaget J, (1932)]. Sharing Exchanging, explanation, justification [Vygotsky (L.S (1978)]. Presenting new idea, Sharing/Comparing [Gunawardena C.N, et al (1997)] Exploring, Exchanging. Pointing to resources Using External Information & experiences [Lally V , de Laat.] Direct Instruction [Anderson T et al (2001).Contributing [Curtis D.D.et al (2001)]
Divergence	Promoting Divergence: Opening -out, Questions, suggesting new possibilities, offering new perspectives on shared thought. Negotiation of meaning , testing & modification. Justifying. Discovery of dissonance , [Gunawardena C.N et al (1997)] prompts for consideration of other information, disagreement, [Tolmie A et al (2001)] , Debating [Lalley V, de Laat (2001)..Seeking Input [Curtis D.D (2001)]. Divergent thinking [Harasim L., (2002)] [Bruffee K.A (1999), Rochelle J (1996) in Harasim L (2002)]
Convergence	Promoting Convergence: Agreeing, modifying, Summaries, weaving, linking, blending, referring to the thoughts of others., building on thoughts of others. Reference back/connection of new experience to previously discussed[,testing of idea against novel circumstances. [Tolmie A et al (2001)] Discovery of consistency Agreement/Application of newly constructed meaning [Gunawardena C.N et al (1997)] Idea Linking, convergent thinking, [Harasim L., 2002] [Bruffee K.A (1999), Rochelle J (1996) in Harasim L (2002)].
Framing	Framing understanding of collaborative task, defining and re-defining task, generalizing, theorizing task and boundaries of task. Expanding earlier information given, Explanations, Instructions , prompts, requests, references to Study Guide. Summaries. Scaffolding. New conceptualizations [Doise, W., Mugny, G., (1984).] Direct Instruction.[Anderson (2001)]. Problem Solving. construction of new explanation, Tolmie et al (2001)] Reflection [Curtis D.D (2001)]

Figure 1

When the various coding schemes, and/or conceptualizations referred to are gathered together as in Figure 1 above, it becomes clear that there is a lot of commonality in terms of the range of matters that are seen as pivotal to an understanding of the collaborative learning environment.

The task at one level is a matter of finding an appropriate way to cluster the various terms in a way which best do justice to the range of terminology used in a representative range of works.. There is considerable potential for agreement within the range of work referred to here in support for our six proposed ‘elements". Some developments of the coding scheme however take a seventh element, ‘scaffolding’ as separately accountable – see McAteer et al (this volume).

Apart from the question of what the codes should be, there is the second strand of the proposal for an elements approach which relates to the methodology of coding of whole messages for simultaneous multiple participant action and interaction [behaviors]. We will now address this issue.

APPLYING THE CODES: WHAT THE "ELEMENTS" CAN TELL US

The main variation from ‘conversation analysis’ approaches, with the "elements" framework, is the coding of whole messages for multiple behaviors rather than seeking to isolate specific words and phrases. Covert as well as overt behavior can thus be accommodated and contextual and extra-textual knowledge utilized. This gives rise to the holistic claim for this approach. It is also a point which supports the "fast coding’ tag, as in practical terms it is much quicker.

We count each instantiation of an "element" as the basic unit of analysis. When looking at either group or individual behaviors then it is not a simple message per head count but already a more qualitative account.

It is not however until we see the way in which the "elements" are seen in their various co-occurrences, that they provide us with really strong interpretative clues to the character of the online learning behaviors. It is worth underlining that it is often as informative to note which elements are missing at any point, as which are present.

To demonstrate something of how we see character of online learning behaviors emerging using the codes, we’ve selected a single group of 125 messages from an Open University MA Open & Distance Learning [H804-2000] .

Group Participation Profile

Firstly we coded each whole messages for participant identity. Simple frequency of messages per participant information is elicited by this process and as a quick group check on who has involved in a conference and the extent of the involvement. An example of from the demonstration data showed the following distribution. PL1[2,3,4 etc] = Participant/Learner,

PT= Participant/Tutor. There were 15 learners in this tutor group, and one tutor. 8 learners contributed one or more messages. 5 contributed the bulk of the interaction. Those who contributed 3 or less messages are grouped together as 'other", which left 5 plus the tutor represented by this Figure 4.0.

Figure 2. Group profile of Participant Contributions.

Secondly [at the same time or on further/later passes] each whole message was coded for as many "elements" as seemed appropriate This allowed us fairly speedily to characterize messages posted by the group [in terms of instantiations/ 'instances' of the elements]

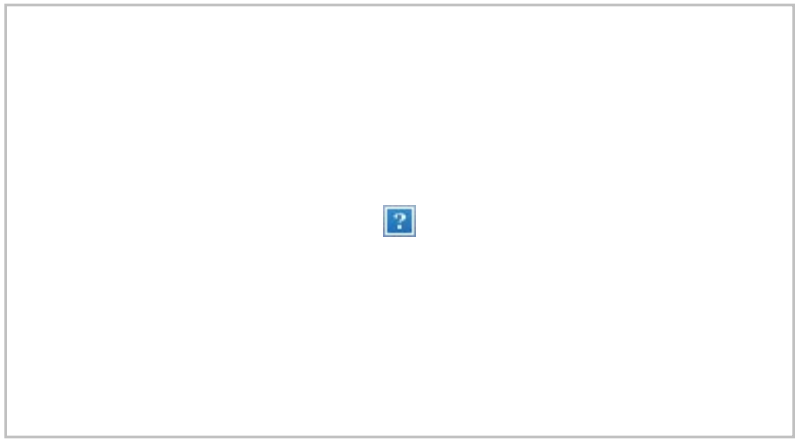

Figure 3 . Group Profile: Distribution of instances of 'Elements'

As the above chart shows, while this group was messaging a lot in order to organize and facilitate the discussion, however the highest number of instances was for framing. Framing being conceptualization of task, grounding and modelling types of concern, the picture which emerges tends to suggest that this was a successful learning activity in terms of the type of discussion taking place. There was a good amount of sharing of information, resources and experience [dissemination] as well as solid kernel of opening out and challenging./ building arguments. Divergence/Convergence]

Individual Participant

Coding each message as a whole for every "instance" of an element identified, was the point at which the potential power of this approach began to emerge. Which elements appear together and with what sort of frequency, is where character starts to realize. This is a critical point and it can be seen in a brief examination of the following Figure 5.

Figure 4, is a matrix of PL3 behaviors in this conference in terms of instances of elements. . Participant PL3 posted 40 messages though these constituted 94 instances of elements.

Figure 4. PL3 A Learner Profile [Matrix distribution of instances of elements]

The high level of Framing without the qualitative insights afforded by reading the co-occurrences which showed the way in which the big overall picture was importantly modified by other simultaneous behaviors, might have suggested a first glance interpretation of an "ah ha ! case of one learner dominating the discussion.

On closer inspection it was revealed from the whole context that this group had decided to make a case study of an authentic problem faced at that time by this participant . That participant was in fact sharing a lot of information and experience with the group to enable the activity to proceed. While framing dominated it was, for example, quite well balanced by dissemination [sharing] .

Overall the co-occurrences offer stronger qualitative insight [without further coding]. What we see with this further view is that 14 out of the 18 instances of framing were accompanied by dissemination, and that 11 instances, the same messages sought to open out the subject. Opening out is an inclusive move in terms of online interaction. The overall interpretation then tends to suggest a rather diligent and helpful participant. Had single attributes has to be ascribed to particular words and phrases this further qualitative insight would not have been available.

Allowing all the 'elements' present at the same time, is where this approach gives the richer and fairer characterization

Even more complex patterns are revealed by a further level of investigation, comparing patterns within patterns. So it is only when

the whole rich fabric is examined that many more interesting levels of characterization are revealed. The point again is that useful characterization of online learning behavior can be available with this fast coding.

DISCUSSSION OF ELEMENTS APPRAOCH

This approach is very experimental and in early trial stages. The reason for presenting it here is that even in early trial application it has proved to experienced online educators to be quick easy and highly intuitive to apply as well as usefully informative. The approach has a number of distinctive features and some difficulties which need to be understood and it is proposed to now address these.

DISTINCTIVE FEATURES

The generic codes are descriptive " clusters" , not categorical. By this we mean that that what we understand at any one time by these generic labels is dependent of natural usage, and this involves a flexible range of meaning. This is similar to usage and meaning of common words in our language. A range of usual meanings describes each generic code, but allows this range to be expanded and varied without requiring re-coding.

Elements coding can work as a pattern ,time based approach. Fast coding allows pragmatically for higher sampling rates and makes it possible to code all messages is a given conference. The ability to look at patterns over the time of the conference is very powerful descriptive aid when dealing with process such as learning. Patterns can also be built and compared across the course or any parts of it.

The elements approach brings into account a broad range of context-building activity as well as knowledge construction and shows in broad terms ways in which they are inextricably entwined in the learning process. Context is made essential not simply and add on, and this seems to provide a way of opening out recognition of a fuller range of complexity than we have traditionally liked to admit as part of the learning process.

QUESTIONS

The first strand of our discussion here is what should be the ‘elements’ used. We have referred to a range of literature which supports the six ‘elements’ we have worked with to date. These have emerged in application to approximately 400 messages to date in close analysis and a great many more less systematically. There have been choices.

Until fairly late stages of working with the codes, we had formed a generic group, "accommodation" which comprised both "divergence" and "convergence". After working for some time with this code it became clear that these items did not always occur together, an when they occurred in co-occurrence with other elements it lead to interesting potential characterizations. In the end it was decided that they were consistently more meaningful dealt with separately.

A further consideration has been raised within our group about whether framing might not also benefit from division into scaffolding and framing, to distinguish between framing with reference to internal-to-task conceptualizations and framing in relation to external-to-task considerations. So far this is an ongoing discussion and further work is in progress investigating this.. The decision for any such suggestion is to determine whether a concept should be a new cluster or can reasonably be included in an existing cluster. The less the better is a guiding principle if fast coding is to be espoused, as the co-occurrence generate densely complex data.

A second obvious question is to wonder about the equivalence of meaning across contexts when using such broad terms. Figure 2 above shows that t many researchers are using the same terms or very like ones and this in itself suggests that there is a strong likelihood of corresponding meanings. As the codes were foundationally derived from long established theory, there must be a strong chance too that they have been deeply internalized by a wide range of educators and that this also makes them easy to handle.

Following Anderson [Anderson T 2001] we used Cohen’s Kappa to check inter rater reliability. The figures here however report on the 5 "element’ position and some variation would be expected when the terms are treated separately, though the same terms and assigned cluster descriptions remain consistent. In order to do this we assigned a single code for each message.

The "Elements ' inter-reliability according to Cohen's kappa was very solid with K = .9469. As

Anderson [Andeson 2001] quotes Riffe et al [1998] "research usually reports reliability figures in the .80 to .90 range."

Kappa N (= 125)

Confidence Interval .95 [lower limit = .9012 , Upper limit = .9925.]

Observed Kappa = .9469 [Standard error 0.0233]

. 9469 = Maximun possible Kappa given the observed marginal frequencies.

1..0 = observed as proportion of maximum possible.

The second strand of the discussion was related to the method of coding whole messages for multiple instances of "elements" . The issue here perhaps being the degree to which the this develops to being truly informative.

The role of new qualitative software such as we used is clearly basic. Being able to quickly gather together whole messages and read them first this way and then that to compare and refine meaning, is instrumental to this approach , and it would probably not have developed without it.

The levels of complexity which can be generated are considerable., and we believe "telling". Further work in terms of participant interviews and focus groups to check interpretation are envisioned.

CONCLUSION

"Online" challenges what can be taken for granted or assumed in the learning process . It expands the range of matters which we see area actually involved in the online learning environment and pragmatically taking up the time and effort of learners and tutors.

What the "elements" method shows quite instructively is that much of the character of the learning can be described simply by seeing which of and where these broadly described clusters co-occur. The method is a powerful and easy interpretative aid.

In the end the problems revolve around trade-offs. Too many generic elements make coding too cumbersome, and the cost of doing this has to be weighted in any case against the benefits of richer characterization. "Need- to-know" and "Nice- to-know" are important distinctions here.

For busy tutors in the online environment the "elements provides a useful and informative systematic check on group and individual behavior. Whether it is more widely useful remains to be seen. . Further research is needed to see how far this approach can be taken, but early indications are that there is considerable depth of description available.

Fast Coding of online learning behavior seems possible with an ‘elements’ approach .

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CHARACTERISING ON-LINE LEARNING ENVIRONMENTS

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ABSTRACT

We propose a central feature of on-line learning environments as *transactive communication* – where participants respond to and build on to each other’s contributions, developmentally toward a mutual outcome. This differs from the more didactic, or at least tutor-controlled, dialogue that takes place in traditional learning environments. In the on-line setting, therefore, communication is

particularly perceived to be an essential part of the learning process. This provides a strong motive for research to determine its characteristics and functions. The need for good systems for describing and understanding the *contexts* of learning activity is also crucial. Who is teaching what to whom and why – and why they are there to learn – is of course critical for the understanding and from this the prediction of good pedagogical strategy. At the micro and macro levels of analysis, then, we need to review, revise, develop and implement tools for research to inform good development of practice.

This paper depends upon ongoing work from all its authors. Different aspects have been presented and discussed across a range of settings, virtual and physical, over recent months as our research refines or revises our ideas. New work for this symposium presentation reports on our testing of theoretical frameworks and ways of applying them for good understanding and development of on-line learning communities. The paper provided here outlines our developing theoretical framework and methodological approach.

Keywords

communication, theoretical frameworks, socio-cognitive conflict, expert guidance, activity theory, situated participant reflection

THEORETICAL BACKGROUND

Research into collaborative learning within school and post-compulsory education, within distributed and face to face settings, provides us with some understanding of both the character and function of communication within learning situations. Further work is still required to uncover fully the circumstances that *promote* productive interaction, which is clearly critical in the development of optimal on-line learning environments. What has been achieved so far does, however, provide the basis for conducting research in a coordinated fashion. By sharing a common language, there is the possibility of integrating data across research initiatives.

Work over the past decade gives useful models of the types of dialogue that are important, initially derived from the theories of Piaget (1932) and Vygotsky (1978) and their followers. Subsequently, it has been expanded via empirical research on interaction and learning (Azmitia & Perlmutter, 1989; Cazden, 1988; Howe, Tolmie, Duchak-Tanner, & Rattray, 2000; Tolmie, Thomson & Foot, 2000). We have a well-developed framework that is grounded in both theory and data. At the core, are two basic processes: *socio-cognitive conflict* and *expert guidance*.

Socio-cognitive conflict

In the 1930's, working with children, Piaget proposed that whilst learning was a matter of individual cognitive adaptation to the world, there might be an important role for discussion between peers. In particular, where there was disagreement over expectation or interpretation of some event, this would cause as much conceptual conflict as actually experiencing events that departed from expectation. In both instances, this conflict would provoke a process of reflection and conflict reduction. Children would attempt to find improved conceptualisations that accounted for the apparent discrepancies. In this way, learning would take place.

Subsequent work by Doise and Mugny (1984) suggested that this process of 're-equilibration' might not require post-event reflection. It could occur through joint attempts to construct new conceptualisations at the point of disagreement. More recent work indicates that both processes occur (Howe, Tolmie, Anderson & Mackenzie, 1992a; Howe, Tolmie & Rodgers, 1992b; Williams & Tolmie, 2000). Furthermore, factors such as age, familiarity with subject matter, friendship, etc are significant. Basically, the more familiar participants are with resolving conflict in given circumstances, the more likely they are to negotiate some improved agreement 'on the spot'.

This later work pinpoint specific types of interactional turn as symptomatic of learning. Indeed, demonstrations that they are predictive of actual learning outcomes have validated their importance. The types of interactional turn are:

proposal of idea,

disagreement,

justification,

negotiation or construction of new explanation,

testing of idea against novel circumstances,

feedback 'from the world'

connecting new experience to one previously discussed.

Expert guidance

According to Piaget, conflict and discussion of this productive kind can only occur among peers. When there is an imbalance of status, the less expert individual simply defers to the person with more expertise. Vygotsky (1978), however, proposed that under these circumstances, a different type of learning dialogue occurs within the zone of proximal development.

Vygotsky theorised that learners could perform at a higher level when working with more expert others who help direct activity. Learning thus occurs via the appropriation and internalisation of the 'moves' initially performed under guidance. Bruner (1985) and Wood (1986) suggest that this might take place through a process of scaffolding or contingent support.

Recent research confirms the existence and impact of this kind of 'tutor-ly' dialogue (Howe et al, 2000; Tolmie et al, 2000). It goes on to specify the following types of interactional turn as predictive of learning:

requests for suggestions of move,

suggestions themselves,

prompts for consideration of other information,

explanations of prompts,

questions,

feedback targeted to need

instructions.

The level of sophistication of productive interactions (involving either peers or with experts) is likely to vary according to the experience of participants. Adult learners are more likely to engage in elaborate processes of cross-questioning and co-construction, and even adoption of tutor behaviours.

Community and culture

One further strand of behaviour in collaborative learning contexts, noted as important by socio-cultural, activity, and situated learning theorists (e.g. Crook, 1994; Leont'ev 1981, Engestrom, 1987; Wenger, 1998) relates to what might be called the 'social glue' of interaction. This includes strategies employed in managing and maintaining learning community activity. At the simplest level, this can be reduced to 'chairing' behaviour: interactional turns aimed at specifying what should happen when, and who is responsible for this. At a more sophisticated level, this might involve managing the process of uncovering and resolving conflicts, without provoking outright hostility.

These behaviours have been less researched than those relating to socio-cognitive conflict and scaffolding, but appear to be highly sensitive predictors of learning outcomes. For instance, overmuch routine chairing can lead to negative outcomes (Tolmie et al, 2000). At the more sophisticated level, interactions aimed at generating shared community views of activities and the appropriate conceptual backdrop to this, especially at an early stage, appear crucial to the success of collaborative outcomes (Lewis, 1997). There is also good evidence to suggest contextual variation in the incidence and effectiveness of these interactions, depending on for example the make-up of the community, or the channel of communication being used (mediated is less likely to be successful than f2f).

Theoretical perspectives from socio-cultural frameworks go beyond interactive learning behaviours and 'productive dialogue' to engage critical issues of *context, culture and resourcing* of the learning group. Activity Theory-based studies of 'distributed learning' over recent years combine a range of approaches to make sense of, rather than control for, the complexity of human learning mediated by information and communication technologies (Russell 2002). Activity theory (Leont'ev, 1978, 1981) examines behaviour in terms of three levels of description: activity, action, and operation. Activity is the superordinate unit of analysis, and characterises behaviour as involving a subject using tools (including writing and speech) to pursue an object (a global intention or purpose) For instance, presenting this paper constitutes an activity, and my understanding of the object of this exercise and how to go about it (what tools to use in what way) is integral to its performance.

One aspect of this understanding is knowledge of actions directed at specific goals which need to be taken to move toward the overall object. Actions are usually conscious, but comprise relatively unconscious operations, through which they are carried out. Thus if the object of the present activity is presenting this paper, making this current point is a contributory action, and articulating

the words necessary to do so is a constituent operation. It is important to emphasise that it is the perceived activity which organises actions and operations, and gives them meaning.

The informing principle for us here is that the lynchpin of a successful learning support system, is *grounding*, shared understanding by all involved at the 'chalkface' - teachers, learners and support staff, in the collaborative effort for individual learning. The central concern here is to promote a conceptual development from 'learning network' to 'activity system' (Engestrom 1996, following work by Leont'ev, eg 1978, see also Scribner 1984 and Cole 1996). In the context of conferencing technologies, an activity system could comprise: the subjects or actors (teachers, learners, support staff – and what they bring with them in terms of experience with learning task, learning environments, their motivations, their personal and educational/professional contexts…) ; the object(s) of the activity (task goals, role of task in larger course goals, as perceived by different actors); the mediating tools of the activity (v-c equipment, CMC network, phone, voice, keyboard); the community (here, the learning community); the division of labour (say task roles and responsibilities of actors in context); and the rules, norms, conventions of appropriate action (lecturing, tutoring, assessment etc.).

Key to our work is the usefulness of an activity system as *context* – not in the sense of surroundings, but more as a functional system of social-cultural interactions. Russell (2001) suggests an understanding of context not as container, but as weaving loom…

Michael Moore's theory of *transactional distance* (see Moore and Kearsley 1996 ch. 10 for a recent overview) offers another useful framework for understanding, which might also support prediction. Broadly, this relates to three aspects of the learning environment:

communication between teacher and learner, between learners and learners, and the extent which this is resourced and supported in a given learning community;

structure – this of the pedagogy, rather than the environment – the extent to which the learner is guided, prompted, 'programmed' toward the learning goal, the degree to which paths to understanding are prescribed and learning tasks ordered;

autonomy – this aspect interdependent upon the others – the extent to which the participant has responsibility for his or her own learning.

Implications for the investigation of on-line learning

Where does this leave us with respect to the investigation of productive communication in on-line learning environments? At the very least, these strands of research appear to provide a common framework or language for specifying the characteristics of on-line learning environments under different conditions. This is a crucial first step towards systematically discerning the influences associated with productive interaction. However, this is not sufficient in itself to move things forward, since we also need to agree how to use this framework i.e. a methodology.

Methodological approach

A common approach that formed part of a JISC funded project was the examination of on-line communication using a 'critical incidents' method (McAteer, Crook, Tolmie, Macleod, Musselbrook, Barrowcliff, 2000; McAteer, Tolmie, Crook, Macleod, & Musselbrook, 2002). This involved examining the communication records, but also collecting participants' recall of activities. The latter was stimulated by the presentation of communications records at researcher selected points of interest (e.g. tutor interventions) or else points identified by participants as being of significance. Analysis of communications is then based on both the direct records, and participant commentary on what they were thinking, feeling, or attempting to do at the given time.

The rationale was that the 'physical' record of communication is in itself too flat to be informative about the processes driving communication, effective and otherwise, in educational settings. Participants' commentaries are needed to make explicit the subjective effort after meaning that is central to the communicative process (cf. Clark & Wilkes-Gibb, 1986).

The precise format of how this approach might be used may need modifying according to the 'immediacy' of communication records. (For example, video of face-to-face communication is more immediate than records of computer mediated communication texts. The latter may need to be read through several times to generate the same impact.)

To carry forward the analysis of communication based on this approach, two systems are needed to analyse:

communication records themselves,

participants' reflections on and descriptions of the process.

Analysing communication records

In analysing communication records, there are both pragmatic and conceptual issues to be addressed. On the pragmatic side, messages need to be sampled (e.g. within threads at specific points), since the whole sequence is likely to be unwieldy, and then the analysis of these messages needs to be managed. A good approach could be to use software, such as NVivo, for the management and analysis of message texts. Texts are imported and elements coded as defined by a coding scheme. This makes coding more manageable and also allows subsequent reliability checks to be carried out in a straightforward fashion.

Coding communication records

This of course leaves open the question of what the coding scheme itself should look like. Taken together, the productive interaction elements referred to previously outline the types of communication that coding schemes dealing with learning environments ought to focus on. It would probably be mistaken to suggest that there is any single best formulation of such schemes: contextual variations will make it appropriate to work at a finer level of detail in some instances, whilst being less refined in others. In other words, coding schemes may vary from case to case, and need to be deliberated in relation to each – but all should be covered within the theoretical frameworks identified above.

In some instances, it will also be appropriate to relate coding of interactions directly to learning outcomes. This could include, for example, analysis of whether the frequency of certain types of communicative event, predicts grading or outcome of individual or joint products such as essays. This type of approach will serve to refine our understanding of the precise ways in which interaction generates learning. It could be used to investigate whether, for example, processes of co-construction have the positive impact that is supposed by teachers and researchers.

Analysing participants' reflections

As above, there are both pragmatic and conceptual issues to be considered. On the pragmatic side, one concern is how best to generate useful data in a form that is manageable for the purposes of analysis. Face to face or telephone interviews are possible, but since dialogue segments for text-bound communications need to be presented, and this can be done readily on-screen, there are possibilities for conducting the whole exercise on-line. This has the added advantage of saving time on transcription. One approach might be to use synchronous chat sessions between participant and researcher focused on selected messages from the communication archive. In this way, reflections are captured in a text form, ready for importing directly into NVivo, in the same way as the communication records themselves.

Regarding analysis of the content of participants' reflections, it seems logical to parallel the analysis of the communication records. There would therefore be a focus on the process of community construction and transfer of knowledge. The central concern must not, however, be so much what communications take place, but rather what drives and shapes these communications from the participant's viewpoint. It is useful to conceptualise communication as occurring between what Salomon and Perkins (1998) term 'learning entities' (groups and individuals), who are semi-autonomous agents, capable of making explicit decisions about their communicative behaviours, as well as reacting in a more intuitive fashion.

From this perspective, the issue for analysis is the extent to which participants are aware of the reasons for making particular interactional turns, and whether they do so as part of a deliberate strategy. This would include how far awareness varies from context to context i.e. what factors are involved in provoking it; and how far it relates to variation in the types of communicative behaviours that occur (note the points above about increases in the sophistication – and therefore success – of communication with increasing experience).

Work in progress

At the micro level, work ongoing within our own research group (Chappel et al, this volume) draws upon a wide review of work related to the coding and representation of interaction within on-line learning environments to provide a set of descriptive categories which are grounded from the theoretical frameworks detailed above. Broad categories of description for communicative behaviours associated with socio-cognitive conflict, (convergence, divergence), with expert guidance (scaffolding, framing, dissemination) and with social management (facilitation, organization) have been derived. These have been applied to a small range of course conference archives and are now being tested more widely, for both on-line and face-to-face collaborative groups across different subject disciplines and learning contexts. Follow up interviews or, where suitable, focus group meetings are presenting learners and teachers with segments of archived records to situate participant reflection on episodes toward planned learning outcomes.

At the macro level, frameworks drawn from Activity Theory and Transactional Distance Theory provide larger units of analysis, 'theoretical lens' (Russell 2001) from different directions and at different levels of magnification to provide critical context and resourcing information against which to examine communication and reflection data. Work here is still at the review and framework

development stage, testing through the on-line learning environments available to the research group.

Our symposium presentation will report pilot work towards implementation of both levels in the wider educational community.

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Understanding Networked Learning: A Personal Inquiry into an Experience of Adult Learning On-line

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ABSTRACT

In this paper, I offer a reflection on my own personal experience of learning on-line. I follow this with a theoretical analysis of this experience,e drawing on the fields of linguistics, sociology and deconstruction. I end the paper with some suggestions for the pedagogical challenges posed by this analysis.

Keywords

Personal inquiry, identity, community, reciprocity, literacy

INTRODUCTION

Personal inquiry involves the researcher in a conscious and critically reflective investigation into an area of the researcher's own experience. Such a process is founded on the assumption that personal experience is a valid source of knowing and that critical reflection is an essential process in this coming to know. The critical element of the reflection involved brings a rigor into the process which would otherwise risk falling into self-deception and self-absorption. The understanding gained through such a process both informs the researcher's personal understanding and research purpose, and forms a framework within which to further investigate the issues raised outwith the realm of the personal (Marshall, 1999; Marshall, 2001).

This paper reports on a personal inquiry I undertook into the experience of networked learning through participating as a student in an on-line adult education literature course. My purpose was to both pursue an intrinsic interest in the subject of the course and to provide myself with an experience through which I could begin to develop a grounded understanding of the networked learning process.

In this paper I first offer a brief overview of the design of the course I participated in and of the approach I took to reflecting on and analyzing my experience. I then present the four aspects of my learning experience which seemed to me most significant. They are to do respectively with issues of identity, community, and the medium of written communication. I conclude the paper by drawing implications from these for our understanding of networked learning and for the pedagogical challenges it poses.

THE COURSE

This was a ten-week adult education course offered on-line as part of a pilot programme of such on-line courses. It had no entry requirements except for the need to have access to relevant technology. It was taught by one tutor. Course administration and technological support was offered by another academic. The course had its own website which contained a welcome to the course, information about the timetable of novels to be read and topics for discussion, background information on aspects of the course, postings on technological issues, and an evaluation questionnaire. Attached to each novel, was the requirement for one of the participants to contribute a discussion paper. The main means of communication between the tutor and course participants was via asynchronous email to the course email address. There was also an attempt to set up synchronous discussion via a Moo. There was no formal assessment required but anyone who wished to do so could submit an essay for review by the tutor.

The course began through the process of receiving an email from the course administrator welcoming participants and giving information about the tutor, how they would be contacting us and how to proceed. The tutor began by inviting all participants to introduce themselves. Only two or three introductions were made and very soon discussion focused on the first novel to be read. The tutor made a couple of interventions during the course in order to request that we focus on particular questions. There was also some discussion as to what was required by the seminar papers. Although there was some discussion of questions raised by the tutor, all formal requests by the tutor were ignored. The course discussions, involving some participants and the tutor, consisted mostly of discussion of participants' views and experience of their reading of the three novels set. A call by two participants for more formal input on literary theory was not picked up by the tutor.

Eleven people contributed emails at some time during the course, although only five were regular participants. It wasn't always clear who the learning community was.

PERSONAL INQUIRY

The points I make below arise out of a process of reflection on my experience and actions as a participant on this course. In order to help me with this process I kept a learning diary of my experience during the course and subsequent to the course read through all the emails exchanged, noting what for me were any significant issues or experiences. I then tried to make sense of these by analyzing the dynamics that seemed to be in play that may have contributed to my experience and distilling what seemed to me to be the essence or 'nub' of the experience. I make no claims for objectivity or necessary generalisability from this process. What has been significant for me will have arisen out of my own particular context, previous experience and framework of assumptions. I offer this simply as an illumination of one on-line learner's experience and the possible insights this might bring. This approach is based on a view I have that in order to begin to understand and research a particular phenomenon, it is important for me to examine this from the inside-out and to gain some kind of an experiential understanding of it myself.

THE LEARNING EXPERIENCE

Identity: The presentation of self

Contrary to my expectation that working on-line would allow far greater freedom of self-presentation, the paradox emerged for me of being more self-conscious on-line than face to face. There is a record of everything one says. One becomes visibly inscribed in

the text. I was conscious of asking myself: How much do I disclose? How anonymous do I remain? My introduction of myself to the group shows how, in dropping the 'I', I seem to be expressing a certain shyness or diffidence about asserting my identity in the group.

Hello

I'm Sarah – work at the Univ of Glasgow, am interested in NL so thought it would be useful to do a course as a student using the internet to try to understand more about the process/experience.

I note in my diary that one of the participants has expressed concern about their educational experience and working class background. I become conscious of wishing to keep my professional self out of my self presentation. I mostly send emails from work, and therefore take great care to delete my 'official' signature. One day I forget. Off it goes into the void. Will anyone comment, pick it up? Silence. It is a strange feeling – I've been found out, I've sent out more than I wanted to. Oh what the hell!

I am conscious of the idea of visibility and invisibility. All I have here are words on a screen and a sense of a void out there with unknown respondents. I have a strong feeling that I don't know who is out there. There is no instant 'feedback' and no capacity for instant re-adjustment of one's self in relation to others.

As the community develops, I become more conscious that there seem to be different values held by other members of the group. I am challenged by the question of how to express these values that seem to be different. I'm also not clear how different they really are. It requires great effort to express my views subtly in writing in this medium as opposed to the greater ease and fluency I experience communicating face to face. I am learning a new means of communication and I lose my day-to-day fluency.

It seems that the process of managing my identity as a learner entering and becoming part of this new learning community is exaggerated in the on-line learning environment. We know from the literature on learning groups (e.g. Heron, 1992) that any new group member is concerned with issues of whether one will be liked, whether one will succeed, be able to perform, who the other participants are etc. This to me was exaggerated on-line rather than mitigated. The factors that seem to be at play here for me are to do with the invisibility of one's peers and teacher; the lack of or limited amount of feedback and clues as to who they are and what they are making of me; the loss of speed, and concomitant increase in effort required to communicate in writing; and my sense of clumsiness and illiteracy in this new medium.

Establishing the learning community: the impact of early words

Strongly connected to the previous section on issues around the presentation of myself on line, are the issues that arose for me around the community we were establishing and my participation in it. Most striking to me in re-reading my diary is a comment that I was disappointed that we didn't get under way on the date set, but when one of the first emails to appear from a participant suggested they were 'grumpy' that nothing had happened, I was immediately struck by the power of the word and the tone that it set for me. Although at one level it was obvious to me that the person is simply expressing their feelings, for me the impact was less one of gladness that there was a possibility for frank expression of feeling to emerge in the group, but more one of the possibility for negative judgments to be made and expressed about what is seen to be inappropriate behaviour. Interestingly, then, from the start a word, for me at least, took on great significance.

Three other 'events' contributed to the sense of the development of what I experienced as an unstable learning environment. The next of these was the first contribution from the course tutor. Although it was obvious that the tutor cared, was very competent, made significant and very useful contributions, just one aspect of what the tutor wrote stood out for me and had an impact. This was expressed in a contradiction for me between a firm direction to participants to follow certain instructions on how to proceed and on what to focus, immediately followed by a comment that tried to mitigate this by saying the tutor was only a facilitator and we were to pursue whatever we wished. We did the latter, and never really engaged with the issue between us and the tutor of negotiating how it might be best to work. This emerged by default.

The third event was the realization that some of the participants had not only worked together previously on similar courses, but they also knew each other face to face and met regularly to discuss the course. As in all groups within groups this raised issues of inclusion and exclusion, and of power associated with alliances and privileged knowledge. This experience was reinforced when it was revealed that the course tutor also knew this group and inadvertently expressed solidarity with them in acknowledging this.

The fourth event was the first substantive contribution commenting on the first novel read. This contribution expressed strongly a view that was very contrary to my own. It was also expressed in what to me was quite derogatory language whose tone I found troubling and slightly alienating. Subsequent contributions seemed to appreciate the robustness of the contribution and in essence supported the views expressed. I began to question whether I was the only one who thought differently. And if this was the case, how well did I and would I continue to fit into this community. For a while this led to my taking a more withdrawn position until I

began to feel rebellious. It was as if for me the discourse space had been hijacked. Eventually I contribute an alternative point of view. Others also did so. The person who made the original contribution apologized and feared they had acted as the 'class bully'. I begin to fear that it is my very response which has had a bullying effect on the contrary view. I now feel positioned as the one who has complained at being bullied, when what I have done is assert an alternative and want to engage with that. But I am left wondering whether my motives were as innocent as I might assert.

The final point I wish to make about the experience of the community is that it never really felt as if we had one. There was a core of about five people plus the tutor who regularly contributed and other than that there were appearances once or twice from another five or six. New people seem to pop up out of the blue; others who contributed once at the beginning never appeared again.

In reviewing this aspect of my experience I am struck by the power of the signal of the word and how this is interpreted by me on the basis of a considerable assumptive process. One could liken this process of engagement in the forming of the community as a mythopoeic one (Adams, 2001), one which allows fantasy and the imagination greater play, especially concerning the physical form and feel of the other person and the norms and values they hold and therefore the judgments they make. I have images of my fellow participants in my mind, rather as in a radio play, but no concrete physical experience of them, except through words. I can only imagine. Maybe there is something here similar to the experience of being blind.

The weight of words: reading and writing on-line text

Significantly linked to the previous point, and probably to the whole experience, is the experience I have of the ponderous, heavy nature of communicating in this way, with only the written word to express ourselves. The demands of reading and responding through writing seem far greater than those of immediate face to face response where so much more can be taken for granted and signaled through context and body language. This experience is exaggerated by the context of my participation being one of heavy workload and frustration with aspects of the technology. My work also requires me to read and write a lot. Evening classes have in my past experience been a relief from this, a bit of social and educational fun. Translating this experience on-line was for me a demanding experience. It required discipline and effort, the antithesis of what I wanted!

The theoretical exploration below suggests why this process may be such a burden and how it relates to identity work and community forming.

DISCUSSION – IMPLICATIONS FOR AN UNDERSTANDING OF NETWORKED LEARNING

One can argue that language use in networked learning involves a combination of speech utterance, letter-writing (Phillips, in Parker et al, 1999) and formal written text. It might also have something of the nature of classroom discourse about it. It is clear however that like all communicative events it is a social and linguistic practice.

Stubbs (1983, p.3) defines language use, according to Malinowski, as *action in context*. In this view, language, action and knowledge are inseparable, as are language and situation. That is, how we use language is inextricably bound to our knowledge and frameworks of assumption and when we use language we can't help but act and construct reality and understanding through it. What we express has significance. And this use of language is inextricably bound to how we define the particular social and linguistic situation in which we are in. However, language is also highly implicit and indirect, and is dependent for its 'fluency', on actors' knowledge and assumptions, and on their interpretive, expressive and negotiation capabilities. According to Stubbs, t*he basic problem for discourse analysis is how speakers can say one thing and mean another* (op cit, p. 5).

The interpretive processes necessary for dealing with this implicit and indirect aspect of language is referred to as *conversational inference* by Gumperz (1982, p. 153). He describes conversational inference as *the situated or context-bound process of interpretation, by means of which participants in an exchange assess others' intentions, and on which they base their responses*. According to Gumperz, conversations are sustained through the bringing to bear of shared linguistic and socio-cultural knowledge through processes of inference based on *indexical signs* or *contextualizing cues* within the discourse of the interlocutors. These signs, for example dialect, rhythm, lexical choice etc., are intentional and therefore meaningful, symbolizing markers of context and convention, and are thus central to the shared construction of reality. They have interpretive significance. There is however always the potential for misunderstanding given the implicit nature of the inferential and cueing processes. And this therefore requires the need for what Gumperz terms *conversational management* (op cit, p. 159): *It is through talking that one establishes the conditions that make an intended interpretation possible. Thus to end a conversation, one must prepare the ground for an ending; otherwise, the ending is likely to be misunderstood.*

In an on-line learning environment the same language processes will be taking place, except that the indexical signs or contextualizing cues normally available in spoken discourse have been limited by the written discourse processes required. Furthermore, given the implicit nature of language described above, the possibility for misunderstanding is greater and therefore the work required for 'conversational management' to mitigate this is even higher in this new environment. First meetings, early

presentations of self, negotiations of learning community norms, and responses to contributors all have the potential for greater misunderstanding, all therefore become more significant and require greater effort to manage. No wonder then, that the weight of the words is felt so keenly. A whole new communication process has to be learned. It is not simply a process of shifting from speaking and listening to reading and writing.

Goffman (1971) argues that identity and self-presentation are managed through the consciously used medium of language (the expression that s/he gives) and through the more theatrical and contextual medium of non-verbal gesture, conduct and appearance (the expression that s/he gives off). The individual is able to manage both of these to create a particular effect, just as those meeting the individual will use both of these media in order to make judgments and inferences about the trustworthiness and 'authenticity' of this person. According to Goffman, we will use what may in some cases be the less voluntary and controllable medium of gesture and non-verbal communication as the source of evidence against which to check the more controllable presentation of self through language. Although it is possible to critique Goffman's analysis in the way that it seems to separate language and action, nevertheless it offers an interesting further insight into what may be happening in the on-line learning environment.

According to this perspective, both the presenter of self and the 'receivers' of this presentation of self have lost a highly significant source of information (or in Gumperz's terms, indexical sign). They have lost or got a much reduced expression of the non-verbal. An example, from my own experience, is my formal presentation of self through a written introduction (the expression that I give) as opposed to my presentation of self through the 'non-verbal' of both the tone of subsequent contributions but also the 'slip' of inadvertently letting out my official signature (the expression that I give turned into an expression that I give off).

Two effects are produced by this. Firstly, as in the discussion above, greater effort is required for identity work on-line in order to compensate for the loss of this significant non-verbal medium. Secondly, according to Goffman, one of the main reasons we attach such importance to identity work, is that we need to establish the 'trustworthiness' or not of our interlocutors - who they are - in order that we can work out what kind of communicative context we are in and therefore what norms or 'rules' of behaviour and interaction are to apply. If this process is disturbed, as it may well be on-line, then the consequences are likely to be a greater sense of uncertainty and instability attached to establishing the norms of the particular community and how it is most appropriate to act within it. This was certainly my experience.

Another element that may have contributed to this experience of instability in the learning community is the fact that it remained at all times a community without clear boundaries. That is, except for the contributions of regular participants and the tutor, it was never really clear who else was in the community. This had a paradoxical effect – on the one hand it suggested a certain freedom and openness; on the other hand, like an open door in a draught, it provoked a feeling of unease. Derrida does not like the word community. He is concerned by its potential for closure, identification and its association with the idea of fortification (Caputo, 1997). He says: *There is doubtless this irrepressible desire for a "community" to form but also for it to know its limit – and for its limit to be its* ***opening*** (Weber, 1995, p. 355). According to Derrida, a community can never be fully inclusive; it must always have insiders and outsiders. Holding to community and the boundaries thus erected, closes off the possibility for future *'in-vention',* for openness to the other;*,* and denies the fundamental assumption behind deconstruction that one's stance should not be one of autonomy but one of responsibility to the other (Caputo, 1997, pp. 106-109).

My experience of classrooms is of relatively bounded spaces. I am disturbed if people come and go and we can't settle. As a new member of a learning group I am tending towards a need for community in the sense of a bounded space in which certain purposes and norms are shared. This may help me to contribute and engage more easily. The on-line learning community as described here is a less bounded space, which has not explicitly established a common purpose and which has certainly not established agreed norms and values. In many ways if could be an example of a future *in-vention* of a community, the opportunity for experience and expression of diversity and for the stance of responsibility to the other. In this case, this potential was not realized, for in my mind I was still learning the ropes afforded by this new medium, was still translating it out of my previous experience, rather than experiencing it in its generative newness.

This analysis of my experience as a networked learner and this brief exploration of some relevant theoretical concepts suggests to me that Networked Learning does involve radically new discourse practices. The newness of this discursive environment and the natural uncertainty generated by learning itself and the joining of a new discourse community would in my view compound the weight of the words, clunky and burdensome, and promote a tendency towards the need for a more conservative idea of a stable community.

CONCLUSION – THE PEDAGOGICAL CHALLENGES OF NETWORKED LEARNING

The following pedagogical challenges are posed by this reflection on networked learning:

> The need to facilitate the construction of learner and teacher identities in such a way that takes account of the loss of the normal channel of the non-verbal and theatrical referred to by Goffman and

which attempts to design into the networked learning environment ways in which this can be compensated for.

The need to make explicit the development of operating norms and conventions for guiding the discursive practices of the learning group.

The need to support alternative forms of indexical signs or contextualising cues in such a way that is appropriate to the new medium of communication and the educational purpose of the course, and in such a way that lightens the burden of the weight of words on learner and student alike.

The need to take account of the fact that in the new discourse environment with its reduced communicative media there is the potential for greater misunderstanding and for significance to be given to what may seem entirely insignificant.

The need to take account of the fact that for some learners engaging for the first time in networked learning requires the learning of new literacy practices.

The need to consider ways in which the developing learning community can be open to the other of uncertainty and ambiguity whilst at the same time holding the boundaries of the learning space.

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Charting Change in Networked Learners: What can we learn about what they learn?

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ABSTRACT

Despite its shortcomings as a comprehensive guide to the activity in an online course (Jones & Cawood 1998), the conference transcript remains one of the most distinctive and potentially useful features of networked learning (as opposed to face-to-face, or other form of learning which does not record student interactions). Through the transcript, alongside other documentary evidence, it is possible to chart the development of learners and discern changes in the way they acquire new concepts, present themselves and their views, construct socially supportive and collaborative groups and develop their skills, from the beginning to the end of a course.

This paper explores learner and group development in networked courses. It examines the nature of the developments and identifies some limitations in existing analytical frameworks. Drawing on data from a range of different courses, (but primarily from one undergraduate module) it investigates what is actually learned and created, and questions the validity of this in terms of a theoretical understanding of networked learning within the context of the 'globalisation' of education. Some practical implications will be identified and the paper will raise issues for further research.

Keywords

Change, learning, development, social construction

INTRODUCTION

As networked learning becomes more widespread, methods of analysing asynchronous discussions proliferate (McLoughlin, 1996). One of the best known tools is Henri's content analysis framework (1992). This classifies messages according to five dimensions: participation; interaction patterns linking messages; social (defined as not related to the formal content); cognitive, and metacognitive components. This methodology has been criticised (McLoughlin, 1996, Hara et al, 2000) for its rigidity and failure to reveal the true complexity of online discourse. Social skills are an essential component of collaborative knowledge construction, and social or interactive messages are inseparable from other categories, much like ordinary conversation.

For example, the following extract from an undergraduate course might be categorised as social, or metacognitive:

> If, like me, you have been madly trying to find out what you know, in order to revise what you don't know then you will have by now, like me, re-read the entire web-board. For those of you who haven't, I can really recommend it as a refresher of the course and a handy reminder of which articles to re-read. Having re-read it twice it is also useful for clarifying readings which you may not have been part of the discussions on.

This learner is keenly aware, not only of the value of the shared knowledge that has been encapsulated in the transcript, but also of the value of vicarious learning, even retrospectively. She is placing an implicit trust in her community, with the assumption that the shared understanding constructed by her peers without her active involvement is as valid as that which she herself played a part in creating. She recognises the act of re-reading the transcript as a learning strategy and is sharing this strategy with the group. She has learnt 'what she knows' as well as the value of the transcript as a study-aid.

The transcripts drawn on here reveal that the levels of interactivity (Jaffe et al, 1995) and task-orientation (Bales, 1950) in an accredited Art History module are significantly higher than in the shorter, non-formal courses. There are many reasons why this might be the case, not least that the accredited course was more intensive and took place over a longer period. It was a highly theoretical, discursive subject; it may be that it demanded higher levels of attention. Either way, this misses the underlying social nature of networked learning. How should the myriad elements such as "did that make any sense?", and "I would love to chat about this with someone" be classified? They are surely social, yet intertwined within whichever of Henri's categories the remainder of the posting falls. These and other problems with coding are discussed in depth by Hara et al (2000).

Further examination of the various analytical methods employed to date is beyond the scope of this paper; the intention here is merely to illustrate the limitations of some of the better known frameworks. A comprehensive analysis may indeed not be achievable across all types of courses and learners.

> learning contexts are quite specific discourse communities ... both macro and micro issues impact in direct ways on opportunities for learning ... it is clear that success in one context will not necessarily

> guarantee success across a range of other learning contexts (McMillan, 1997)

Categorisation of partial messages without reference to their situated contexts is unhelpful in attempting to understand the nature of the networked experience. Given that each experience is unique to the learner, the following sections draw directly on the transcripts, questionnaire responses, email logs and learners' own subsequent reflections, to focus more closely on what their own voices are telling us.

This paper purports to chart changes in the learners, and in the online group. Changes are discernible in the co-construction of knowledge and critical thinking, the development of a socially-supportive networked community, identity building, IT skills and the use of the technology, metacognition and study skills. The following sections will take these in turn.

critical thinking and the co-construction of knowledge

There is an admission of incomplete understanding in two of the very first messages in the main course on which this papers draws: "The readings are good, although I'm finding [one in particular] kind of hard going. Did any one else find this?", "… but I'm kind of confused about … Can someone out there clarify?"

Interestingly, no introduction or greeting whatsoever prefaces the very first remark. This might be seen as an indication of confidence with the medium, or as a purely task-focused offering. However the appeal suggests that this learner comes to the discussion already predisposed to learn from her peers, and is open to asking for help when she needs it. She does indeed receive it, immediately afterwards, and within a very short time the same user was actively engaged in one of the longest threads of this conference – a theme that required two separate prompts from the tutors requesting the discussion move on to another topic, and a couple more weeks before the flow of interactions ceased. This was such an engaging topic that almost every participant posted something, yet few held the same views. Eventually, the holder of one of the most divergent views opened her final posting with:

> Hmmm. I might just eat my words a little. It's true that ...I was speaking without knowledge ...I do believe that there are ... but then ... I think such judgements are hard to make ... I have proved through some silly and irrational statements ...this somewhat contradicts my dashing statement ...

The bulk of this conference, active over five months in all (some weeks longer than the course itself) is composed of learners posting their interpretations, struggling at times with paradoxical issues, requesting agreement or clarification, and negotiating or revising their opinions. Very few messages are 'off-task', though many contain social elements. Messages are carefully constructed, expounding on particular points in the texts, and drawing on social and philosophical arguments as well as personal anecdotes as illustrations. There is no apparent hesitation in requesting clarification of points not understood, or ambiguous opinions.

> I don't mean to be rude, but I didn't quite catch the meaning of what you have just posted. I realise [he] talks quite paradoxically sometimes but I think he meant ...
>
> What on earth do you mean ...?
>
> P.S. W - about Rothko, I think you got the wrong end of the stick.

Text conferencing demands clarification of conceptual ambiguity and "shared interpretation is the result of joint effort" (Schoultz etc al 2001). There is clear evidence of learners checking others understand, that the textual message has 'come over' clearly: "Am I making sense? I really disagree with Crow …", and no qualms about voicing divergent opinion or qualifying agreement: "But, I feel that a matter requires questioning here (if I have understood...)".

There is a process of interpretation and accommodation of divergent views as the learners initiate discussion, respond, evaluate their set readings, and negotiate meaning:

> …Is it that … [learner's interpretation] or because his work had impact and appeal and was naturally 'explosive' as so many writers seem to put it?
>
> ... it takes a step back after having read it, and someone like you to put the argument in a different context before being able to be objective again.
>
> Maybe I'm starting to see the tutor's remark ....

There is evidence too of learners bringing prior knowledge to bear, and relating their learning to wider contexts. One learner brings a lengthy quote from another text (not in the course readings) and relates it to the discussion topic, raising some searching questions about the group conclusions and the very subject area, then justifies this long posting with: "Sorry about the length but glancing at the readings I don't think we're going to get anything on this."

Another learner, also studying a face-to-face course, makes a highly relevant reference to themes which arose in his lecture earlier that day, and another begins uncertainly: "I'm not sure how I'm going to put my thoughts in order here but give me a chance", proceeding to present a very well-argued case which not only questions the validity of one critic's views, but also brings in a wide range of other subject area references and her own conversations with friends in the real world.

One participant argued against the prevailing opinion for a while, appearing not to grasp the full argument. After a co-learner spent some time expanding the argument, the discussion appeared to die down. Some time later, the following was posted: "I am beginning (after looking at some more of [...'s] work) to agree with you"

Vygotsky's concept of the zone of proximal development (1978) describes how conceptual difficulties can be resolved through interaction with a more knowledgeable adult or peer. This phenomenon is at the heart of Laurillard's 'conversational model' (1993) and forms the basis of networked learning. It can be seen to be operating here, and in many other instances throughout the discussion.

In their subsequent reflections on change during the course, the Art History learners reported an increase in the number, length and complexity of discussions over time.

The creation of Online Identity

> people do not exist on screen unless they act or speak ... Participants can only define themselves in terms of language ... learner identities are created only through written language; personas are created and recreated in collaboration and interaction with their partners... (Schwienhorst, 1998)

What can we learn about the way in which learners construct online identities from their own retrospective reports, and from the documentary evidence?

The transcript from the undergraduate course captures some interesting elements relating to identity. Initially, as mentioned above, few introductions or greetings were 'tagged' to the postings, perhaps as the learners found their way in the new medium and presented formal and measured academic opinions. Very soon, this formal tone disappeared completely, until the informal, sometimes humorous, spontaneous style that characterised the rest of the conference was adopted by almost all the participants. Compare for example:

> [both writers] have equally valid arguments ...the concept of equilibrium and truth coming from opposites is not new. Hegel used the same idea in political philosophy ... therefore...

with

> If anyone else is interested in the issues raised regarding the nature of colour that 'Deleted User' brought up on the 12th Feb, try reading Jubien's book 'Contemporary Metaphysics' Ch 6, it's a lot simpler than Plato I think... I've got the book if anyone wants to borrow it for a while! Let me know. Bye

'Deleted user' here is interesting. One learner was given two 'identities' for the discussion group. Once the tutors realised this, they deleted one, but in the intervening period the learner had posted messages to the board from both accounts, (apparently the same name). All of the messages posted from the deleted account were subsequently attributed to 'deleted user'. Far from being unsettled by this, the other participants continued to refer to her earlier messages by this label: "as deleted user said …". The 'deleted user' herself openly reflected with the group on her dual identity, and lightheartedly questioned whether this had any relationship to her 'real' identity:

> hi everyone, I'm back, and I'm no longer deleted user. It seems that i had two identities made for me. Could this mean that the system knows something about my mental health!?

About halfway through this same course, one of the learners experimented with posting his messages as 'anonymous'. This was also received with no query or disruption. To further confuse things, it appears that a lurker, who we never did manage to identify, also posted one or two messages as 'anonymous'. Again, there was not even a query about this from the now socially cohesive group. The following extract illustrates how this learner clearly didn't know, and didn't care, whether 'anonymous' was male or female:

> I've got to say that I agree with Anonymous (sorry *[name of student posting conflicting argument]*), he/she's told by strange coincidence exactly how...

This absolute lack of concern was confirmed by the learners' reflections on the course a year later.

A female learner with a ungendered name was referred to as ‘he’ to which she responded:

> Hi K, I am delighted to see you assume G is male! ... (sorry this is not v. academic [tutors] but it was too good an opportunity to miss), Cheers, G

There were two face to face video-screenings at which this group eventually met in person. Following one of these, the same learner posted: "I’m the old lady in the front row today that K assumed was a bloke!"

Despite comments attesting to the formation of a cohesive social group (‘people in general are more open’, I haven’t done anything like this before. Its educating in different ways. I think the web boards a laugh. especially W...’ etc) there is some doubt over how ‘real’ this is. Stone (1992), notes that MOO participants appear to have no difficulty developing fairly complex relationships with the virtual ‘agents’ of co-members. Surprisingly, she observes, when participants change their name or re-configure their virtual agent, these relationships remain stable, so long as fair warning has been given (and some evidence suggests this only applies within the confines of the accepted morality - changing gender, for example, does appear to cause considerable upset). This raises questions about the intimacy of the group - are online learners able to accept that relationships, though they can be intense, are fleeting and partial? The evaluation questionnaire for this course asked participants whether they felt part of a supportive virtual community. 60% agreed this was so, but 40% did not.

Learner K appears to have greatly valued the discussion group, whilst acknowledging that she did not really feel part of a supportive virtual community, that the views within the discussion space may not always be true reflections of the individuals’ opinions, and that she herself would not be beyond misrepresenting her opinion in order to participate. Despite this doubt she casts on the validity of the views, she still closes with very positive responses to the course. She appears to have valued the activity, or indeed interactivity, more highly than more conventional elements of the course, such as the set readings.

All Art History course questionnaire respondents reported looking back at previous messages, with K among the 60% who did so ‘often’. However, she reports "I sometimes would have lied to give an opinion in the discussions".

Perhaps the truth is revealed in another comment:

> I really enjoyed the course. I was a great subject. The Webboard was good as you could do the reading anytime and contribute whereas with tutorials if you are late doing the reading *you don’t get to voice yourself* (my stress)

Stone (1992) also comments on the personal ‘feedback’ which seems to be valued by participants, and the need for self-projection. For networked learners, the opportunity to air their own views and ‘hear’ themselves in virtual space may be closely tied to the drive to create an online presence. Nevertheless, there is clearly also a fascination with the identities presented by others: "personally I’m intrigued by the interplay of ideas and personalities. Art is almost taking a back seat. Conferencing is onstage".

Curiously, one learner, in the context of a discussion about the cultural roots of a writer, remarks:

> I agree with B… I think that it impossible to try and pigeon hole somebody into a identity. I think that identities can be very misleading. However what is important is more the person and where there inspiration came from [*sic*]

This might be a clue to the way in which online communities are perceived. The person is ‘just’ an opinion, a tone, a few lines of text - what matters is what this text expresses. One year later, the undergraduate learners were asked to reflect on certain aspects of the experience. The following responses are typical and confirm their primary engagement with the concepts. Identity took a secondary role to the discussion process:

> I don’t think it is important to develop a personal identity, the issues raised were important and I think we learned a lot from each other, regardless of who had written it. I can’t remember names of who stood out the most but a couple of people did - those who questioned the readings well or who contributed the most...

> Often, I read the webboard without awareness of whose opinion I was reading...The one thing I think was really good was people often had time to give intelligent and argumentative comments which are often missing in a tutorial where a person doesn’t have time to reflect on the issues and give a thoughtful response. On the other hand, I think this is what led to people becoming anonymous in my mind if not in fact. Sometimes you were too busy working your way through their argument to notice who it was from.

One learner states that, although ‘you couldn’t put a face to the name... it didn’t limit the course at all’. Hara and Kling (2000) reported many frustrations in their study of networked learners, but isolation was not one of them.

Murphy and Collins (1997) claim that for a supportive group to form, personal disclosure is prerequisite. Personal information was disclosed in all of the transcripts referred to here, but particularly so in the undergraduate course. References to learners’ homes, their friends and their real life abound, and when feelings are threatened there is no apparent hesitation in attempts to correct the balance: "… but I’d be really hurt if I thought that you thought that at other times I was ‘drowning in hyperbole’."

It is clear that the nature of virtual identities and groups is far from simple. By the end of this course, the learners had nevertheless constructed a socially supportive group. Offers of help abound, and concern for others is evident: "you might want to say something about this on the webboard as it could cause panic on Friday if anyone else has used pictures and finds they can’t email their essay".

For another, campus-based course, a discussion group was set up as an ‘add-on’ facility. We intended the various subgroups, already working together face-to-face on their collaborative projects, to use this as a way of sharing their ideas amongst the wider group. In fact, if anything, the networked medium made the smaller groups even more cohesive, to the point of having a negative, ‘groupthink’ effect:

> ... the other members of my [cohort] have not [joined in] and although we have developed a strong communication in support of study and learning, it has not extended to other class members. Therefore I would have felt a bit inhibited (yes even me!) about sharing info. over the system with the others.

This subgroup had also developed as a community, here one which it was not ‘safe’ to venture beyond, even when this had been facilitated by the design of the environment. Interactions related to each subgroups’ project work moved almost exclusively to the online setting however, and the degree of activity and interaction blossomed - within the confinement of the known group.

The Development of skills

These learners and groups did, then, develop their cognitive capabilities. They did not appear to create strong online identities, but highly task-focussed and supportive groups. There is also evidence of the development of more practical skills.

Use of the technology

The asynchronicity and parallel threads of interactions distinguish the work of an online group from fixed time, fixed place and fixed theme lectures, where there is minimal scope for exploring learner-centred themes. Furthermore, the normal time scales of formal education courses do not apply. In the undergraduate course, comments such as "I couldn’t sleep" were not uncommon. Learners need to adapt to these features of networked learning, as well as enhancing their general technical skills. This appears to have occurred:

> it helped me get to grip with computers - (had never even e-mailed before!)

In one of the courses drawn on here there were two or three shared first names amongst the learners. Initially, references to these learner’s postings were consequently often ambiguous. After a short period one participant used the first name with the date reference, after which this became adopted as the normal convention.

There is also evidence of an increasing sophistication in the use of the technology. Initial messages were posted immediately below the tutor’s greeting, despite instructions in that message to post messages beneath the first topic heading. For some time, this lack of concern as to where messages appeared continued, but by the close of the course, with no prompting, all appeared to have learnt how to follow ‘threads’ and ‘correctly’ place their offerings.

Study skills

Networked learning generally demands more self-direction than lecture-based courses. The Art History course learners in particular attested to the value of this in enhancing their study skills (pasted here verbatim):

> ... I am spending far more time studying and thinking about what I am reading than I would do if I was attending ordinary lectures. normally I would lose concentration towards the end of the lecture and miss important points, this way I can stop, have a cup of tea, and start again! it also allows me to think about what I have just read and form my own ideas and opinions. I find the best way to study is to write up my own reactions to the texts in note form, this way the work is all my own instead of just copying what the lecturer has said. I’m finally using my brain all the time instead of only 3 hours a

> week at lectures!!
>
> My main weakness before beginning this course was never doing any private study, I have definitely been able to manage that better now that I'm 'forced' to because obviously if you don't do the readings you can't do the assessments.
>
> Some of the readings are quite heavy going and they take longer to read than you expect because it's useful to take notes.

Certainly then, learning does appear to be taking place on a number of levels. In one evaluation of the undergraduate course, all respondents answered 'agree' or 'strongly agree' to the statement 'I learned something of value'. However, how much this is due to the particular features of networked learning, and how much it is simply an increased exposure to the concepts under discussion, almost unlimited opportunity for self-expression, and heightened attention to the material demanded by the need to formulate, articulate and defend personal opinions is a question that remains to analysed. (In the same evaluation, 75% of respondents rated the workload as 'heavy' and 62.6% rated the work 'difficult' or 'very difficult'). None of these courses assessed participation, nor was it compulsory. Motivation of course, is key, and enjoyment is closely linked "I'm enjoying it a lot more than I expected", "I'm having fun". These learners felt that they worked harder than in other courses, and gained more from the effort.

Implications for design and management

The interaction style of the tutor is a recognised factor affecting cognition (Feenberg 1989, Salmon 2000) and some implications for the design of an environment to support debate have been drawn (Goodyear, 1996). However, the success of the degree module here, explicitly rooted in constructivist approaches and critical thinking, might be best understood by the learners themselves:

> It would have been very difficult getting into the discussions if I hadn't have been enthusiastic about the subject - it helped that it was conceptual and deliberately provoked thought and discussion.

Evidence from new courses is now being analysed to establish whether more content-driven models support cognition equally well. Further research needs a coherent methodology for analysis of these factors, a methodology that can be applied in a broad range of situations both formal and informal, in order to investigate a variety of learner experiences and across cultural and organisational boundaries. Nevertheless, it is clear that "practice cannot be the result of design", but is defined by communities (Wenger, 1998).

Enculturation and exclusion

Implicit in the formation of groups is the notion of exclusion:

> I just meant that to those poor ignorants out there, even setting aside us savvy 'adolescent' students, Rothko, if he means anything at all, is wallpaper, or a nice calender for the kitchen.

Completing a short 'interest' course gave one learner a sense of achievement, whilst feeling threatened by more experienced peers. She felt isolated from the established 'academic' group, and pressurised to join in with their working methods:

> I never went to uni and felt that it would be above my head, but was very pleased and surprised how i could follow through the coarse... Next time i would work on my own, because our group had done other coarses before and rather took over our thoughts etc.[*sic*]

This seems to suggest that, again as with any other course, online courses need to be composed of a coherent social and educational group with a comparable level of experience. The pre-existing group had created their own community, complete with an acceptable social language and individual roles including arbiters and virtual 'bullies'. This student was definitely 'out'.

Furthermore, conferencing is heavily dependant on good writing skills, and some evidence suggests it favours those with innate ability and desire to learn, whilst putting less able learners at a disadvantage. The highest achievers throughout the year of the degree course were also, with one exception, the most active discussion participants. The exception was a 'peripheral participant' (Wenger, 1998) according to the login statistics, never posting, but lurking, and achieving high grades. Some learners are intimidated, struggle with the technology, simply prefer to study alone, or concentrate on other aspects (Goodyear, 1996).

> Other than checking understanding of an instruction, or progress with assignments, I have no need of communication.

Finally, we need to foreground the aims we implicitly aspire to in developing networked courses. Few educators would admit to intentionally striving to create exclusive experiences, yet this is what the vast majority of our online courses actually are. This paper examines the development of learners and groups in networked courses, and attempts to identify some of the learning that occurs.

However, the learning gains of privileged groups in Higher Education in the UK cannot be a basis on which to predicate similar outcomes for the rest of the global population.

Talking of collaborative assessment in South Africa, Mabasco notes that

> ...learning benefits are congruent with Henri's ... participative, social, interactive, cognitive and metacognitive. All these dimensions will be influenced by the educational and cultural backgrounds of the learners ... self-disclosure and submission of self to analysis and criticism is anathema in other cultures.

(For further discussion of the tensions between distance education, globalisation and inclusiveness see Hayward et al, 2001).

This paper reports initial findings from continuing research. Comparable methods are currently being applied across a broad range of networked courses and across consecutive presentations of the same courses. Further analytical methods will be applied to these transcripts in a process of framework refinement, in the attempt to identify robust methodologies applicable in the many situated contexts of networked learning.

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