
The strength of cohesive ties: discursive construction of an online learning community

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Abstract

Learning takes place in a social context, shaping and shaped by discourses. In online projects such as the *Schome Park Programme*, these discourses are material-semiotic practices (Haraway 1997) that make use of writing and other manifestations of digital literacies. Discourses include traceable patterns with linguistic features of distinctive forms and functions. Employing a sociocultural perspective of discourse as mediated interaction (Scollon 1998), we identify use of register and cohesive ties as salient to the practices of learning communities. The study reported here focuses on two groups of teenagers, one a formal learning community based in the USA, the other a larger, online, informal learning community based in the UK. The groups were originally only weakly tied within a network, but aimed to work together within the virtual world environment, despite some different aims. Working with McMillan's concept of community as characterised by spirit, authority, trade and art, we illustrate how misalignments in register and problems with cohesive ties can be associated with difficulties in the cooperative learning enterprise and we also make recommendations for future practice.

Introduction

- One thing that everyone here has to understand, is that Americans and British people think completely differently. (IUSTeen)
- That might be true. (6GBTeen)

Learning is a social endeavour, as meanings that are first negotiated in intersubjective interactions become internalised (Bandura 1971; Vygotsky 1987). Connecting with others gives learners access to expertise and to people who can guide, model, challenge, teach and work with them. These interactions take place within specific temporal and spatial environments, yet understandings of physical features are inevitably perceived through cultural understandings instantiated as discourses. We share with Wertsch (1991, 8) 'a concern with the cultural, institutional, and historical situatedness of mediated action.' So we view specific learning interactions as always being socio-historically situated, understood by us in terms of discourses we have come across in the past as well as in terms of any newly evolving sense of cultural patterns we discern. As Kumpulainen and Kaartinen (2000, 432) propose, 'Learning is an enculturation and meaning-making process that occurs through participation in cultural, dialogic activities with peers

and more knowledgeable members...’ From the perspective of the individual learner, knowledge for the individual is socially constructed in processes that are mediated by language (Gee 1996; Wertsch 1991). This means that the material aspects of learning interactions are inescapably approached and understood through discursive negotiations. Thus discourse functions as a kind of dynamic boundary object between individual learning identity and the patterns of communication, which are always in practice situated, that are imbued with the ‘values, beliefs and intentions of [...] users’ (Hick 1996).

The aim of this chapter is to focus on specific key aspects of discourse and to explore how these came to play a role in constituting instances of degrees of (non)-alignment in a learning endeavour between two communities coming together in a project centred on use of a virtual world. We will begin by outlining our understanding of key concepts. Necessarily briefly, we will develop the relation of discourses to learning as outlined above. We will discuss the oft-debated concept of community in two ways. First, in order to approach an understanding of two groups working both separately and together, we discuss the notion of (online) community as contrasted with network. Second, we establish a durable understanding of community, taken from the work of McMillan (1996), as a framework for analysis. We also introduce two key linguistic concepts: register and cohesive ties. We then move to describing the source of our data for this paper, outlining the context for the debate in the Shome Park Project. Through our analysis according to the frame of Spirit, Trust, Trade and Art (McMillan 1996), we show how discourses as mediated actions arise from differing expectations and misunderstandings and so lead to gaps in intersubjectivity and even conflict. Our final conclusions summarise our endeavours and include recommendations for teaching practitioners and researchers.

Key concepts

Learning and discourses

Interactions that involve opportunities for learning, whether taken up or not, are inevitably instantiated in discourses. This extends to the specifics of the contexts within which we can understand resources. These include frameworks for learning within which we have a role (for example, as learner, teacher or expert); opportunities for the joint negotiation and development of ideas; historical settings within which we can help to develop continuous threads of knowledge, and affective elements such as motivation and confidence that can support our learning (Clark and Brennan 1991; Claxton 2002; Wells and Claxton 2002). Access to these discourses is diverse and uneven; cultural resources that may enable or

empower learners are likely to be unequally distributed, a particular challenge for marginalised members of any society (Hick 1996).

In a community that has been set up to support formal learning, where goals and means of achieving them are decided or at least mediated by the teacher (Vavoula 2004), the teacher plays a strong part in recognising, identifying and shaping dominant discourses. Learners are typically socialised from an early age to recognise standard elements of classroom discourse (Sinclair and Coulthard 1975), although this may be more difficult for members of marginalised sections of any community (Hick 1996). In informal learning situations, where goals and means of achieving them are non-specific or are set by the learner (Vavoula 2004), an even greater variety of discourses is likely to be available, and the opportunities for misunderstanding and incoherent exchanges may be increased. Therefore, we suggest that the creation of effective online learning communities is intertwined with the establishment of recognised discourses that foster coherent discussion.

Concern regarding unequal access is an impetus for those teaching and indeed researching literacies in both informal and formal educational contexts to investigate effective practices. However, a significant issue we now turn to is conceptualising communities, especially with relevance to the situation investigated here.

Networks and communities in virtual worlds

In virtual worlds – the learning contexts that we are concerned with here, in common with other contributors to this book – online connections are typically conceptualised either as networks or as communities. It is useful to make a distinction between these concepts, as blurred as they may often be and probably necessarily are in practice. Networked learning has been defined as follows:

learning in which information and communication technology (C&IT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources. (C. Jones 2004, p89)

Learning networks are made up of actors and the ties between them. These ties can be classified as strong or weak, depending on their frequency, quality or importance. A weak tie has the capacity to act as a ‘bridge’, the only route between two sets of actors in a network (Granovetter 1973). Online networks can offer learners easy access to large sets of people and resources and a wide range of perspectives and may support both cooperation and collaboration (Haythornthwaite and de Laat 2010).

However, in order for groups of learners to work together successfully, they need to develop shared understanding of what they are trying to achieve, and shared knowledge on which they can build. Such shared, or cumulative, knowledge is built through mediated discourse as social interaction (Scollon 1998) and forms the contextual basis for further discussion (Edwards and Mercer 1989).

The temporal elements of context mean that shared history is an important resource; learners can refer back to past discussion, actions or events (Mercer 2000) and can develop a shared understanding of their current actions and their future intentions. Developing and deploying shared contexts, discourses and histories are activities that are associated with communities rather than networks.

There are many types of community associated with learning, including communities of practice, communities of interest and communities of learners (Wenger 1998; Goodfellow 2003; A. Jones and Preece 2006). They can all be described as having four common characteristics, described in detail by McMillan (1996): spirit, trust, trade and art. Spirit is associated with friendship, and feelings of belonging. It is made possible by boundaries, and ways of assessing whether new recruits will be loyal to the community. Trust is associated with authority, group norms and, ultimately, with justice. Once a community has a live spirit and an authority structure that can be trusted, members discover ways in which they can trade skills and resources in order to benefit one another and the community. Together, spirit, trust and trade combine to form a shared history that becomes the community's story symbolised in art.

In the physical world, a sense of community is strongly associated with place, and pre-Internet definitions of community emphasised location (Bell and Newby 1971). Online, communities tend to be associated with 'cyber-settlements' which offer a minimum level of interactivity and sustained membership, a variety of communicators and a common public space (Q. Jones 1997). Constructing the settlement, though, is just the beginning. Communities need leadership, support, governance, acknowledgement, entertainment and amusement (A. Jones and Preece 2006), and in an online community these will primarily be constructed through the use of dialogue and the development of a shared discourse.

Coherence, register and cohesive ties

As human beings participate in meaning-making practices, in any domain of literacy, they are characterised by a tendency to make connecting patterns; in other words, to construct coherence (Walsh 2006). In this chapter we make particular use of the idea of register as the key linguistic notion behind interpretation of coherence (Halliday and Hasan 1985). The notion of register combines a recognition that meaning making, in both oral and literacy modes, is constituted in linguistic patterns, and that these are recognized and deployed in particular contexts. That is, this is an approach to language that recognizes language-in-use, i.e. in interactions, as always situated, and thus is theoretically consonant with our sociocultural perspective on learning, as outlined above.

Registers 'are the semantic configurations that are typically associated with particular social contexts (defined in terms of field, tenor, and mode)' (Halliday and Hasan 1985, p43). The field of discourse refers to the nature of the social action that is taking place, the tenor refers to the status and roles of the

participants, and the mode refers to what the participants are expecting the language to do for them in that situation. Formality is a key dimension, associated with practices and understandings of an event by its participants. The same words may carry different meanings depending on register, so in order to understand what is said, we need to understand its register. In the classroom, for example, the words ‘When did the First World War begin?’ will be interpreted as a request for information if they form part of a student-student register, but as an elicitation of knowledge if they form part of a teacher-student register. Likewise, ‘give me your dinner money’ would be an expected request in the teacher-student register, but could be interpreted as a threat in the student-student register.

Coherence in speech, writing and online forums is established, in part, by register. Another way of establishing coherence is through the use of cohesive ties: grammatical devices that bind sentences, utterances and longer passages together (Halliday and Hasan 1985; Ferguson 2009). Cohesive ties connect stretches of language by building relationships between the smaller units. They include the use of conjunctions to link ideas, pronouns to refer back to nouns, punctuation to signal the start or end of ideas, and repetition to recall past input. Other examples are paraphrasing, references, sets of words that are lexically related, and substitution of one word or phrase for another. In asynchronous environments such as the *Schome* forums, where there is no expectation that contributors will be present at the same time, part of the way in which they create coherence is by establishing and marking adjacency between postings. This is important in such settings, as conversational turns are often produced in blocks, with individuals logging on separately and contributing to or beginning several discussions at a time. As a result, topics are discussed in parallel rather than in sequence.

Cohesive ties and register support the development of coherence, but do they support the development of online learning communities? Goodfellow (2003) notes that such communities take time to develop; so opportunities to track and analyse how they are discursively produced are necessarily rare. Despite these difficulties, as online social learning becomes increasingly important and we seek to build learning communities upon and within learning networks (Conole 2008; Walton et al. 2008; Ferguson and Buckingham Shum 2011), it is important to ask

What roles do cohesive ties and register play in the discursive construction of online learning communities?

Data collection

In order to answer this question, this study draws on data from the encounter of two learning communities, one formal and one informal, within an online learning environment. The data are taken from the *Schome Park Programme*, a project within the *Schome Initiative*, which aims to develop ‘a new form of educational

system designed to overcome the problems associated with current education systems in order to meet the needs of society and individuals in the 21st century' (Sheehy et al. 2007, p89). The *Schome Park Programme* started in 2007, in the virtual world of *Teen Second Life*[®]. Participants who joined in 2007 included individual teenagers from across the UK, supported by adult educators who also considered themselves learners. They interacted on the virtual island of *Schome Park*, and also in the *Schome* forum and wiki. Although the majority of participants had never met face to face, a strong sense of community developed, and members referred to themselves as the *Schommunity*. (For further details of the aims of the Schome Initiative, activities during the phases of the Schome Park Programme and background to the issues studied in this chapter, see Gillen et al. 2012b; Twining 2010).

Of interest in this chapter is the third phase of the *Schome Park Programme*, which ran from January to June 2008. A particular research aim was to explore the interface/co-existence of the learner-centric approach to education within the *Schome Park Programme* and more traditional schooling. The *Schommunity* as constituted at the beginning of this phase was informal. As in earlier phases, there were no attendance requirements beyond voluntary agreements within collaborative activities, nor any assessed tasks. Teenagers (and adults) participated as and when they chose, with a focus on the development of knowledge-age skills such as leadership and creativity. A formal learning community, a high-school computing class from Los Angeles, joined them in March 2008. The two communities had formed part of a network related to new approaches to education. Within this network, they had been connected by one 'bridge', the weak tie between the *Schome Initiative* director, Peter Twining/1GBStaff (see Table 1 for an explanation of pseudonyms used in this article), and the class teacher, 1US Staff. There were significant differences between the two communities: the existing *Schommunity* was informal, mainly based in the UK, familiar with the online environment and primarily interacted online, while the US community was formal, unfamiliar with the online environment and primarily interacted within a face-to-face setting.

Insert Table 1 (roles and pseudonyms) here

Table 1 Those who participated in the forum thread, their pseudonyms, roles, and number of postings within the thread. Note that for ethical reasons concerned with child safety, the real-world identity of the director, Peter Twining (1GBStaff), was in effect transparent

The Schome Park Programme generated an enormous dataset including forum postings, virtual artefacts, media assets and records of in-world chat. Our broad analytic approach to this dataset may be described as virtual literacy ethnography (Gillen 2009). Our use of this term here emphasises three features of our approach to researching *Schome Park*:

1 recognising the significance of understanding diverse literacy practices, as enabled by the different affordances of the communicative domains and as enabling and constraining creativity (see, eg Gillen 2012);

2 acknowledging, and indeed embracing, the situated nature of our understandings as informed by our longstanding engagement with the *Schomcommunity* and with the data generated by the community (see, eg Sheehy et al. 2010)

3 reflecting our commitment to the co-construction of understandings through a ‘team ethnography’ approach, writing collaboratively (Gillen et al. 2012a).

To answer the research question posed by this study, we carried out a thematic analysis of one forum thread, taking as our themes the key elements of community – spirit, trust, trade and art – and considering the roles played by cohesive ties and register in the construction of these.

This forum thread was selected as an exemplar of the extensive discussions and interactions between the two communities that took place during spring 2008. It includes the written participation of 28 members of the *Schome Park Programme* (including two of this article’s authors) and, when we began our analysis, it had been read 12,727 times. It is a long thread (although far from being the longest on the forum), created over three weeks, and including 166 separate posts with a total word count of 27,871 (to put this number in context, the thread is only 80 words shorter than Shakespeare’s play, *Othello*). It was by no means the only discussion that took place at the time – while this thread was open there were 1,278 other postings on the forum, three weeks of engagement in the virtual world, and extensive use of the project wiki. It was selected for analysis here because it represents the main threads of discussion around the challenges and opportunities presented as the two groups negotiated an understanding of community.

In the data presented below, note that spelling, punctuation and grammar have not been standardised, and that the gender adopted by or attributed to participants in the *Schome Park Programme* may not represent their offline gender. The data represented within Figures 1-4 are screen grabs from the online forum; the dark blocks within them indicate where we have replaced the names used within the forum with the pseudonyms listed in Table 1.

Data analysis

Spirit

The forum thread began with a posting from 1USStaff, headed ‘1USStaff’s Team Events’

Greetings to all.

I will be posting events for various members of our team. They would post themselves, but we are a bit short of time and attendance is not always steady.

Being newbies, I hope I am doing the right thing. Please let me know if I need revisions.

We would love to have anyone participate in planning the events as well as attending, so feel free to join any group.

1USStaff

There is an immediate confusion of cohesive ties here, as names and pronouns are presented ambiguously (1USStaff's Team, all, our team, they, we, group) and the text shifts uncertainly from the first to the third person and from membership to leadership. The next afternoon's postings from the US students suggested a more formal approach was being employed in the classroom; the students were not functioning as a 'team' but were working as singletons or pairs to propose an event in the virtual world and to evaluate another proposal. Figures 1 and 2 give a flavour of these exchanges, which employ a familiar educational register – the teacher assigns written work and provides a framework or template to support its completion. The pronoun 'we' in these postings clearly refers to the sub-groups within which students were working, rather than to the community. Eight of the ten US students who posted in this thread repeated the same format: they posted a proposal and/or an evaluation, used 'we' to refer to themselves and their project partner, and did not engage with the discussion thread in any other way.

[Insert Figure 1 (rough draft of laser tag) here]

Fig. 1 Reply #6, a proposal for a LaserTag tournament, posted by 3USTeen as a response to the request by 1USStaff for proposals for team events

[Insert Figure 2 (evaluation of laser tag proposal) here]

Fig. 2 Reply #10, posted by 4USTeen. An evaluation by 4USTeen and 11USTeen, using the 'Strengths, Weaknesses and Suggestions' format, of the LaserTag proposed in Figure 1

In the context of the *Schome* forum, the appearance of assessed work and of postings that did not form a part of a dialogue was unusual. As the forum thread progressed and debate became increasingly heated, the occasional interjection of postings within a traditional educational register, following a set formula that had been provided by a teacher, was experienced by some as jarring. When 6USTeen posted the following review of a project proposal by 3USTeen,

That sounds like a ton of fun 3USTeen! How on earth did you come up with such a brilliant idea lol Make sure there is a way to modify the guns and you'll probably need to be a way to inform people of the time as it runs out.

we interpret his positive evaluations as hyperbole, probably tongue-in-cheek exaggerated praise oriented to the education context. However, his posting in the educational register established by 1USStaff appeared, incongruously, in the midst

of what had become a fast-moving discussion on religion. A member of the *Schome* community, 5GBTeen, responded,

I wish to make clear that I am now no longer intending to participate in this project for as long as 1USStaff is busily destroying the whole concept.

This reaction to the previous posting appears somewhat extreme but, in context, it can be understood that the evaluation had not been interpreted by 5GBTeen as merely a difference in register, but as a challenge to the *Schommunity*. Another of the UK teenagers, 10GBTeen agreed with this view,

In terms of the existence of final projects and suchlike, I tend to agree with 5GBTeen- it isn't at all part of the schome ethos

Here 'the *Schome* ethos' made its first appearance in the discussion, substituting for 'the whole concept' and prompting a query from 1USTeen

Look, I joined in a bit later than most. What is, in your terms, the Schome ethos, then?

7GBTeen provided a detailed response, referencing a relevant wiki page, and a reformulation of the information on that page, aligning it with the concerns of the ongoing discussion:

On the schome ethos it basically runs down into some main points

One being that you are not forced to learn if you choose not to - If I don't choose to go to an event I'm not forced to, If I do then I may

The main conflicting element of this for the most part is the school philosophy, school lessons nine times out of ten are very structured, you are told what to learn, when to learn it, how to learn it, attendance is compulsory, Learning is compulsory even if the subject is of no interest (school and homework make sure of it)

The thread includes many reformulations of 'the *Schome* ethos', which was in part defined in opposition to the register of postings by members of the US community – *Schommunity* members made it clear that this ethos did not involve final projects, three-line evaluations or graded coursework, which meant it effectively excluded all contributions to the discussion thread by eight of the US participants, and placed the contributions of the others in doubt.

Trust

Two of the US teenagers did engage with the idea of the *Schome* ethos, including 1USTeen. From the start of his engagement with the thread (Fig. 3), he employed the same register as members of the *Schommunity*, employing similar ideas, style and terminology. Unlike his fellow students he introduced himself, set out his credentials and engaged with the *Schommunity* by asking for members' help and their thoughts. In his next posting he asked the community to 'green-light this project'. In doing so, he acknowledged the authority of the *Schommunity*, and this produced a tension for him because he then had to try to align the requirements of both communities, one concerned with the ongoing development of knowledge-

age skills and one concerned with the development and assessed demonstration of computing skills. (For an analysis of this specific debate in terms of argumentation, see Gillen et al. 2012b.)

Insert Figure 3 (proposal for Gothic Cathedral) here

Fig. 3 Reply#7, a proposal to build a Gothic cathedral, posted by 1USStudent as a response to the request by 1USStaff for proposals for team events

When asked why he wanted to build the cathedral, 1USTeen set out five reasons, including:

because a good deal of my grade in 1USStaff's class is riding on this project and I'm starting to approach the point where I won't have time to start over.

Schommunity members objected to grading but nevertheless engaged in a coherent discussion in which the related terms 'grade', 'mark' and 'A*' acted as cohesive ties. 4GBTeen suggested 'Could this debate not get you a mark - demonstrating different skills?', a view repeated and developed by 3GBTeen: 'For engaging in this debate alone and how well you are presenting your augment etc alone you should get a A*'. 1USTeen's response, though, was 'Hah, I wish. No, we have to actually make something in second life – it's a computer class.' The US community did not treat its rules, authority and standards as negotiable within the *Schommunity* forum, and no cohesive ties were created between the two communities on these subjects.

Trade

The start of the discussion thread had a networked style to it, with postings apparently offering access to people and resources. 3GBTeen offered to record some cornet music for the concert group, and mentioned access to resources related to laser tag. Yet members of the US community did not respond to these offers – such a response would have meant shifting register away from assessed work and into discussion.

In the forum there was little other opportunity for the trade of material goods, but participants proved willing to offer a wealth of ideas, challenges, discussion and debate.

[Insert Figure 4 (detailed response) here]

Fig. 4 Reply#97, a detailed response to posts by several other students (the shaded areas are quotations from previous posts), posted by 1USTeen

Figure 4 gives an indication of how this worked in practice. This post from 1USTeen made use of the forum's quotation facility to build strong cohesive ties

between the postings of different people. No posting was quoted in full, but key sentences were selected for response. The extensive use of selective quotation to keep numerous lines of discussion in play at once would be impossible in face-to-face discussion, and would almost certainly lack coherence in synchronous online discussion. Here, it was deftly employed to manage the exchange of intellectual ideas between several people.

In the space of just one posting, 1USTeen replied to four members of the *Schommunity*, responded to challenges, raised counter-challenges, shared personal interests and beliefs, offered clarifications and modifications, raised questions, provided information about Gothic architecture and introduced new issues. He also built cohesive ties into his posting in the form of numbers that allowed others to respond to separate elements of his arguments – his responses to the idea of building a Gaudi-style cathedral were numbered first, second, third – his reasons for building a cathedral in the first place were numbered one to five. In doing so, he constructed a framework for future discussion – members of the *Schommunity* could, and did, respond to separate points. The posting as a whole was a sophisticated construction that formed part of an extensive exchange of ideas.

Art

Part of that exchange involved the construction of a shared understanding of elements of the history and art of *Schome*. It became clear at various points in the discussion that, although members of different communities were using the same words and referring to the same things, these cohesive ties were not creating coherence because their register was interpreted in different ways.

When 1USTeen introduced himself (Fig. 4, above)

Oi. I'm the angel with the black wings and the gun, if you've seen me.
My building project idea is the Moishe Z. Liebowitz Memorial Cathedral.

his proposal 'was an in-joke between me and my friends'. His classmates knew that he was an observant Jew, they would have recognised (as the UK teenagers do not appear to have done) that Moishe Z. Liebowitz is a Jewish name, and that there is a comic tension between 'Moishe Z. Liebowitz' and 'cathedral' just as there is between 'angel' and 'gun'. As far as we can tell, the UK members of the *Schommunity* missed the jokes completely.

Later in the thread, 2USTeen commented, 'It is strange to us as Americans that some people might not want to embrace religion into the project', suggesting that the significance and relevance of the topic had also been misunderstood. The two communities had engaged with each other for several weeks before they began to identify these subtle differences in register.

These misinterpretations also existed within the *Schommunity*, and sometimes it was the newcomers who helped the *Schommunity* understand their own art and history. 'The Hawaiian Shirt', a beach bar on *Schome*'s virtual island, was

misinterpreted by 1USTeen. ‘Isn’t the Hawaiian Shirt an expression of native Hawaiian culture?’ he asked. 2GBTeen gave a logical, but misleading, explanation for its name

the Hawai’ian Shirt has no reference, that I know of, to native Hawai’ian culture, and is instead a reference to the relaxed atmosphere linked with a beach hut.

Once the subject had been raised, 3GBTeen could supply a more accurate explanation – it was actually an in-joke, referring to the fashion sense of a former staff member

It’s a... joke/comon knowledge - something that you’d have to have met [the former staff member] to understand.

In the case of the island’s ‘Japanese Garden’ on the island, the UK teenagers in the *Schommunity* referred to it on several occasions as a tranquil, non-religious place to hold ethical debates. The potential for any cultural artifact to be differentially interpreted as contributing to an alternative discourse was vividly instantiated by 1USTeen, who reinterpreted the location by pointing out the Shinto significance of its kami gate.

Discussion

This forum thread was a focus for the discussion and negotiation of all four key elements of community – spirit, trust, trade and art (McMillan 1996). In each case, cohesive ties and register were implicated in its construction and maintenance. The development of community was closely tied to the joint authorship and understanding of a sustained and coherent narrative. When the thread lacked coherence, as it did when members of the US community posted reviews without linking these to their immediate context, it resembled the activity stream of a social network, where postings of different styles, types and themes share nothing but a temporal link.

All participants used cohesive ties to produce coherence within individual posts. When these internal ties were confusing or contradictory, as in the case of the thread’s initial posting by 1USStaff, this appeared to mark uncertainty and an attempt to move from one state to another. The shift from using ‘we’ to refer to individual communities, or to groupings within those individual communities, to using ‘we’ to refer to one large community proved to be a difficult move. The *Schommunity* used the pronoun in a seemingly wide sense, but examples such as ‘could we not have a gaudi style cathedral instead of a gothic one?’ implied that the first-person address referred to those actively engaged in the debate – members of the original *Schommunity* and 1USTeen. In fact, of the 17 members of the US community who authored posts or who were credited as co-authors of proposals or evaluations in the thread, only 1USTeen used ‘we’ to include himself and the *Schommunity*.

The two communities employed cohesive ties between posts in very different ways. The US community used a formulaic structure (presumably proposed by their teacher) for evaluations, linking their posts – however widely spaced in time – by the use of the headings ‘strengths’, ‘weaknesses’ and ‘suggestions’. However, only three members of the US community built cohesive ties linking their posts with those of the *Schommunity*. This prompted a shift in the behaviour of *Schommunity* members – they stopped replying to the formulaic project proposals and evaluations, although they still clearly read such postings and made reference to them.

The different registers used by the two communities thus limited communication between the two and reduced the chances that they would unite as one community. This was particularly marked when it came to the issue of authority and community norms. Within this thread, members of the *Schommunity* challenged both UK and US staff and engaged in detailed debate about *Schommunity* norms and standards. Three members of the US community took part in this debate (although not in the direct challenges to staff). However, the register of formal schooling is not designed for the negotiation of norms, authority and standards and there was no apparent shift in lesson planning or assessment, even when the grading of IUSTeen was raised as an issue and alternative assessment methods were suggested. The use of this educational register thus made it almost impossible for the two communities to unite. The *Schommunity* did not have the option of volunteering for coursework and assessment at a school they did not attend; the US teenagers could only adhere to *Schommunity* norms if they were willing to jeopardise their schoolwork and grades.

With respect to trade, it is evident that cohesive ties greatly increased both the possibilities for exchange and the resources available. At the beginning of the thread the proffered resources included information sources, time and digital resources (recorded music). Without cohesive ties linking the communications of the two communities, these resources could not be accepted and these offers ceased. However, when there were cohesive ties between postings, the dialogue in itself formed a valuable resource that brought together ideas, extensions to those ideas, challenges, counter-challenges, questions, explorations and beliefs. The tools available in the forum, particularly the option for clearly delineated quotation, allowed community members to tie posts tightly together, creating a braiding and patterning of ideas that combined to form a complex, multi-authored narrative.

Although an absence of cohesive ties and large disparities in register proved limiting and troublesome for the community, smaller disparities proved more fruitful as community members worked to establish coherence together. The need to consider and explain the ‘*Schome* ethos’, the different understood meanings of the ‘Japanese Garden’, and the reasons why cathedrals and Hawaiian Shirts could be interpreted both as religious artefacts and as sources of humour, stimulated an interconnected series of rich and complex learning discussions.

Conclusion

The shift from networked learning communities to a single learning community is difficult to negotiate. Cohesive ties and register are important aspects of discourses that can be mobilised to develop a coherent community narrative by linking the contributions of diverse contributors and thus bringing together the dialogue of separate communities. A shared register and cohesive ties between communications support the development not only of understanding but also of shared organisational structure, standards, goals, art and history. Without cohesive ties, effective communication and negotiation are limited and differences are difficult to resolve.

The analysis presented here focuses on the interaction of just two learning communities, but it has wider implications. Each community has its own practices around spirit, trust, trade and art, which must be renegotiated when it joins another community. Attention to register and cohesive ties offers ways of identifying and avoiding communication problems and also offers ways of increasing a community's cohesion and its potential for knowledge building.

Shared discourses enable individuals to offer resources and services, and to take up others on their offers. Cohesive ties and a shared register also have an important generative role in supporting and structuring the dialogue that resources learning and enables the co-construction of knowledge.

The opportunity to participate in social activity in situations derived from authentic, everyday contexts and in which social and cognitive elements are intertwined has the power to support meaningful learning, creating knowledge and understanding which can be used for meaning-making and problem-solving in school and out... (Kumpulainen and Kaartinen 2000).

Therefore a recommendation for future practice from this study is to encourage the explicit attention of teachers working in virtual environments towards discourses. To an extent, the teaching role can be seen as socialising learners into particular ways of talking about topics, in order to work towards greater intersubjectivity.

Further, this is not only a linguistic matter for, as we have shown, discourses do not float free of material constructs 'even' in a virtual setting (Gillen and Merchant 2012; Hayles 1990). So paying attention to specific media design features that allow the creation and utilization of cohesive ties is valuable. In this discussion, the usefulness of formatting tools for numbering or bulleting separate arguments, the creation of clearly delineated and referenced quotation, and easily accessible permanent records of communication has been shown to be vital.

Similarly, for the researcher, attention to the material features of modes for digital literacies is of significant importance. In emphasising a perspective on literacies as mediated action, we have provided further support for Wertsch's (1991, p8) proposal:

When action is given analytic priority, human beings are viewed as coming into contact with, and creating, their surroundings as well as themselves through the actions in which they engage. Thus action, rather than human beings or the environment considered in isolation, provides the entry point into the analysis. This contrasts on the one hand with approaches that treat the individual primarily as a passive recipient of information from the environment, and on the other with approaches that focus on the individual and treat the environment as secondary, serving merely as a device to trigger certain developmental processes.

It is extremely unlikely that Wertsch had virtual worlds in mind as a learning environment when writing this, just as McMillan's concept of community was founded on the physical world. But the concept of mediated discourse as social interaction (Scollon 1998) provides us with a lens with which to consider communities, however and wherever the locus of their interactions may spread.

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