

A New Role for Computer-Mediated Communication in Engaging Teacher Learning within Informal Professional Communities

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Abstract. Computer-mediated communication (CMC) implementations, in particular among teachers, have not lived up to public expectations. This study examines some reasons for this and outlines a conceptual and methodological framework for characterizing the engagement of experienced and novice teachers in informal network-based professional learning communities. I postulate sustainability to positively correlate with what I term "CMC engagement." This study addresses three key research questions: (1) What properties constitute CMC engagement in professional learning e-communities? (2) Why do some CMC groups sustain themselves, whereas others do not? (3) How might the communicative structures of network-based CMC enhance or constrain the development of their e-communities, and in turn, pertain to CMC engagement? I argue that both the dialogicality of utterances (Bakhtin, 1986) and the use of texts as "thinking device[s]" for generating new meanings (Lotman, 1990; Wertsch, 1991) are essential for engaging practitioners' professional life. Using both qualitative and quantitative methods, longitudinal discursive data from public teacher email lists are subject to microgenetic, discourse, and ethnographic analyses, resulting in a novel taxonomy of e-communities and a characterization of CMC engagement. The findings provide a new formulation for sustainable learning in CMC-based professional teaching and learning environments, in both informal and formal settings.

Keywords: Computer-Mediated Communication (CMC), Engagement, Teacher Learning, Informal Professional Communities

INTRODUCTION

According to a recent report of the National Commission on Teaching and America's Future (2003), one-third of new teachers leave teaching within their first three years, and one half within their first five. Given the current fiscal and accreditation constraints in teacher education, any hope of meeting the national challenge of providing two million highly qualified beginning public schools' teachers by 2009, while also improving teacher retention by at least 50 percent by 2006, would appear to be unobtainable. Amid this crisis, education reform advocates have increasing hopes for incorporating information and communication technology when reforming teacher learning via collective professional e-communities (e.g., Riel & Fulton, 2001).

However, the outcomes of this to date have varied widely and are yet to live up to public expectations (e.g., Wade & Fauske, 2004). The literature identifies two general areas that compromise the rich possibilities of computer-mediated communication (CMC) for professional e-learning: (1) online discourse lacks depth (e.g., Putnam & Borko, 2000); and (2) teachers are reticent to use networked peer communication (e.g., Zhao & Rop, 2001). It follows from this that the current claims for the contribution of CMC might be exaggerated.

This study examines some reasons for this and outlines a conceptual and methodological framework for characterizing the engagement of experienced and novice teachers in informal network-based professional learning communities.

This study has important implications for improving networked communities of teacher learning in three significant areas. One, it provides a formulation for larger-scale explorations, the results informing both policy-makers and practitioners in their designing more cost-effective and sustainable models of professional development. Two, my project provides an alternative to existing professional development approaches. And, three, this study increases awareness and provides the details of shared professional language or discourse in analyzing educational practice, therefore filling a void in the American context (e.g., Lampert, 2000). My analysis will inform proactive ways in which teaching and learning may provide more professionally and

intellectually rewarding experiences (e.g., Cochran-Smith, 2003; Nieto, 2003), while simultaneously acculturating, attracting, and retaining new and experienced teachers in classroom practice (e.g., NCTAF, 2003).

LITERATURE REVIEW

The CMC literature affirms the importance of technology in teacher education reform. It also highlights the need for robust theory and methodology to inform practice and significant longitudinal study to assess the effectiveness of such a strategy (e.g., Gunawardena et al., 1997).

Technology affects all our lives, and its ubiquitous use in education clearly has the potential to change the future of education (e.g., Tyack & Cuban, 2004). In particular, networked communication itself has proven a viable tool for mediating teacher education reform, including three frequently stated CMC goals: (1) information sharing, (2) fostering professional development; and (3) community building (e.g., Berge & Collins, 1998). Developed in the 1960s, CMC involves the exchange of text messages across time and space via networked computers, such as online chatrooms and electronic mail. However, its dynamic temporal-spatial parameters constrain as much as they facilitate conditions for creative communicative action.

Various methods have sought to characterize CMC interaction. But despite calls for examining the quality of interaction (e.g., Cazden, 2001), CMC research has remained focused upon structural and discursive content analyses (e.g., Fahy et al., 2001). Such research is useful. However, it fails to explain *how* discursive functions may account for CMC engagement. This is significant, given that CMC engagement involves genuine interchange, going well beyond simply the transmission of information.

High-level, in-depth online discourse is rare in educational settings (e.g., Nystrand, 1997) and CMC infrastructure alone cannot ensure engaging experience. Most studies have covered relatively short time frames, from week-long conferences (e.g., Gunawardena et al., 1997) to course-duration bases (e.g., Fahy et al., 2001), but rarely have they been conducted over significantly longer periods, or with larger self-motivated public communities.

The current study addresses all these issues and provides a coherent communicative theory and model of analysis that considers the CMC parameters that both facilitate and constrain high level CMC engagement as an alternative method for connecting teachers to professional and intellectual e-communities.

CENTRAL THESIS, ARGUMENT, AND RESEARCH QUESTIONS

The central thesis of this study postulates that "sustainability" positively correlates with CMC engagement. "Sustainability" has been considered an important goal of educational reform (e.g., Cole, 1996) and professional development (e.g., Franke et al., 1998), but little is known of its correlates.

"Engagement" is considered a crucial inquiry within a learning community among teachers and educators (e.g., Cochran-Smith, 2003) and will here refer to "genuine" forms of communication that goes beyond simple transmission-like exchange, as characterized by three principal dimensions: (1) how utterances are integrated and used for creating new meanings or "dialogicality and functionality," (2) how utterances/texts are evaluated and elaborated for formulating new ideas or "exploration," and (3) the development of overall threads, topics and participant activity or "structural characteristic." Each is operationalized by further indicators.

I argue that by examining the ways in which our voices and utterances are integrated and used to comprehend and control communicative action for generating new meanings involve going beyond mere transmission of information and addressing CMC sustainability. This provides a key foundation for our understanding of sustainable CMC communities in engaging in quality dialogue and thinking.

Against this background, I address the following three key research questions: (1) What properties constitute CMC engagement in professional learning e-communities? (2) Why do some CMC groups sustain themselves, whereas others do not? (3) How might the communicative structures of network-based CMC enhance or constrain the development of their e-communities, and in turn, pertain to CMC engagement in general?

THEORETICAL PERSPECTIVES

Conceptually grounded in semiotic and discourse theories, the study's theoretical framework has its roots in sociocultural perspectives (e.g., Vygotsky, 1986; Wertsch, 1991) and communities of practice (e.g., Wenger, 1998). Specifically, my argument is grounded in two critical notions. First, I employ Bakhtin's and Wertsch's dialogicality of utterances, which refers to the ways we make meaning through engaging and responding to

voices and utterances (see also Nystrand, 1997; Cazden, 2001). Second, I draw on Lotman's (1990) theory of using texts as "thinking device[s]" for creating new meanings. Both these theoretical perspectives emphasize the dialogic language use underlying my key claims for CMC engagement.

RESEARCH DESIGN AND METHODS

This study is both descriptive and analytical, employing mixed qualitative and quantitative methods. The qualitative aspects comprise microgenetic (e.g., Wertsch, 1991) and discourse analyses (e.g., Gee, 1999) for investigating the discursive practice of CMC engagement. Ethnographic (e.g., Carspecken, 1996; Hymes, 1986) and sociolinguistic perspectives (e.g., Briggs, 1986) are used to analyze communicative action, interview, and subjective interpretations informing the implicit norms conditioning the social reality of e-communities. Quantitative inquiry employs post hoc analysis and comparisons to determine the relationships between interview responses, coding components, and e-community categories.

Following institutional human subject research guidelines, research data are collected from multiple sources (i.e., text transcripts, interviews, and field notes) via participant observation.

DATA COLLECTION AND ANALYSIS

A total of approximately 1,300 messages comprising 80,000 lines of naturally occurring text message threads have been collected from experienced and novice teachers communicating via six contrasting public education email lists over two years. Email lists were chosen for their public access, levels of communicative activity, national and state representativeness, discipline, and representation of experienced and novice populations. Each text message is coded for levels of engagement (e.g., "dialogic CMC engagement" or "univocal informative exchange"), and prototypes are selected for in-depth analyses according to both micro- and macro-level coding categories. The unit of analysis is the episode or thread, including a minimal unit of individual message turn or utterance level. Inter-rater reliability check is undertaken.

Preliminary analysis has shed new light on three major issues: (1) different forms of professional teacher e-communities, (2) the emergence of engaging e-communities, and (3) characterization of these engaging teacher discourse e-communities.

First, two distinct forms of e-communities have been identified as distinguishable by speech genres (details below). "High engagement" communities are characterized by their "dialogic CMC engagement" level, resembling genuine conversation, scaffolding thinking and socialization through integrating discourse. In contrast, and more common, are "low engagement" communities which show a more transmission-like communication, predominately comprised of "univocal information exchange." For example, two of six target email lists are "high engagement" communities (41 percent message threads are "dialogic CMC engagement"), the remaining four are "low engagement" communities (91 percent, "univocal information exchange").

Second, "high engagement" communities would appear to emerge in the presence of extensive chains of communication, during the progressive development of topic levels as may be represented by multi-layered tree diagrams of twenty topic levels or more. Such multiple topic levels are sustained by both high, and mixed engagement levels of "dialogic CMC engagement" and "univocal information exchange." Furthermore, a high "dialogic CMC engagement" level correlates with deeper reflection on pedagogy. Conversely, the "low engagement" communities display a limited development of topics (ranging from one to five levels) and are frequently characterized by single topic level discourse threads with a few mixed engagement levels. It follows from this that high and mixed engagement levels afford a greater capacity for sustaining the long chains of communication more typical of "high engagement" communities.

Third, the characteristics of speech genres reveal quite different levels of engagement to exist between "high" and "low engagement" communities. Based on a preliminary analytical framework, I briefly describe below two excerpts of text transcript that illustrate two (of three) engagement dimensions (i.e., the "dialogic and functional" and "structural characteristic"). The first excerpt illustrates substantive "dialogic CMC engagement," a second presents "univocal information exchange." Consider the following cases where the first excerpt elicited four subsequent responses, but the second elicits none at all.

"Dialogic and Functional" Dimension

The following is an illustration of a "dialogic CMC engagement":

While I absolutely agree that the teaching of five-paragraph essays and other formulas leads to wretched writing and a minimal understanding of organization as only filling in the blanks, I also agree that most students need some scaffolding to understand organization. I would,

however, argue that that scaffolding must be more varied than it may have been in many classrooms, including the ones in which I learned and some of the ones in which I taught!

Integrated or interanimated utterances are coded at three levels, namely lexical, phrasal, and clausal. Consider, for example, “I absolutely agree *that* [italics added]” and “I also agree *that*” are integrated utterances at the clausal level, and the use of “organization” and “five-paragraph essays” at the lexical and phrasal levels, suggestive of Nystrand’s uptake.

Moreover, the first utterance above uses the word “agree,” in “I absolutely agree” and “I also agree,” indicating the functional use of another’s utterances for specific communicative purposes (i.e., as agreement, with a view to provoking comparison). It also demonstrates the author’s awareness concerning the contributors’ appropriation of the speech of others as their “thinking device[s].” Secondly, the use of the word, “argue” as in “I would, however, *argue*” clearly demonstrates purposeful use of another’s thread utterances as “thinking device[s]” for generating new meaning.

In contrast, consider a typical example of a “univocal information exchange”:

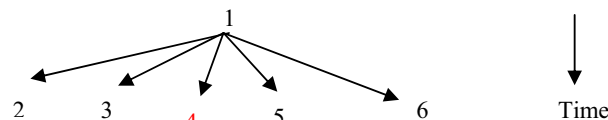
I have a book called Activities for Fast Finishers (Scholastic). It comes in Math, Language Arts and Vocabulary. I got it at Barnes and Noble. The one I have is for grades 4-8... not sure if it would work for your grade level, but you might be able to adapt some of the activities.

In response to a question, the utterances above are characterized by relatively straightforward and factual transmission-like exchanges based on personal experience. Although consideration may have been given to the thread inquirer’s status in making the proposal, the respondent makes no reference to the thread’s previous utterances nor does s/he use any text for creating new meaning. Such discourse is typically less engaging, more univocal and monologic.

“Structural Characteristic” Dimension

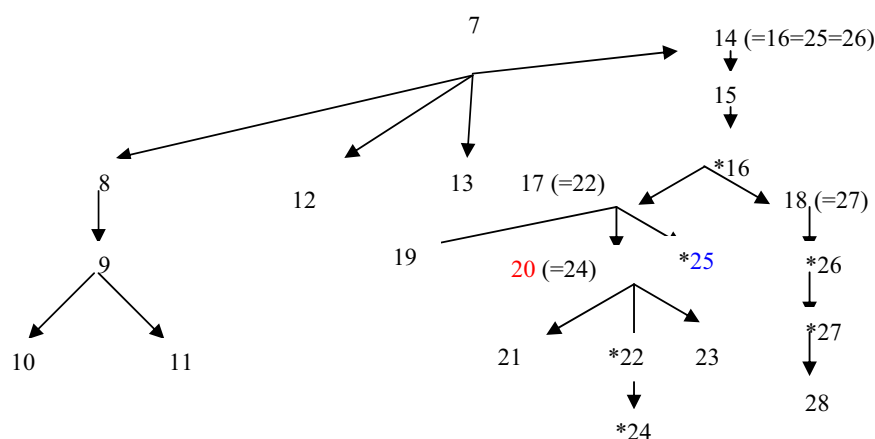
Drawing on the social theories of Schegloff (1999) and Fahy et al. (2001), a “structural characteristic” dimension is operationalized using three engagement indicators (two of which will be briefly illustrated below).

What follows is an overall thread development of a “univocal information exchange.”



This figure illustrates linear thread development with only two topic levels, and no development of repeated turns. Each number represents the chronological order of writing authors through time. Engagement increases as reflected by a progression of new arrow nodes (noticeably absent in this example) revealing the quantity, rather than any great depth, of communication. The second excerpt lies in #4.

The next figure shows a representation of “dialogic CMC engagement.”



Note. “*” and “=” refer to repeated authors/turns.

In contrast to the first figure, this one reveals a more complex, multilayered participation pattern, with eight topic levels, and the development of repeated turns. The flow is relatively non-linear, evolving with greater bidirectional and dynamic discourse. The first excerpt lies in #20.

RESULTS AND CONCLUDING REMARKS

The empirical findings of the study to date affirm the rationale for my taxonomy of e-communities (i.e., co-constructing “high engagement” versus informational “low engagement” e-communities) on the basis of “CMC engagement.” Higher level mastery of dialogic texts as “thinking device[s],” thus markedly contrast with the relatively less engaging discourse of “univocal information exchange.” The former category characterizes interaction among sustainable groups.

Three dimensions have been identified for characterizing CMC engagement (“dialogicality and functionality,” “exploration,” and “structural characteristic”), each in turn possessing further identifiable engagement. Furthermore, CMC engagement as expressed between experienced and new teachers is noticeably different. Experienced teachers show greater mastery of “thinking devices[s]” and integrated voices in their speech. In contrast, novice teachers more often appropriate the speech of others, without addressing the reported voice.

This study also provides evidence for the emergence of collective e-communities in supporting new teachers. Conventional boundaries of communities thus needs be reframed as larger dynamic e-communities, comprising synergies of multiple e-communities (e.g., Snyder & Acker-Hocevar, 2003) when engaging in “inquiry as stance” (Cochran-Smith, 2003, p. 7). The findings further challenge, and point to the need to reconsider notions of experts and teaching expertise (e.g., Lieberman & Miller, 2001; cf. Lave & Wenger, 1991), e-learning contexts, and the meaning of putatively objective ontology expressed in critical ethnography (Carspecken, 1996).

This new knowledge of CMC engagement within the e-communities of learners has the following important educational outcomes: (1) a new method for identifying practical ways for e-teacher-educators to optimize their e-learning environment, and their respective roles for leadership and research in education; (2) new policy implications for the impact of e-communities and individual member relations to their pedagogical knowledge and beliefs; (3) accommodation of the differential learning needs of experienced and novice teachers; (4) promotion of empirical explorations of e-research contexts, e-researcher roles, and assessment awareness; and (5) consideration for updating professional development software and training.

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