ONLINE TEACHER COMMUNITIES: MEASURING ENGAGEMENT, RESPONSIVENESS AND REFINEMENT

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The Internet holds much promise as a medium by which teachers might work together to improve their craft. The simple asynchronous threaded discussion format has advantages over live meetings in the key areas of cost, scale, distance and scheduling. Hence it has become a highly pressing matter to find ways to assess the success and qualities of online professional development.

We present the results of an analysis of a small online course for algebra teachers. By many measures from the literature, the course seemed to be a success. Surveys and post-interviews showed high satisfaction; participation was regular and apparently on topic; teachers did respond to each other; teachers tried new activities in their classrooms and shared their experiences. However, post-interviews one month afterwards showed a surprisingly limited and inaccurate recall of discussions and classmates. We present a framework for understanding the teacher conversations that attempts to understand this subtle phenomenon. We combine the two methodologies of message thread analysis and semantic trace analysis (Riel and Harasim, 1994), and introduce ideas from the graph-theoretic approaches of the social network theorists of sociology (Garton, et al. 1999).

We can associate a discussion with **conversation graphs** in several ways. For instance, a literal reply graph is constructed by assigning to each posting a single node, and drawing directed edges between nodes if one is a thread reply to another. Another construction is the semantic reply graph, which assigns directed edges only if a post is an actual reply to content of another post as opposed to merely following it in a thread. We identify and calculate two key features calculated numerically from the conversation graph: **engagement** and **responsiveness**. Engagement is the extent to which participants exchange messages on a topic. Responsiveness is the extent to which posts receive replies. We further tune our techniques to the special case of in-service teachers refining professional craft by studying a subgraph of the semantic reply graph where only posts which discuss specific classroom strategies or evidence are assigned nodes and edges.

Our analysis of these conversation graphs reveals a more textured picture than previous approaches. It reveals a disconnected conversation whose engagement and responsiveness are hurt by specific course design decisions. Participants appear to be reflecting on practice, but on closer examination they engage vaguely and rarely about specific aspects of their teaching craft. Software used for the analysis can be made available to interested researchers.

References

Riel, M. and Harasim, L. (1994). Research perspectives on network learning. *Machine-Mediated Learning*, 4 (2&3), 91—113.

Garton, L., Haythornwaite, C., and Wellman, B. (1999) Studying on-line social networks. In Smith, M. and Kollock, P. (Eds.) *Communities in Cyberspace*. New York: Routledge.