# Personalized Identity, Mentoring and Mathematical Conversation: The Math Forum's Online Mentoring Project

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**Abstract:** Drawing on current thinking about identity, social group boundary and informational technology, the research presented in this poster discusses a unique online interactive project at the Math Forum called The Online Mentoring Project. The importance of this work for digital libraries will be highlighted.

## The OMG

The Online Mentoring Project (OMP) at The Math Forum developed a curriculum structure called the Online Mentoring Guide (OMG) where pre-service teachers learn to think about math problems and the idea of mathematical thinking. They then learn to mentor by first mentoring each other followed by instruction on how The Math Forum thinks about mentoring. Finally, they have a "pre-field" experience mentoring K-12 students in The Math Forum's Problem of the Week (PoW) environment and reflect upon their mentoring experience.

## Theory: Hybrid Social Worlds

The Internet has made possible the transformation of social space such that individuals can craft the spaces in which they operate and the times that are convenient for them to operate. This space/time transformation makes possible the re-imagination of the community that one operates within and the identity that one presents within that community (Shumar & Renninger, 2002). The transformation of social space brought about by brining the online world into communication with the f2f world is at the center of the vision of the OMP.

## Learning and Identity Work

Digital libraries can be used by people to reorganize their social lives in new ways allowing them to "personalize" the communities to which they belong (Wellman, 2001). Further the transformation of the learning space that an interactive digital library allows makes it possible for teachers and students to rethink their identity as learners as part of the learning process (Cobb and Hodge, 2003). Central to the process of learning for students (perhaps as well as teachers) is a process of boundary crossing and identity work where one has to safely imagine oneself as a valuable member of a community of practice in order to collaboratively construct knowledge with an other (Anderson, 1991; Cobb and Hodge, 2003; Harlen and Doubler, 2004). In this way an individual's knowledge can grow rather than being channeled into a struggle to maintain an identity in the face of an uncaring system.

## Method

Modeled after much design-based research project (Design-based Research Collective, 2003; Hoadley, 2002) the OMP collected survey data from pre-service teachers after they used the Online Mentoring Guide (OMG) the curriculum unit that linked pre-service teachers to the Math Forum's Problem of the Week (PoW) environment. Further, staff members of the OMP discussed in detail and regularly the experiences of the pre-service teachers with the university faculty who were supervising the teachers. The university faculty themselves took an "approver's version" of the OMG so that they would have direct experience with the guide their students used. They also approved the mentoring work of their students and so were directly involved in the mentoring experiences of their students. OMP staff met regularly taking the survey results from students who used the guide and interview data from the faculty to think about the potential impact of online curriculum units like the OMG on f2f courses in math education.

## Discussion

For many pre-service teachers, especially elementary teachers, the OMG instills them with a sense of confidence around math and technology. Further they get an opportunity to think deeply and critically about mentoring, math and technology. Feedback from pre-service teachers suggests that online environments like the OMG not only can train students efficiently but it allows them an opportunity to connect with a different kind of community of practice, in this instance The Math Forum. Those kinds of connections, coupled with increased opportunities for

communication, create the potential for students like the pre-service teachers to overcome their fear and resistance to learning and engage with others in new and productive kinds of ways. While the OMG helped students with their confidence in math and technology, evaluation has shown that problem solving skills and mathematical thinking has not improved much (Renninger et al., 2006). This is not surprising in that the goal of the OMG was originally just to provide training in mentoring. And yet it is clear that mentoring and content-knowledge cannot be separated. Future versions of the guide are being planned that would include new problem writing and problem solving components to further enhance the ability of the online world to positively impact f2f classes.

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