Preservice Teachers' Perceptions of Instant Messaging in Two Educational Contexts

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Abstract

Using an activity theory framework, we investigate how preservice teachers and middle school students utilized instant messaging in educational contexts, and the impact of instant messaging on the development of community among preservice teachers. Qualitative results from six focus groups and two personal interviews indicate that instant messaging enhanced the development of community among the preservice teachers and facilitated the breakdown of teacher-student social barriers while being predominantly exploited as a social rather than an academic medium. The instant messaging assignment consisted of three overlapping activity systems that complicated the assignment and created some degree of tension for the teachers. Even though preservice teachers felt uncomfortable being at a peer to peer level with students, instant messaging enabled them to build an activity system that can be characterized as a multifaceted learning and knowledge-based community.

Preservice Teachers' Perceptions of Instant Messaging in Two Educational Contexts

In this research we examine how one cohort of preservice teachers in a preservice post-baccalaureate English education program used Instant Messaging (IM) to communicate with each other and with middle-school students (hereafter students) and the impact of IM on the development of community among the teachers in the cohort. The teachers' task was to communicate with sixth and seventh-grade students about a writing assignment that focused on developing characters for a fictitious town. As the instructors of the teachers' classes in learning technology (first author) and methods of teaching writing (second author), we purposely left the IM assignment fairly open so that teachers could develop their own social and instructional roles with their students. The research reported in this paper focuses on the teachers' perceptions of the IM project and answers the following question: How did introducing IM as a legitimate form of communication in our classes shape the development of community among the teachers and the teachers' perceptions of using Internet communication in educational contexts?

Theoretical Framework

Our theoretical framework is informed by two schools of sociocultural theory—communities of practice (COP) (Lave & Wenger, 1991) and activity theory (Engestrom, 1999). Both share a view of learning not as primarily a mental act but as a social act dependent upon interaction among people and their tools and technologies (Gee, 1999, Lave, 1996; Rogoff, 1995; Wenger, 1999). Based on her research on learning communities outside of schools, Lave argues that learning is about constructing "identities in practice" (1996, p. 157). Identities practiced in such communities are always a work in progress shaped by individual and collective efforts to create coherence through participation in varied social contexts. Wenger (1999) also views learning as arising from the identity work that occurs through participation in communities of

practice (COP), communities "created over time by the sustained pursuit of a shared enterprise" (p. 45). These shared practices create and reinforce the tacit and explicit expectations and worldviews held in common by the community; thus, participants in a community of practice learn collectively as they interact.

One approach to looking at community is through an activity theory lens. Activity Theory (AT) (Cole & Engestrom, 1993) shares with COP theory a view of social practice as central to learning. Any activity system consists of a subject (those engaged in the activity), mediating artifacts (in this case digital tools, students' writings, language), rules, outcomes, divisions of labor, and community. In addition, situating activity within an *activity system* is a central aspect of the work of activity theorists. If we consider the main activity system for this IM assignment to be the system related to the assignment as made within the context of two teacher education classes at the university, then we can imagine the following intended system components.

Subject: Teachers

Mediating Artifacts: Digital tools and language

Rules: Communicate with students about their writing once per week at a given time; communication is open-ended (no particular prompts or norms of engagement)

Outcomes: Improved student writing; better rapport with students; and (from the subjects'—or teachers'—perspective, fulfilling a course requirement and getting a good grade in the methods classes)

Division of labor: Teachers as facilitators rather than directors; strong and engaged student participation

Community: Partners interested in building a relationship around writing; co-learners

We delineate the activity system here, in advance of the findings, both to serve as an illustration of the components of activity systems and to provide a description of our intended activity system as a way of foreshadowing its eventual complications. Activities can be viewed as social practices situated within communities invested with particular norms and values. However, as we discovered through the research process, activity systems are not benign or neutral. They serve a normative function that determines the parameters of the activity (Moje & Lewis, 2007). Activity theory provides a lens that reveals how individuals use tools to shape social contexts and how the use of particular tools within activity systems shapes the individuals who are part of the context. To this end, we were interested in the process of student and teachers using IM as one of the major tools to participate in learning while building community.

Review of Literature

The use of IM is pervasive as 42% of Internet users report using IM and 63% of those users indicate that they use IM several times during any given week (Shiu & Lenhart, 2004). In 2005, 65% of American teens, and 75% of American teens who were online, used IM, most on a daily basis (Lenhart, Madden, & Hitlin, 2005). The pervasiveness of IM has led researchers to present IM as a natural mode of communication, "a fact of life, a way of being in the world" (Lewis & Fabos, 2005, pp. 470), especially in the lives of teenagers (Grinter & Palen, 2002). Given its pervasiveness, it is natural that IM has also found its way into educational settings. For instance, Wang and Beasley (2005, 2006) report on the use of IM as a tool to support instructor online "office hours" and structured online discussions, while Repman, Zinskie, and Carlson (2005) note that it can be utilized for activities such as collaboration on research projects and virtual conferences. Some researchers are enthusiastic about the use of IM in educational settings with Abram (2004) noting twenty reasons why IM can be an effective tool for teacher-librarians

and Farmer (2005, p. 60) pronouncing IM as having "powerful applications and incredible potential within educational and learning environments." Based on a detailed case study of adolescents' uses of IM, Jacobs (2006) argues that IM should be viewed as a writing technology that builds skills needed at school and at work, such as "collecting, assembling, and distributing information" (p. 191). Other research findings suggest more mixed results. Online discussion forums have been found to improve students' writing skills and promote critical thinking but not to improve reading or vocabulary (Zhang, Gao, Ring, & Zhang, 2007). In discussing their perceptions of how IM affects their academic writing, middle school students (Adams, 2006) noted both positive and negative effects.

The widespread use of IM can partly be explained by the affordances IM offers, both for general and educational purposes. In general terms, IM enables individuals to easily communicate with each other in real-time. Furthermore, users can maintain contact lists of friends, family, and colleagues, enabling easy and quick communication access, can converse with multiple individuals at the same time, and save transcripts of interactions for future use (Repman, Zinskie, & Carlson, 2005). For use in education, Farmer (2005) suggests that since many students are already familiar with instant messaging, it can be used as a tool to foster an engaging learning environment. Beach and Lundell (1998) support this hypothesis. Their results indicate that students benefit from using computer-mediated communication (CMC) because they can type their thoughts without being interrupted, as often happens in face-to-face communication. Likewise, "CMC may be particularly helpful for students who, for various reasons, are reticent about participating in [face to face] conversations" (Beach and Lundell, 1998, pp. 96). For example, the use of instant messaging applications may assist adolescents in overcoming shyness (Chester & Gwynne, 1998; Valkenburg, Schouten, & Peter, 2005). Other

advantages include the convenience of both students and instructors being able to contact each other from wherever they have computer access, and the opportunity for students to receive immediate feedback from their instructors or other students (Dos Santos & Wright, 2001).

The immediacy afforded by instant messaging applications described above may promote a sense of proximity even though participants may be geographically dispersed. Since interactions between participants take place in real time, clarifications, explanations, and exchange of views become immediate as in face-to-face conversations. Nardi, Whittaker, and Bradner (2000), for example, investigated the use of IM between twenty individuals working in three different corporations. Their findings include a realization of the efficiency of chat software related to immediacy: "IM allowed more rapid exchanges than it is possible with email but without the overhead of a full-blown face-to-face conversation" (p. 81).

Previous literature has also reported on the use of IM as a social tool. Even though researchers describe various instances where IM implemented for academic purposes was used for non-academic conversations (Nicholson, 2002), the interactive nature of IM may assist adolescents in enhancing their awareness of social communication and how best to use writing and the affordances of IM to increase their social status (Lewis & Fabos, 2005). Hu, Wood, Smith, and Westbrook (2004), for example, report that the amount of IM usage is positively related to verbal, affective, and social intimacy. Equally important, social interaction via IM technology is not limited to student-student conversations. Indeed, Nicholson (2002) indicates that students interacted socially via IM with both their peers and instructors.

The social nature of IM has been shown to improve users' understanding of academic skills that involve communication. For instance, the adolescents in a study by Lewis and Fabos (2005) learned to manipulate the tone, voice, word choice, and subject matter of their messages

to fit their communication needs. Heightened awareness of audience—an essential feature of good writing—has been noted by other researchers of Internet communication among youth (Adams, 2006; Garthwait, 2007; Rodrigues, 2007). In addition to audience awareness, other studies have pointed to a deeper understanding of voice and representation in writing. For example, in a study of girls' online social interactions, Currie, Kelly, & Pomerantz (2006) found that young people were deliberative in their use of voice to represent themselves in writing as they wanted to be represented. Writing online was viewed by the participants as more permanent then face-to-face impressions and thus more open to critical evaluations by others across time. The deliberative stance taken up by the girls in online communication was viewed by the authors as an important condition for learning.

IM can also foster community between learners. In a study of college students enrolled in a Web-based distance education class, Nicholson (2002) found that students who utilized instant messaging were "more likely to agree with the statement that they felt a sense of community with classmates" than those who did not utilize instant messaging (pp. 368). Even though a sense of community is difficult to define and researchers often disagree on what features define a community of learners (Linehan & McCarthy, 2001; O'Connor, 2001), Nicholson argues that IM can reproduce the role of common locales that students gather to interact with each other. This claim is also echoed by Grinter and Palen (2002), who argue that the teenagers participating in their study use IM as a tool for "social congregation." For example, participants arranged to chat with their peers on IM after school and these conversations usually involved three activities: socialization, event planning, and schoolwork collaboration. Even though it is not clear whether IM encouraged community-building, it is very likely that IM served to enhance the sense of

community that existed amongst participants, especially in the face of evidence presented by Grinter and Palen that IM peer groups reflect real world relationships.

While there are many advantages to using IM in educational contexts, there are also possible shortcomings. The most common disadvantage mentioned in previous literature is that IM may increase instructors' workload (Dos Santos & Wright, 2001; Farmer, 2005; Repman, Zinskie, & Carlson, 2005). For instance, depending on how IM is used, it may require instructors to be available at all times to reply to student questions/comments. Another concern with IM use in schools is the potential for off-task behavior (Farmer, 2005; Repman, Zinskie, & Carlson, 2005), especially in the face of evidence suggesting that IM users are used to multitasking while using IM (Shiu & Lenhart, 2004, p. 16). Finally, because IM use is employed more frequently by younger age groups (Repman, Zinskie, & Carlson, 2005; Shiu & Lenhart, 2004) instructors and teachers may need to be introduced to the intricacies of IM technology. For example, Farmer (2005) notes that "a large number of faculty are ill-equipped to use IM and will likely need formal faculty development training" (p. 60). Instructional decisions have been shown to influence the quality of student-to-student online discussions, with lack of teacher guidance and intervention having a negative effect (Hou, Chang, & Sung, 2007). Even though this shortcoming could be addressed with teacher training both at in-service and preservice settings, available resources may hamper efforts to introduce teachers to yet another technological innovation.

A number of studies argue that when youth's out-of-school literacy practices, such as IM, are appropriated for school use, the result is problematic. Lewis and Fabos (2005) suggest that school uses of IM change the objectives and motives of the activity, the roles of the young people engaging in the activity, and the group norms associated with the activity. The young

people in the study were very clear about these aspects of the activity. Their heightened knowledge of the objectives and motives, roles, and rules led a strategic and analytic use of literacy that is rarely seen in school. Research conducted in an urban high school in Brazil yielded similar findings (Rodrigues, 2007). Students' uses of Internet communication were compared across three contexts—computer lab, classroom, and the local cyber café. Students' writing and understanding of writing in the cyber café was more competent than the writing produced in the classroom or computer lab. Students writing in the café setting demonstrated a sense of audience, content, and metacognition, which was not evident in the other two settings. Relevant to our study is the students' sense that Internet communication does not align with their perception of school as an activity setting where being serious and focused on skills takes precedence. Thus communicative competence was not enhanced through the use of Internet communication in school.

Within the literature, the benefits of IM in the development of community within educational contexts appear to be greater for student-to-student conversations than student-to-teacher conversations, and more notable in distance education courses. However, although it has been noted that students see IM as a means for community, the definition of community is lacking. Riel and Polin (2004) define community as a "group of people, at work or play, whose identities are defined in large part by the roles they play and relationships they share in that group activity" (p. 18). The word *community* is applied to numerous environments with some holding more promise for learning than others. Moreover, with the introduction of numerous Internet technologies, the definition and vision of community is continually changing with great interest in the role of online communities as well as its intersection with face-to-face (f2f) interaction within the classroom.

Background

This study occurred at a large, metropolitan university. Preservice teachers at this institution enroll in a content and cohort-specific technology course at the same time as they participate in methods courses on the teaching of writing and reading. The technology and the methods instructors collaborate on making technology courses relevant to students' content area specialization. For example, the English technology course affords students the opportunity to learn about content-specific technologies and pedagogy (e.g., digital storytelling). On the other hand, the Social Studies technology course focuses on social studies technologies and relevant pedagogy (e.g., problem solving via geospatial technologies). Instant Messaging was one of the technological tools used with the English education cohort.

Methods

Participants

The primary participants, of whom this study focuses on, were 21 European American English education teachers who were part of a preservice teacher education cohort in a 15-month post-baccalaureate teacher education program. Of these 21 participants, there were 10 males and 11 females. The 21 participants were part of a cohort of thirty-nine teachers total who all participated in the IM exchanges as part of their work for our courses. The secondary participants were 18 European American and African American middle school students, 10 female and 8 male. The school site was a magnet school with an inquiry-based curriculum that served urban and suburban working and middle class students.

Research Questions

In the context of the course assignments and preservice teacher cohort, we were interested in understanding:

- How did preservice teachers use instant messaging to communicate with each other?
- How did preservice teachers use instant messaging to communicate with middle-school students?
- How did the use of instant messaging influence the development of community among preservice teachers?

Data Sources

All participants engaged in two focus groups at the end of the semester, each consisting of half of the participating teachers. Individual interviews were also held with two preservice teachers and six focus groups with middle school students (see Appendix A for questions).

Although our research questions focus on the preservice teachers rather than the middle schools students, the focus group responses from the middle school students provided a perspective that was important to consider in relation to the teachers' comments regarding the IM exchange. The middle school students' perspective was important because it assisted in providing further insight into the instant messaging assignment. All focus groups lasted approximately one hour and were audio-taped. Two researchers were present at each focus group. Open-ended questions were used during the interview to prompt reflection about the participants' thoughts. Some of these questions were based on our informal observations and class conversations as instructors for the duration of the IM project. Two preservice teachers also participated in personal interviews with the first and second authors to follow up on comments they made during the focus groups and elicit further insights into their IM experiences. These teachers were selected because the researchers deemed that their comments during the focus group sessions were insightful and needed to be probed further. These interviews also lasted approximately one hour and were audio-taped.

Data Analysis

Our research questions warranted a qualitative approach to data analysis that would help identify the teachers' experiences using IM and direct future research. Yin (1994) indicated that the case study helps explain the "links in real-life interventions that are too complex for the survey or experimental strategies" (p. 15). Because this study focused on the development of community and beliefs among preservice teachers, it was essential that we use an approach that would help us to understand complex and nuanced responses among participants.

We used an iterative process to guide the development of the salient categories and patterns in the focus group and interview data. All focus group and individual interviews were transcribed. Each of us read all data independently and in detail to develop initial codes. We followed this procedure with a research team meeting at which we discussed theoretical core concepts that each of us noted in the data (e.g. Preservice teachers tended to construct the meaning of teacher as traditional and directive.) We returned to the data with these core concepts in mind, met to refine our initial codes, and repeated the process several times, eventually arriving at a set of final coding categories for the teacher focus groups and the student focus groups that grew out of our lengthy and in-depth discussions regarding our individual findings. Transcripts were coded using Nvivo^{TM}. This process resulted in the emergence of data-driven patterns that triangulated across teacher focus groups, individual teacher interviews, and individual researcher analyses.

In keeping with our theoretical framework, we applied the analytic tools associated with activity theory to help us understand this tension. We considered each of the components of activity systems delineated earlier within what we determined were three activity systems involved in this IM assignment. The three systems and their components are discussed in the

results section, along with our findings about ways that the systems overlapped and produced tensions and possibilities for the teachers.

Results

Focus group and personal interview analyses of the preservice teachers indicate that IM: 1) was utilized primarily for social rather than academic purposes, 2) enhanced the development of community among the teachers as they participated in their cohort experiences, 3) reduced teacher and student social barriers enabling minimal academic discourse and making some teachers uncomfortable and 4) produced tension among teachers related to overlapping activity systems. We explore each theme below.

Academic vs. Social Uses of Instant Messaging

Although the use of IM was introduced in the classroom to be used for academic purposes, it was primarily used for non-academic discourse. Teachers initially expected to use IM with the students for academic discourse, while the students saw their opportunity to chat as a chance to engage in social discourse. For example, James stated, "I got the feeling that every time I brought up the inquiry project the kids were like, 'Why do you keep talking about this?'" Sara noted that the middle school students she worked with were more interested in discussing non-academic topics than the stories they were writing for school. Beth said, "It was right around Halloween time so my girls just talked about like trick-or-treating and the Halloween party that they went to and what costume I was gonna wear if I went out. Like, it wasn't anything about school." Furthermore, the students were very interested in life as a college student. Jacqueline said, "Yeah, they seemed more interested in what *we* were doing."

The majority of teachers prepared for the IM sessions prior to logging on by developing notes and questions about the class project to engage their students. They did this primarily after

the first few sessions as they noted that the academic discourse was not "coming naturally." That is, students typically asked questions about the teachers' social lives with no interest in the class project. Peter explains, "The first week I got in a conversation and I tried to get them to talk academically and then the next week I think they kind of smarted me out and they tried to control the conversation." The students seemed to have a general interest in what life as a young teacher was like and it dominated almost every conversation. The intentional move by the teachers to take the discourse into the academic arena was unsuccessful as the students had no interest in learning via IM and were more interested in simply using the technology to get to know the teachers. When discourse was academic, the students' responses were minimal. Sue commented about her student, " . . . her answers are real short except for when I ask about her family or stuff like her rules for the computer. Then she's willing to tell me." Elizabeth suggested that the students ought to be told by their teachers to "focus on three things" related to their writing projects during the IM session. Nonetheless, she felt that had the technology worked more effectively (log-on time, etc.), the social talk would have been useful in building rapport and enhancing her academic role.

Development of Community

The use of IM by the teachers enhanced the sense of community experienced by the cohort. Again, we are considering community to be as Riel and Polin (2004) have described it, a group of people whose identities are defined in large part by the roles they play and relationships they share in a particular group activity. This project started at the beginning of the semester and the two courses taught by the first two authors were the first courses that the teachers had taken together apart from students in other discipline areas. The teachers were required to sign up for an IM service, but were not required to share their screen name. However, they all immediately

posted their screen name to the discussion board, added each other's screen name to their IM client, and began exchanging messages. The teachers sent IM messages and developed chat rooms where they could interact with each other. Samantha said,

> I think we were still getting to know each other cause it was kind of at the beginning of the semester and some of us had summer classes together but, yeah, just kind of building the relationships. Like in that chat room the first day it was fun to see everyone's personality come out cause you don't see that very much when you're sitting in class.

Bill was amazed by how quickly everyone came together within the IM environment:

> And what was interesting about that was that, you know, I didn't think that the instant messaging between students [within the cohort] would actually happen. For some reason, I didn't realize. I didn't think about it. But, then what I found in class, which I thought was pretty cool, was adding everyone's screen names to theirs, their AOL or whatever it might be.

Joe discussed how the ease of the technology allowed him to get to know people he probably would not have approached in a class that did not use IM,

> If I get paired with someone that I don't know as well in the cohort and um, I have to look up their number, whatever and call them up. I am way less likely to do that if I need to get information about an assignment or something than I am to, you know, and if they're there, there is no hesitation to ask them that way.

He continued, "I suppose it makes communication a lot easier. I am not the type of person who'd pick up the phone and randomly call someone. I am an IM and email kind of guy." A quiet

student, Joe felt more comfortable communicating through IM than face-to-face because in IM he was "never on the spot" to contribute but able to contribute when he had something to add.

Elizabeth provided a specific example of how the technology enabled her to get to know one of her peers:

> I felt like I got to know you better, Joe specifically, because I'm really loud and you're not very loud and I have a hard time listening to people and I know this. If you don't come at me, you know, I have blinders or something and so that was really cool. I was like, 'That's who Joe is. Neat'.

The teachers discussed using instant messaging to communicate frequently with other members of their cohort, which made them feel closer to each other. They used instant messaging to converse about their classes, their experiences with the middle school students, their weekend plans, and to ask advice about difficult situations related both to school and their personal lives.

Quite often, they used IM to discuss the frustrations of IMing with middle school students and other challenging aspects of their English Education program. When Sue was discussing what she talked about online, she said, "Yeah, whatever to how student teaching is and how stressed out you are or you know, what classes you think are terrible." Jay continued about the "sworn to secrecy" discourse as the participants laughed. When discussing what they would IM about, he said, "It would span the gamut, like, you know, 'where the hell are the students?' to 'this class sucks' to whatever 'what are you doing this weekend'?

Breaking Down Teacher and Student Barriers

Data revealed conflicting perspectives on the impact of IM on student/teacher relationships and, therefore, on the usefulness of IM in educational contexts. The teachers indicated that instant messaging places them at a peer level with the middle school students,

which seemed to be an uncomfortable situation for them as they were trying to set themselves apart as teachers and as professionals. This unraveling of traditional teacher-student roles challenged what Lewis and Finders (2002) called “the implied teacher” which they described as the perception preservice teachers have of who a teacher is or should be. Teachers were concerned that IM sessions were not contributing to student learning and thought the sessions would work better if they were organized around focus topics or other structural components. Joe told us that he was “more careful” talking to students on IM because he feared that the “conversation could go into something you don’t want to talk about.” Reflecting back on the IM experience, which had occurred a year prior to our individual interview with Joe, he pointed out that he “didn’t feel like a teacher in any way that early in the program.” We were struck by this insight because it so clearly underscores the profound gap preservice teachers often feel between their own identities and their beliefs about teachers’ identities—between how they see themselves and how they envision the role of “teacher.”

In contrast to this discomfort on the part of some teachers, others noted that being at the peer level allowed for closer relationships with their students. Jack explains, “I’ve always felt that [IM] puts you at a peer to peer level . . . and so talking with them [middle school students] definitely got me closer and kind of made it feel more comfortable and like we could talk about other things besides school.” Teachers, who were comfortable with the less traditional teacher role that IM engendered, felt that building rapport with students ultimately enhanced student learning. For many of the teachers, this rapport building extended beyond the classroom walls, with middle school students initiating IM conversations at home. These teachers seemed to have a different model of the role teachers play and who they can be with their students. Elizabeth, who was just a bit older than most of her peers, explained that it was important to chat with

students about non-academic things in their lives in order to get to know them, which she saw as important to effective teaching. She did not see these more personal conversations as placing her in the role of friend, but rather saw them as part of her role as mentor. “Nothing in me would think I should be friends with a 7th grader . . . I accepted the mentorship role.” She joked that she would never expect these young teens to find her “cool,” and so she didn’t worry about seeming too much like a friend to them.

Overlapping Activity Systems: Tensions and Possibilities

As noted at the start of this paper, we turned to activity theory as a theoretical framework for this research because we thought it could help us understand the conflicting roles the teachers experienced between their student identities at the university and teacher identities at the middle school. Any activity system consists of a subject (those engaged in the activity), mediating artifacts (in this case digital tools, students’ writings, language), rules, outcomes, divisions of labor, and community. We considered each of these components within what we determined were three activity systems involved in this IM assignment. In addition, situating activity within a mediating *activity system* is a central aspect of the work of activity theorists. But activity systems are not benign or neutral. They serve a normative function that determines the parameters of the activity (Moje & Lewis, 2007). What we discovered was that our single assignment—which we considered to be part of one activity system—consisted of three overlapping activity systems that complicated the assignment and explains some of the tensions described in earlier sections. All three activity systems shared the same subject (teachers) and mediating artifacts (digital tools and language). However, other aspects of these systems conflicted, resulting in some frustration about the assignment and limits on its effectiveness as a knowledge-making tool.

Early in this article, we delineated the components of our intended activity system with its goal of improved writing for the middle school students and improved rapport between the teachers and their students. We expected the teachers to be comfortable in the facilitator role and to avoid explicit instruction and direction in an effort to engage students as co-learners. One can easily see that the rules for this activity system were ours rather than the teachers. As reported earlier in this paper, many teachers felt that the open-endedness of the assignment was ineffective and that participating in IM diminished their roles as teachers. Furthermore, whereas we saw the outcome of the assignment to be improved student writing and better rapport with students, the teachers had another outcome strongly in mind – fulfilling the course requirement and getting a good grade, even though, in many cases, they found the assignment to be too unstructured. This shifted their subject role from that of *teacher* to that of *student*. To add to this conflict, at the same time that the teachers were placed in the subject role of student, they struggled to define themselves as the sort of teacher they thought they should be—the "implied teacher" discussed earlier who would know how to maintain control and keep their students on task rather than inviting students to become co-learners.

A secondary activity system—which we initially saw as part of the first but ultimately have come to perceive differently—was the activity system created by the teachers for interaction with their students. The components of that system are as follows:

Rules: Teachers and students communicate about their writing once per week at a given time; generate ideas for conversation in advance

Outcomes: Improved student writing; teacher viewed as effective writing teacher

Division of labor: Teachers do most of the work to generate interaction and keep students on task

Community: Teachers and students completing a school assignment to improve student writing

Within this activity system, the components all add up to the teachers wanting to be viewed as teachers with a capital "T" and believing that this is the proper teacher role. Several teachers told us that they would write up lists of prompts and conversation starters to aid in keeping students on task and away from non-academic subjects. They were concerned about students not focusing on their writing and about not being perceived as effective instructors. They felt it was their job to direct the students and criticized our methods of implementing the assignment. For instance, Gwen told us:

> Yeah we weren't really given any context…about what should we be working on during this time that we have with them which almost made me feel like…we were set up to not have it…It didn't make sense that it wasn't organized, like you're gonna talk about this or you know ask them these sorts of questions. It was never even mentioned like what we should do with them when we got online which made me wonder if that was intentional.

Jessica added that in the methods of teaching writing class they were taught to always assign writing with a purpose. She felt that the IM assignment disregarded that rule in that it did not seem to have a purpose she could discern. Building rapport was not viewed as being integral to the writing process because teachers did not develop an understanding that we felt was critical to good teaching: that social relationships enhance academic content knowledge, especially given that writing is a social and communicative act.

Perhaps to cope with the conflict between these two overlapping activity systems, the teachers developed a third on their own. They developed an activity system with expectations regarding IM communication among themselves that included the following components:

Rules: Communicate with each other once a week while waiting for students to overcome technological and timing difficulties and get online; communicate when possible during methods classes

Outcomes: Rapport and community-building among teachers built around shared frustration with the assignment and other aspects of the methods courses

Division of Labor: Some claim more space and authority than others; occasional shifting of roles (e.g. quieter students "speak" more in IM); students initiate private group chats

Community: Group of teacher-education students with shared interests and frustrations related to teaching and to their teacher education program; group of students creating a sense of belonging and friendship

Students had much to say about this activity system, as described earlier in this paper. Beyond what was reported earlier, several students discussed power relations among the group, who claimed authority and how it was claimed, the personal nature of conversations that ensued, and so forth. What is important here, however, is the way in which this third activity system was sustained in order to comment on and cope with the conflict inherent in the two overlapping activity systems associated with the assignment – one system centered in the university with the teachers situated as co-learners and one system centered in the school with the teachers wanting very much to be viewed as Teachers with a capital "T." Research informed by AT often includes an analysis of resistance to an activity, particularly on the part of individual subjects. However, what is striking here is that there is another complete, albeit overlapping, activity system, and this system served two functions—to channel internal resistance and to develop a stronger teacher community.

Conclusions and Implications

The use of IM among teachers afforded them the opportunity to develop as a community with shared roles and relationships. In part an activity system of their own making, it also provided them with a space to express their frustrations about the IM project at the middle school and other program-related issues. Although we, as instructors, constructed the activity system to promote the learning of technology and literacy education, the preservice teachers created two other overlapping but somewhat distinct activity systems with outcomes and motives, roles and rules related to their objectives and concerns. Rather than detract from learning, however, we argue that incorporating IM as a legitimate practice in our classroom led to a more cohesive learning community that shared not only roles and relationships, but also some features of knowledge-based communities (Riel & Polin, 2004), including a strong identity with the knowledge-building endeavor and the construction of a shared language for characterizing the community.

That said, the different components of the three activity systems created some degree of tension that could have been used in the service of learning had we examined the dynamic in collaboration with our students. Discussions about the complex role of activity systems in learning, in this case using the example of our own teaching and learning goals and structures, can help new teachers understand that learning is, on the one hand, situated within an activity system, and, on the other, shaped inevitably by other related systems. This is perhaps even more salient when infusing the use of a popular technology most often employed in out-of-school contexts—activity systems of quite a different order! In the case of this endeavor, the mediating artifact (online digital tools) quite literally connected two activity systems (university and school) resulting in unforeseen tensions but building new bridges and new knowledge as well.

The use of IM between teachers and students led to non-academic, social discourse that made many of the teachers uncomfortable. If learning is a social act that involves constructing identities in practice, then IM, with its social and identity-performing affordances, is a logical medium to include in the teaching and learning process. This is especially true, given the identity-related insecurities the new teachers embodied as they attempted to develop a teacher identity in the face of uncertain practices and relationships.

Perhaps, as some preservice teachers suggested, the IM activity would have been more fruitful had we provided a more prescriptive set of guidelines that included goals and procedures. However, doing so would have detracted from our study, which set out to understand our students' relatively unmediated use of IM. We wanted them to discover how best to use the medium to build a relationship with their students and, in the process, help enhance their students' experiences with writing. This required a level self-confidence as a teacher that few in the class had achieved as well as a belief in the social nature of learning. Although the preservice teachers had read and discussed articles in class that were focused on the connection between social relationships and learning, they were unable to see beyond their own more primary need to identify with a reified image of teacher as knower rather than co-learner, discussion initiator rather than discussion participant.

As others have argued, adopting a stance as co-learner is essential when teaching with technology, but this can be difficult when the teacher 's comfort and knowledge levels with technology are low and their students' are high. In some cases, students are "digital natives" (Prensky, 2001, p. 1) who take Internet technology for granted as a constant in their lives, while teachers struggle to keep up as "digital immigrants" (Prensky, 2001, p. 2) and worry about exposing their lack of knowledge. Adopting the stance of a co-learner would go a long way to

alleviate these concerns, but new teachers, in particular, often lack the confidence it takes to admit that they are learners.

Other new teachers are nearly digital natives themselves, as will more often be the case in years to come. However, in this study as well as in the second author's previous work (Lewis & Finders, 2002), some teachers who were very comfortable with Internet communication, including IM, feared that sharing their knowledge of IM conventions with students (e.g. informal exchanges, emoticons, "IM speak, abbreviations, shortcut "misspellings, and acronyms) would brand them as more of a friend than a teacher. These teachers wanted their roles with students to fit more readily into their perceptions of who a teacher should be and how a teacher should interact with students, what has been termed the "Implied teacher" (Lewis & Finders, 2002). Although Joe and others expressed positive feelings about being able to build rapport with students on IM in ways that they were able to build on in the classroom setting, we found that the preservice teachers' needed to identify as a "Teacher," with a capital "T." This phenomenon may be inevitable for most new teachers at a time when they are not themselves convinced that they truly embody what it means to be a teacher. The fact remains, however, that in our study, this perception limited the teachers' openness to the IM experience. We believe that perceptions of what it means to be a teacher and the potential effects of these perceptions on new teachers' roles and relationships as they enter the classroom should be discussed in methods classes. Doing so could help preservice teachers understand more about the central role of relationship in developing knowledge-based communities and promote a productive teacher identity as they begin to define what it means to *be* a teacher.

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Appendix A

Focus Group Interview Protocol

Preservice Teachers:

1. How did you feel about having IM communication with your cohort?

2. What purpose did it serve for you?

3. How often did you enter into IM conversations with members of your cohort?

4. Did you engage in individual IM exchanges or group chats?

5. Did your IM activity help you to get to know your cohort better? How about individuals in the cohort? If so, how or in what way?

6. Did the IM activity help you with something you were learning?

7. Did you learn anything about your classmates' personalities or identities from their IM exchanges? If so, please provide an example.

8. Did classmates present themselves differently in IM than in classes? If so, how?

9. Did you or anyone else that you know of ever use the IM exchanges to solve a problem – professional or personal? If so, could you give an example?

10. Were there particular people in the cohort who seemed to have more authority in IM sessions (technologically, school knowledge, more fluent writer, funnier, more articulate). If so, how could you tell? What makes you think so?

11. How did the IM exchanges affect the f2f classroom experience with your cohort? Was there a different feeling in the class after the IM sessions began?

12. If tensions were aired on IM, how did this affect the f2f classroom experience?

13. What was your general feeling about the experience of IMing with your middle school students?

14. If you were comfortable (enjoyed) the experience, please tell us why. If you were uncomfortable with the experience, please explain.

15. Did IMing your students help you to get to know them better? If so, did you see this as useful and why? If you did not see getting to know your students as useful, please explain any problems that arose for you.

16. Did you feel like a teacher during IM sessions with your student?

17. Did you feel like a student (or big sister/brother/friend during IM sessions with your student)?

18. Did your IM sessions with your students teach you anything? About teaching? Learning? Adolescents?