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## Web Logs and Online Discussions as Tools to Promote Reflective Practice

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### Abstract

*This article reports on the use of Web logs (“blogs”) and online discussion forums in an instructional technology course in a teacher preparation program. Key goals behind the use of these tools included exposure for students to computer-supported communication and collaboration, encouragement of reflective practice, and a better understanding of the pedagogical and learning benefits derived from integration of these technologies. Management and assessment challenges for instructors derived from the volume of writing, as well as pedagogical considerations, are noted. Some of the issues raised led to a call for improvements in the tools and for additional research in a wider variety of contexts.*

The lack of a “voice” in daily professional practice is just one of many issues confronting teachers, and a factor in the usually low job satisfaction ratings contributing to the very high proportion (almost 50%) of new teachers who will abandon the profession within the first five years of practice (e.g., NBC17.com News, 2002). Part of the challenge for a teacher preparation program is how to inculcate in graduates a greater sense of the importance of their profession, how to see themselves as constructivists—producers of information and knowledge— and not “just as teachers”—objectivists—who are solely in a transmission role (Roblyer, 2003, p. 53). More significantly, teacher preparation programs must encourage our students (future teachers) to claim their professional voice and the means to be heard. The possibility and expectation that technology can be a factor to address these problems and meet these goals is evident, for example, in the National Educational Technology Standards (International Society for Technology in Education [ISTE], 2002) that include under the category of “Productivity and Professional Practice” the following goals:

Teachers use technology to enhance their productivity and professional practice. Teachers

- use technology resources to engage in ongoing professional development and lifelong learning.
- continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- apply technology to increase productivity.

- use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning. (p. 306)

At the state level, for example, the California Commission on Teacher Credentialing (2003) stated similar goals in the Submission Guidelines for its “Fifth Year of Study Program.” The first of seven “required elements” is that “each candidate communicates through a variety of electronic media,” and the second is that “each candidate interacts and collaborates with other professionals through a variety of methods, including the use of computer-based collaborative tools to support technology-enhanced curriculum” (p. 14).

### **Reflective Practice and Computer-Supported Communication and Collaboration**

Journals are a common requirement in many courses, not just in teacher preparation, as a strategy to help students engage in metacognition (thinking about their own learning) with the expectation that the process will help them learn better. However, journals have the limitation that students typically will write them for an audience of one (the instructor), and thus can bias their writing in the direction of what they believe the instructor wants to see. Thus, an exercise that should be (ideally) a self-motivated, intrapersonal learning activity that benefits from review and feedback by the instructor often becomes just another writing task with unclear grading criteria.

Computer-supported communication and collaboration tools such as electronic discussion boards (also known as online discussions, news groups, and by other names) have been used for some time (Boudourides, 1995) to promote reflective learning and other goals, including community formation and problem-based learning (Hawkes & Romiszowski, 2001). Nicholson and Bond (2003), for example, stated that

electronic discussion boards can play an integral role in the development of preservice teachers. First, they benefit preservice teachers in terms of time, scheduling, and geographical issues. Next, they provide emotional and intellectual support and foster a sense of community. And finally, they promote growth of reflective discourse. (p. 261)

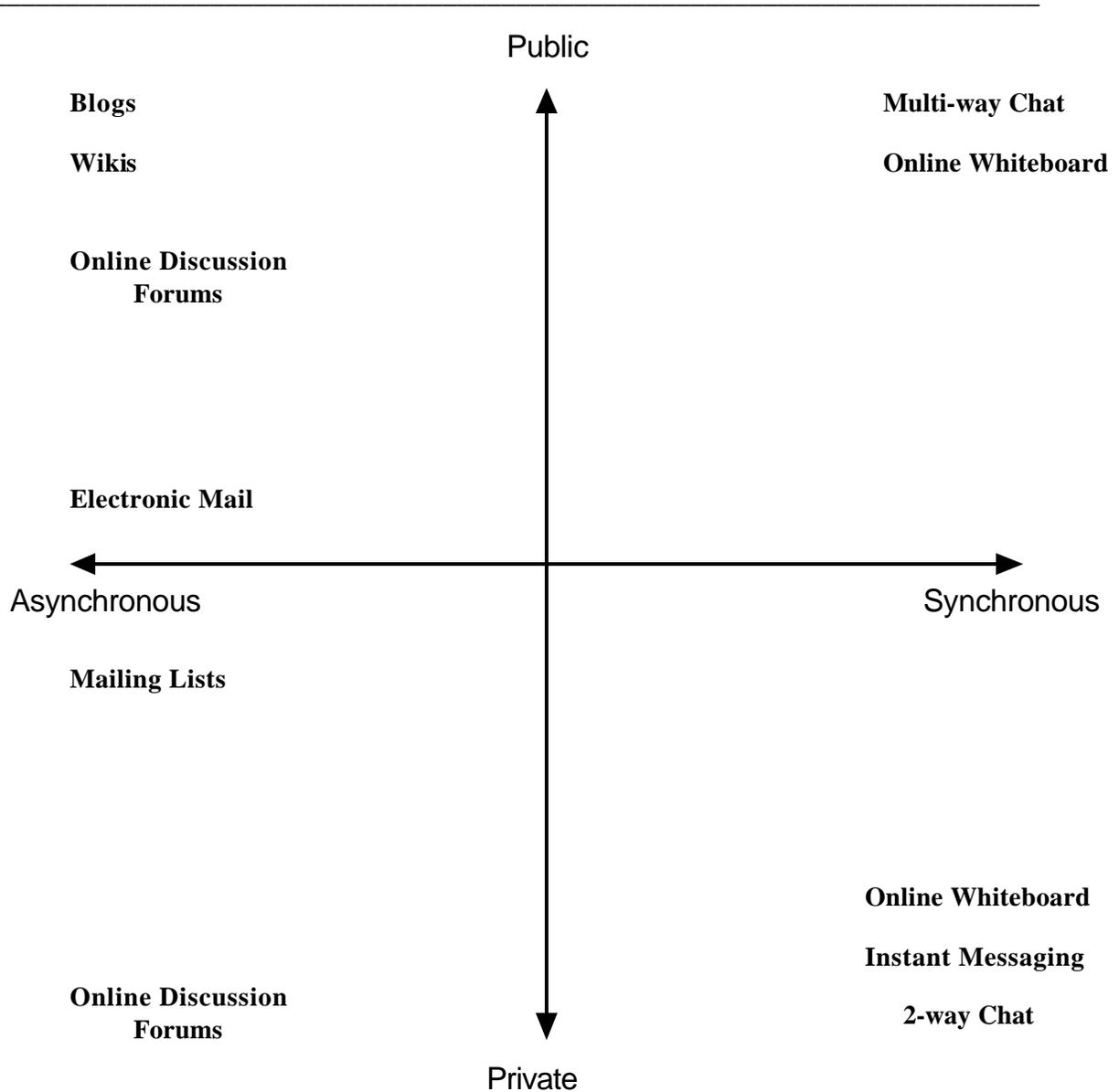
While electronic discussion boards in one form or another have been around for a while and used in a variety of education settings, Web logs (also known as “blogs”) are a relatively new phenomenon, and their uses in education are also still being explored and developed. Carlson (2003) wrote that blogs “are used by scores of memoirists, editorialists, exhibitionists, and navel gazers, who post their daily thoughts on Web sites for all to read” (p. A33). The most common use of blogs in teaching is to encourage writing, but in a public space, which usually motivates students to spend more effort in the process since the audience is more “authentic” (Jonassen, 2000)—not only the instructor or one’s peers, but a potentially large and unknown audience. There are also experiences using blogs as collaboration tools in the classroom and even by practicing teachers in mentoring situations. An example of the latter is cited by Richardson (2004) who describes how a teacher in Ohio “and her entry year teacher archive their thoughts,

reflect on their practice, and discuss their specific goals and needs for upcoming classes [<http://www.edithere.com/yet/>]” (p. 11).

### **Context**

Our teacher preparation program in particular places a great emphasis on reflective practice and social justice issues, so providing meaningful mechanisms for students to engage in active reflection with a reference to larger social issues are key goals. Many courses in our program require students to maintain a journal, so the use of blogs and online discussions was consistent with past practices, supported the ISTE standards for teachers and the California requirements, and introduced technology-based tools in a meaningful way (Jonassen, Peck, & Wilson, 1999, pp. 218-219). Given these two vehicles for self-expression and reflection, students had the opportunity to consider the differences between a “public” voice addressing an unknown audience (the blogs) and a more “private” voice where all participants were known to each other. A complementary goal was to encourage students to see both blogs and discussion forums as valid and effective tools for professional development and lifelong learning. Levin and Camp (2002) argued persuasively that, “without the disposition to reflect on their performance, teachers are less likely to improve their practice or to be able to see the links between theory and practice.” They further said, “we believe that this habit of mind is so important that we must try to teach all prospective teachers how to reflect on their practice” (p. 572).

Figure 1 plots several computer-supported communication and collaboration tools along a private–public axis and a synchronous–asynchronous axis. It is worth noting that online discussion forums (much like mailing lists) can be either private, as in the experience reported here, or public, as evidenced by the multitude of open discussion forums available in the Web sites of newspapers (e.g., to discuss news stories), nonprofit organizations, corporations, and many others.



**Figure 1. Computer-supported communication and collaboration tools located according to public–private and synchronous–asynchronous dimensions.**

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### Perspectives

People preparing to become teachers enter teacher preparation programs with a variety of beliefs and expectations of what their professional practice will be like, how they may grow personally and professionally as the years go by, the roles (if any) that technologies like the Internet may play in their daily work, and other issues (e.g., Dwyer, Ringstaff, & Sandholtz, 1990).

Research (e.g., Bonk, Ehman, Hixon, & Yamagata-Lynch, 2002; Sandholtz, Ringstaff, & Dwyer, 1997) and popular literature (e.g., Shaw, 2003) on teaching conveys a summary image of what schoolteachers in the United States (and in other industrialized countries; see Stoel & Thant, 2002) believe about the nature of their work. Teaching is experienced as an isolated job, one where the teacher bears a heavy burden of responsibility behind the closed doors of the classroom (cf. Hawkes & Romiszowski, 2001). That responsibility is often defined in terms of the externally imposed task of “covering” the predetermined curriculum at a predefined pace that allows teachers little or no decision space to consider each student as an individual. Teachers see themselves as transmission mechanisms, as the regulators in the process of exposing students to ideas, information, and knowledge in a structure and pace established by district, state, or federal authorities. The teachers’ knowledge about their profession and about their students’ performance goes largely unacknowledged by external stakeholders like political leaders and is even devalued, especially in contrast to the standardized tests that practically all public schools (and many private schools as well) administer one or more times a year (Wiggins, 1993).

### **Technology’s Contribution**

Traditional requests to have students write journals submitted as papers to the instructor remain a basic two-way form of communication between student and teacher, with the well-known limitations of these exchanges—students writing with only the teacher as audience, limited possibilities for feedback, and so on.

Blogs offer an alternative that has more potential for pedagogy than Web site creation and maintenance using HTML-based tools (Carragher, 2003; Ferdig & Trammell, 2004; Richardson, 2002; Roberts, 2003). For beginners, the option of not having to type a single line of HTML code and being able to select a pleasant-looking template to display one’s online journal by simply pointing and clicking at options, is a huge benefit. With simple text-based blogs, even novice users can concentrate on writing and not worry much about technical matters. More advanced users will benefit from the ability to include graphics, photos, audio, hyperlinks, and even video into their blogs, plus allowing for feedback comments (including by e-mail) from readers of the blogs. For faculty, the system’s simplicity translates into very manageable time demands to assist students in setting up their blogs and solving basic problems (e.g., with interface issues). Additionally, tools like RSS (“Rich Site Summary” or, informally, also called “Really Simple Syndication” or news aggregators) allow users to keep track of changes to many blogs (which are really Web sites) easily from one browser window, thus simplifying what would be a very time-consuming task otherwise.

From a teaching and learning perspective, plain text blogs are perfectly adequate as a tool to promote reflective practice (Roberts, 2003). Coupled with the fact that blogs are public—available to anyone who knows the URL or chances upon it (Ferdig & Trammell, 2004)—yet allow for a measure of privacy (the writer does not have to include personally identifiable information in the postings), online reflection has the potential to significantly alter the students’ perceptions of themselves as education professionals and perceptions about the power and validity of their ideas.

The more private online discussion forums share the medium (Web) with blogs but the context is significantly different (Jonassen, Howland, Moore, & Marra, 2003). In most online discussions (also called “threaded discussions,” as by Carroll & Witherspoon, 2002), only those authorized<sup>1</sup> (usually through their participation in a class or other formal or semi-formal activity) to join the discussion can participate, and all participants may already be known to each other. Discussions usually have a starting point topic, such as a professor’s posting a question that all students must reply to. All postings are visible to all participants, although some systems allow users to draft postings, save them for editing in a private space (not visible to even the professor or system administrator), and publish them when they are ready. Online discussion systems usually also allow designating certain users as “moderators” or administrators, with privileges to edit or even delete postings considered problematic or unacceptable. Participants can post replies to other people’s postings, thus starting sub-threads. Depending on the system and the instructor’s preferences, it may be possible for participants to create new topics unrelated to the original topic, a feature that also supports work by small groups on specific projects or tasks. “Peers can serve as excellent sources of feedback. Over the last decade, there have been some very successful and influential demonstrations of how computer networks can support groups of students actively engaged in learning and reflection” (Bransford, Brown, & Cocking, 2000, p. 219).

## Methods

Blogs and online discussions were used as vehicles for student reflection in the context of a one-quarter course (Instructional Technology for Teachers) in a teacher preparation program. This two-unit course met once a week for two hours. Fifty-six students were asked to create a blog using the free version of Blogger.com and to e-mail the instructor with the resulting URL. The assessment rubric for the course (see Appendix) specified that to gain full credit for this component, students had to do “10 or more postings 1 paragraph or larger” during the quarter in their blogs, starting in Week 3 (out of 10), on the broad subject of “teaching, learning, and technology.” The rubric also specified that students had to join in an online discussion board (within the university’s Prometheus course management system), which was available only to people participating in the course. The instructor posed three discussion questions during the quarter, and the rubric asked for “timely and insightful” participation, criteria that were clearer on the “timely” side (postings had to be submitted by certain dates on each discussion) than on the “insightful” part—a shortcoming that this experience showed needs to be addressed in future studies. The analysis strategies reviewed by Spataru, Hartley, and Bendixen (2004) can be particularly useful in this regard.

During the third week of the course, students read the following instructions in the syllabus: “Start a personal blog on Blogger ([www.blogger.com](http://www.blogger.com)) and post at least one reflection per week on teaching, learning, and technology. Email the instructor the URL for your blog.” Only a couple of students were not able to create their blogs without the instructor’s assistance. The instructor received an e-mail with the URL of each student’s blog Web site and was able to verify their successful start and subsequent progress.

To participate in the online discussions, students had to create accounts in the Prometheus course management system<sup>2</sup> (required only once at the beginning of the course) and then log in and go to the Discussions section. Once there, they found the topic(s) and could post their replies, read each other's replies, create new topics, and so on. The online discussions required students to address three questions posed by the instructor at different times during the quarter. These initial postings are intended to serve as conversation starters, with students required to post in reply to the initial question and to at least one peer posting. In addition, the system was set up to allow students to create their own topics but none took advantage of this feature.

The three topics launched by the instructor elaborated on ideas and issues addressed in the readings and during class sessions (Ferdig & Roehler, 2003-2004). They were separated by about a three-week period each, giving adequate time for the students to post their initial reply and then come back to reply to a peer's posting. The first discussion, posted on the third week of the quarter, read as follows:

Read the story titled "Browser revolution-10 years after" available both as a PDF file in Prometheus and Eres [the university's electronic reserve system] and on the Web at: <http://zdnet.com.com/21001104-996652.html>. [If you read it online, check the discussion forum at the end of the story.] After reading the story, respond to these two questions: 1) Do you see any impact of the Internet in the schools you know? Where? How? 2) How would your life, both personally as a current or future teacher, be different if you didn't have access to the Internet and to the Web in particular?

The second discussion, posted at the end of the fifth week, was phrased quite differently given that the topic was a direct follow-up to a conversation during the class meetings: "What do you think? The use of productivity applications as learning tools... (Example: Producing a classroom newsletter with your students using a word processor)." The third and final discussion was launched at the beginning of the ninth week and asked,

What is an online learning community? Can we learn from our professional peers through online interactions? Are there some topics or skills that are better suited to the online medium? What would motivate you to become an active participant in an online learning community?

### **Data Sources**

Data analyzed for this article came from printouts which students submitted of their blogs and from the archived online discussions. Accounting for different layouts, blogs range from two pages for 10 postings to more than 20 pages and well over the required number of postings.

Due to the number of students, the course was divided in two sections, each with 28 students. This meant that there were parallel discussion forums going on in each section, addressing the same topics but not visible to each other. Section 1 met on Wednesdays, Section 2 on Thursdays. Differences were observed across sections on the

number of postings to each topic. The first topic, “Internet and education,” had 57 postings from Section 1 (around 16,000 words) and 83 postings from Section 2 (around 24,000 words). The “productivity applications” topic had 96 postings from Section 1 (around 15,000 words) and 70 from Section 2 (around 14,000 words). The “online learning” topic had 49 postings from Section 1 (around 9,000 words) and 63 postings from Section 2 (around 16,500 words). Table 1 summarizes the data from the online discussion forums. This article looks mainly at the quantitative data, and future work will report on the qualitative content analyses of both the blogs and online discussions.

**Table 1**

*Number of Postings and Approximate Word Counts for the Three Discussion Topics in the Online Discussion Forums*

Discussion Topic	Internet & Education		Productivity Applications		Online Learning	
	# of postings	Words	# of postings	Words	# of postings	Words
Section 1	57	16,000	96	15,000	49	9,000
Section 2	83	24,000	70	14,000	63	16,500

## Results

Fifty-three of the 56 students were able to set up their blogs without any assistance from the instructor. The small number of people who had trouble were confused about the difference between private and public blogs (the service used in this course allowed the creation of private blogs, visible only to their creator), for example, or did not figure out the difference between the “post” and the “post and publish” options. A large majority of students reported finding the experience different and rewarding. A few of them have taken to “blogging” with a passion, while others are more reluctant to invest the time and effort in a practice they still perceive as time consuming and self-aggrandizing. The online discussions were also a new experience for about three quarters of the students, but their postings indicate that most of them came to understand the possibilities of the medium as a vehicle for self-expression, access to information, and community building. (See Jonassen et al., 2003, pp. 69-120, for more on the use of online tools for community building.) The online discussions were available to students for several days after the formal end of the course, a few of them continued using it after it was no longer required, and some students recommended to another faculty the use of online discussions for a subsequent course.

Only nine students (out of 56) did not fulfill all the requirements for blogging and online discussion postings, which speaks well of most students’ motivation and

consistency throughout a challenging quarter. For most students, this was their last quarter in the teacher preparation program, which included field experience. The range of topics, ideas, and issues reported on the blogs is very large, although a common theme were the experiences students were having in their school placements. Their blogs reported on everything from their reactions to the time they spent with children in classrooms, to interactions with their master teachers, reflections on their own learning needs (e.g., subject knowledge, classroom management strategies, dealing with special education learners), and the challenges and opportunities around integration of technology into their teaching. On this latter topic, for example, one older student for whom teaching is a second career wrote the following in a blog entry towards the end of the quarter: "Before I took this technology class, I really had little interest in incorporating technology in my classroom. As I watch kids and how they zero in on computers and as I find some really incredible Web sites, I am changing my mind."

The requirement for the online discussions was for students to post a reply to the professor's original topic, and to at least one of their peers' postings. While all students did reply to each of the three postings by the professor at three different points in the quarter, only about half of them replied to a peer's posting, and fewer than five posted in reply to a peer's reply or, in other words, carried on the online conversation. Section 2 on Thursdays had more people replying to postings by their peers than Section 1 on Wednesdays. Most postings were one paragraph long (about 50-100 words), but there were several that were 500 words or longer. A vast majority of the postings were self-reflective ("I think that..." and so on), and when replying to a peer's posting, addressed personally (e.g., "Joan, you raise a good point..."). There is anecdotal evidence that the practice was beginning to take root in this cohort of students, given that a group of them suggested the use of online discussion forums to a faculty member teaching another course in our department. However, one has to agree with the sentiment reported by Galvis, Hadingham, and Rose (2002) of one of the online facilitators participating in a research project, that "joining an online discussion is like going to the refrigerator. If you find something good, you come back again" (p. 8). One of the few students who posted a reply to a peer's reply wrote, "Thank you for your thoughts. They really got my mind moving." So at least for one student willing to verbalize it, the goal of learning from peers was met.

There were two key ideas behind the use of blogs and discussion forums for their online reflection. The first is that the "conversations" implied in the paper journal are expanded beyond the intrapersonal (the student with her/himself) and dyadic (student-instructor) to include, in the case of blogs, a potentially large and unanticipated audience. Feelings of ambivalence and even anxiety crop up. One student wrote, "I'm definitely not into the blogging thing yet. It feels very weird to me to be writing for an unknown audience, and at the same time it is not private." The second goal relates to the fact that this and other students have trouble seeing themselves as active creators of knowledge, or at least as budding professionals whose ideas are worthy of consideration by others. For example, one student wrote, "I feel like I am adding to the useless information out on the Web. There are different tools, like Prometheus [the online discussion forum environment], that I think I would use." By making their reflections public via blogs and visible to their peers in the discussion forums, students are contributing to the general social discourse and their audience is no longer only the instructor. From a pedagogical

perspective, the expectation is that the quality of what is written and published on the blogs and discussion forums will be of higher quality, an insight corroborated by experience and some research (Norton & Wiburg, 2003). Furthermore, by becoming comfortable with the idea of publishing their writing either to the world or to an online community, there are reasons to hope that these future teachers will be motivated to engage their own students in projects such as online newspapers or Web sites that will also make visible the students' work (e.g., Serim & Koch, 1996, pp. 239-241).

## Discussion

The use of blogs and online discussion forums in the same course fulfilled several pedagogical and learning goals. At one level, the experience was designed to increase awareness in the students about differences in electronic communication tools and environments. At another level, one goal was to help students develop a sense of themselves as creators of knowledge, rather than just consumers of information, and to see themselves as meaningful contributors to professional dialogues. At yet another level, their participation in the course's online community (the discussion forum) suggested the idea that their student peers could be seen as valuable sources of information and ideas, a connection that ideally they will carry past their graduation date.

Only about 5 of the 56 students expressed the intention of incorporating blogs into their teaching once they are working in their own classrooms. One wrote, "I've decided that I will take this site [her blog] and use it next year with my students. I may even have them create their own blog." While some of them noted that their uncertainty was due to lack of knowledge about what technology resources would be available at their new schools, others plainly failed to see how blogs can be incorporated meaningfully into teaching and learning. Carraher's (2003) suggestions point to the possibilities of blogs breaking down the "firewall around the classroom" and opening lines of communication between students, teachers, researchers, curriculum developers, and teacher educators. If nothing else, given their public nature, blogs seem to be an effective tool to encourage higher quality writing and more thoughtful reflection by the students. This intuition for the value of blogs was corroborated for online discussions by Hawkes and Romiszowski's (2001) finding that "while the computer-mediated teacher dialogue was less interactive [than face-to-face meetings], it was significantly more reflective" (p. 285).

However, the online discussion forum experience did not develop as the intellectual agora that the instructor and many others (including the ISTE technology standards for teachers cited above) envisioned for this medium, even when some students glimpsed the possibilities. For example, one student replied to another on the subject of online communities:

I totally agree with you that we are able to learn volumes from our peers through online communities. Wouldn't it be cool to see different approaches being taken by an educator in England, as compared to Australia or South Africa? We could easily get new ideas and different perspectives just by participating in such a community. I also agree that motivation is a huge factor in participating in such

an environment. I am also not very motivated, at this point in time, to search out such a community to participate with frequency.

It may be that students were confused by the use of both tools or overwhelmed by the course requirements and their other obligations (which included student teaching). Towards the end of the quarter one student wrote in his blog,

Running on empty... This quarter has been a real “test”: I have pushed farther, faced greater challenges, and somehow survived. It has been weeks since I have had the opportunity to take time out and recharge my batteries. I am trying very hard not to turn this journal into a “bitch-fest.”

Or it may be that there was simply not enough time in a one-quarter course to allow the students sufficient space to realize the differences and possibilities afforded by blogs and online discussions, with the latter suffering more in the process even when their potential benefits were discussed in class. Analogies to public speaking addressing large groups (blogs) and conversations with friends or acquaintances (online discussion forums) may help students in the future make sense of each medium sooner and benefit more from the experiences in each. Also, this may be a case where “less is more” applies: Using either blogs or online discussions may bring about greater engagement and reduce the complexities derived from the integration of multiple tools into the same course experience.

### **Pedagogical Significance**

For instructors, the decision to use only one or both tools in the same course should depend on their learning goals for the students and on the related challenge of assessment (Fauske & Wade, 2003-2004). Given their relative novelty (more so for blogs than for online discussions, which have been around for a long time in a variety of forms [Bonk, 2003-2004]), setting clear expectations for the students and presenting an evaluation rubric at the start of the experience should help reduce the inevitable anxieties around grading.

Careful ongoing qualitative analyses of students’ blogs and postings in online discussions can yield valuable insights for instructors. For example, it may be possible to identify students who need specific support with writing, analytical skills development, or motivation “to tackle challenging tasks and help them acquire a deep level of understanding” (National Research Council, 2001, p. 281). Like other traditional forms of journaling, both blogs and online discussions afford the instructor and peers opportunities to get to know the students better. Many students who are shy in person and whose voices are rarely heard in the classroom are capable of presenting themselves through their blogs and of assuming vibrant personas in online discussions enriching the conversations in ways that they do not seem able to do during in-person class sessions (Ferdig & Trammell, 2004). Students who have much to offer also benefit from having online tools through which their ideas and experiences are shared with everyone without necessarily dominating the in-person conversations in the classroom.

The tools themselves either have improved or should be improved upon to make the participants' tasks easier. To keep track of all the individual students' blogs, instructors now may resort to RSS (see above) as an efficient way to keep track of student blogging activity. Blogs can now be collaborative rather than individual efforts ("Wikis" are one such technology), thus opening up an intermediate space between private reflection, small-group collaboration, and public conversations. Online discussion forums can be improved upon to allow better pre-identification by writer/contributors as to the kind of contribution they are making (e.g., comment, question, rebuttal) and allow for easy linking outside the "thread" where the posting is located. Such pre-identification by individuals of their contributions to the discussion would engage higher order thinking skills at the time of writing, and could also simplify the subsequent analysis by instructors and researchers (see, for example, Spatariu et al., 2004). For all participants, having a built-in "summary service" (perhaps like that available for some applications in the Macintosh operating system) that would allow for dynamic summarization of long postings to either blogs or discussion forums would be a valuable feature, as would the ability to easily export text in formats readable by qualitative analysis software tools, such as Nudist Nvivo, ATLAS.ti.

Finally, simply making the tools available in the context of a single university course is unlikely to be enough to motivate students to make full use of these resources (Ferdig & Roehler, 2003-2004). Sorensen and Takle (2002) found that, for discussion forums, "having 'forced requirements' on the collaborative dialogue prompted students to engage in dialogue and actually caused more interactivity than was required to appear" (p. 28), which again points to the need for additional research and practical experience incorporating these tools into teacher preparation courses. The degree to which instructors should participate in the online discussions as a strategy to encourage students to join in and stay in the conversation needs to be determined (Fauske & Wade, 2003-2004), along with whether such participation should refer back to the conversations during in-person class sessions, address only the subject matter in the online environment, or push it further or in new directions. Given the goal of promoting peers as sources of information and knowledge, strategies for getting students to reply to each other's postings must be developed and documented. In particular, more information is needed on assessment strategies that take into account the quality of the writing and the contributions to knowledge building and community formation.

## **Conclusions**

Reflective journal writing offers instructors a window into each student's mind and assess the degree to which they are making progress toward desired learning goals in a given course or program of studies. Blogs and online discussion forums are two more tools to engage students in computer-supported communication that should, ideally, result in better learning. The nature of each of these electronic tools, and the fact that for many students in teacher preparation programs, exposure to technology resources such as these may not be a common occurrence, can confound their utility for the purpose of encouraging students to become reflective practitioners.

When one of the overarching learning goals is to develop students into future teachers engaged in reflective practice, this experience suggests on the basis of the partial

evidence presented here that the public nature of blogs can be simultaneously a motivating and threatening resource for students, most of whom are not accustomed to publishing their ideas for worldwide consumption via the Web.

By getting students to write blogs and participate in online discussions, at least as assessed by the rubric used in this course, the tools were successful in promoting reflective writing. Future articles will further analyze the significant amount of data collected (over 90,000 words from the discussion forums alone, and over 400 pages of blog printouts) to evaluate in finer detail the level of reflection (van Manen, 1977) and the quality of the online discussions (Spatariu et al., 2004). Additional longitudinal studies are needed to look into whether students introduced to reflective practice in preservice programs indeed become reflective teachers and sustain the practice over their professional lives.

### Notes

<sup>1</sup>Online discussions are now a common feature in many commercial Web sites, including those run by newspapers, nonprofit organizations, commercial entities, and many others as a strategy to engage Web site visitors.

<sup>2</sup>Prometheus was acquired by Blackboard in 2002, and our university decided to replace it in 2003 with a new course management system (ANGEL from CyberLearning Labs) that has most of the functionality of Prometheus, including discussion forums.

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## Appendix

### Course assessment Rubric, as Presented to Students in the Course Syllabus

<b>RUBRIC</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Attendance 10%</b>	Attended every session	Missed 1 session with notice	Missed more than 1 class	Missed several
<b>Class Participation 10%</b>	Very active	Active	Indifferent	Very Limited
<b>Completed readings 10%</b>	All readings	About three quarters	About half	Less than half
<b>Key Tasks in Class 10%</b>	Completed all	Completed most	Completed some	Missed most
<b>Prometheus postings 10%</b>	Timely, insightful	Evident effort but lacking depth	Limited effort, lacking depth	Little or no effort, superficial
<b>Web Log 10%</b>	10 or more postings 1 paragraph or larger	5–9 postings 1 paragraph or larger	2–5 postings 1 paragraph or larger	1 posting of inadequate length and lacking effort
<b>Lesson Plan 25%</b>	Complete, detailed plan with meaningful integration of technology	Complete plan but with some evident shortcomings in content and integration of technology	Plan has potential but lacks significant details and makes limited use of relevant technology tools and resources	Plan shows minimal effort, has large gaps in content and structure, poor or no use of technology
<b>Reflection 15%</b>	Addresses questions seriously, well written, thoughtful and insightful	Serious effort but with clear shortcomings, some writing mistakes	Some effort, minimal reflection, significant writing problems	Minimal effort, little or no reflection, major writing problems
<b>GRADE EXPECTATION</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D-F</b>