Blogging Across the Disciplines: Integrating Technology to Enhance Liberal Learning

Angelique Davi
Assistant Professor of English
Bentley College
Waltham, MA, USA
adavi@bentley.edu

Mark Frydenberg
Senior Lecturer and Software Specialist
Computer Information Systems Department
Bentley College
Waltham, MA, USA
mfrydenberg@bentley.edu

Girish J. Gulati
Assistant Professor of International Studies
Bentley College
Waltham, MA, USA
jgulati@bentley.edu

Abstract

As the use of web logs (blogs) becomes increasingly popular, many faculty members have incorporated them into college courses to engage students in discussing course materials, to foster a sense of community, and to enhance learning. This study, conducted at a business institution, introduces blogs as a tool to help students prepare for meaningful classroom discussion. The authors assigned a similar blogging exercise in three different courses—expository writing, e-commerce, and government--in order to introduce students to the use of blogs in their disciplines. This study finds that by completing the required readings and then posting discussion questions and reflections on topics of interest to which their classmates can respond--essentially beginning the conversation prior to the class session--students become more engaged in the course material. This exercise requires students not only to read the required course materials but to engage with them critically in order to move beyond a superficial understanding of the materials. By using the same assignment and assessment tool in three different courses, the authors argue that blogs can be effective in enhancing class discussion across the disciplines.

Keywords: Blogging, Liberal Learning, Critical Thinking, Enhancing Class Discussion

Introduction

The use of web logs ("blogs") has become a popular addition to many college courses as faculty try to find new ways to integrate this popular technology into the classroom. (Beeson, 2005; Quible, 2005; Ducate, 2005, Glogoff, 2005).   By the end of 2004, 32 million Americans said they had read a blog, eight million Americans had created blogs, and almost half were created by people under age 30 (Reine, 2005).   In fact, Huffaker (2005) cites several studies that reveal that a significant number of blog authors are younger than 20. Lenhart (2006) notes that by 2006, these numbers had increased to 12 million American adults who keep a blog, and 57 million American adults who say they read them. Thus,

students come to the classroom with a facility for maintaining and communicating through blogs. Beeson (2005) argues that it is an approach that is more in keeping with their way of thinking (29).

With the increased popularity of blogs, faculty members have been integrating them into their courses to enhance class discussion. Past research has summarized findings from case studies involving the use of blogs in a single course (Glogoff, 2003; Quible, 2005; Ducate, 2005). The authors of this study, conducted at a business university, assigned a similar blogging exercise in three different courses— expository writing, e-commerce, and government--in order to introduce students to the use of blogs in their respective disciplines and to help students prepare for meaningful classroom discussion. This study finds that by completing the required readings and then posting discussion questions and reflections on topics of interest to which their classmates can respond--essentially beginning the conversation prior to the class session--students become more engaged in the course material. This exercise requires students not only to read the required course materials but to engage with them critically in order to move beyond a superficial understanding of the materials. By using the same assignment and assessment tool, the authors found that blogs can be effective in enhancing class discussion in a range of disciplines and in integrating liberal learning into professional programs.

Blogging in the Classroom

Before blogging became a mainstream form of asynchronous communication over the Internet, threaded discussion groups had been popular venues for holding class discussions online. Unlike a blog, where posts appear in reverse chronological order, discussion groups are hierarchical, and the newer material generally appears at the bottom. While such discussion groups can be a useful classroom tool, it is also important for students to become part of the blogging phenomenon that is increasing in the "real world." Recently, learning management systems such as BlackBoardTM have integrated blogs within their products, and some instructors are finding that "a course blog offers a possible alternative to a traditional learning management system … particularly if students create blogs that they control and whose content they own" (Goodwin-Jones, 2006).

Like online threaded discussion groups, blogs are an easy way to engage in dialogue on the web outside the classroom. The availability of several blog providers such as Google's blogger.com, LiveJournal.com , and WordPress.com make it free and easy to set up, manage, and update blogs frequently and without additional support. By using blogs "students become familiar with blogging, a tool now used by an ever-increasing number of employers to support routine operating functions" (Quible, 2005, p. 76).

The underlying technology behind blogging makes it an improvement over discussion groups for classroom use. While one may "check in" with a favorite blog occasionally to see if there is any new content posted by visiting the blog's website, blogs were designed so that the reader does not have to do this. Blogs make use of a "publish-subscribe" model, in which the author publishes content, and subscribers use a program called an aggregator, which checks the blog periodically and then notifies the subscriber that new content has been posted. This method of really simple syndication (RSS) is possible because the content of the blog is represented in a standard XML (extensible markup language) format enabling aggregators to check and manage any new content. Those who manage several class blogs, or those who subscribe to many different blogs, will find the ability to subscribe to a blog and let an aggregator do all of the management work, to be valuable. This aggregator functionality is now standard in versions of web browsers such as Internet Explorer and Firefox through the use of live bookmarks.

Since blogs are a fairly recent pedagogical tool, new scholarship has emerged that points to its benefits in the classroom. The ability of students and faculty to easily update an online journal promotes blogging as a new form of communication to enhance class discussion and to create a community outside the classroom. Flatley (2005) argues that the technological medium provides a space where students can interact with one another, and it can open up the classroom space "where discussions are continued and where every student gets an equal voice" (p. 77). In addition, blogs can promote collaboration (Flatley, 2005; Williams & Jacobs, 2004; Oravec, 2002).

Blogs in the classroom are sometimes used as "online diaries" where students write about their own experiences or share their ideas related to course topics. However, the power of a blog comes when others interact with an individual's posts, creating a forum for discussion and conversation. Blogs may contain the written word, but more blog providers (such as blogger.com) now offer services such as posting pictures and hyperlinks to other websites or uploading multimedia files. One benefit of having access to direct links embedded in weblogs, Oravec (2002) argues, is that "students can access the weblogs of individuals about whom they have gained considerable background information and reflective insight over time" (p. 617).

In contrast to more traditional forums for online discussion, blogs are open to the world to see. This provides visibility for students to share their ideas with the larger world. Quible (2005) says that blogs are "a natural in business communications courses" (p. 73) because they enable students to share their writing with a larger audience. Glogoff (2003) notes that students "used the [class] blog for a purpose other than from what it was initially intended," (p. 2162) causing them to create a new blog for a more general audience. Huffaker (2005) argues that bloggers can get feedback on their writing from a wide range of other bloggers, and "they can link to fellow bloggers, creating an interwoven, dynamic organization" (p. 94). In addition, "students can have a personal space to read and write alongside a communal one, where ideas are shared, questions are asked and answered, and social cohesion is developed" (Huffaker, p. 94). Halavais (2004) argues that this exposure to a larger audience and the responses from outside readers motivates students to write better. Should a faculty member not want student writing made public, blogs can be maintained so that only the students in the class are allowed to access it and post to it.

Blogs also encourage students to write more thoughtfully (Flatley, 2005), with the quality of writing often surpassing writing in more conventional forms (Todras-Whitehall, 2005) by requiring students to "carefully formulate and stand by one's opinion" (Williams & Jacobs, 2004, p. 236). In addition, blogs encourage students to make their writing more concise (Beeson, 2005, p. 28). Oravec (2002) notes that blogging may further develop critical thinking skills because students must carefully evaluate what they read and write, as their words are now available to a larger audience.

Research on specific cases where blogs have been used in the classroom suggests that blogs can enhance a variety of courses in different ways. Glogoff (2003) incorporated the use of blogs in a communication distance learning course whose participants were scattered across the country. Students overwhelmingly claimed that the use of blogs in the course helped them to learn more about technology and also made the material in the course more relevant for them. Likewise, in a foreign language class, "writing and reading blogs are one way in which students can gain different perspectives about the target culture" which they are studying (Ducate, 2005, p. 415). Beeson (2005) reports of one journalism class where students are required to create their own individual blogs, which "were then put under the umbrella of [their instructor's] blog and linked together to form a virtual classroom" (p. 27). In a course on global communication, students found that blogging "formed a vibrant electronic community" (p. 29), and using this new media "made discussion very rich" (p. 29). Students were able to add value to classroom discussion from outside the classroom.

Brownstein and Klein (2006) describe several modalities for the use of blogging in education: learning, constructing, argument, commentary, chronology, extension, resources, and writing. Krause (2005) argues that students need to visit the course's website anyway to do other tasks such as check grades or view assignments. Blogs, then, are just another place students must go online for course materials, and he finds them to be "a more inviting and interactive space for our students to write in" (Kraus, 2005, p. 33). Finally, recent scholarship suggests that blogs promote student-centered learning. According to Halavais, students are more self-directed, as they hold themselves accountable for their learning.

Dietz-Uhler and Bishop-Clark (2002) examine the impact of the use of more classic forms of both synchronous computer mediated communication tools (instant messenger, internet relay chat) and asynchronous tools (email, newsgroups, bulletin boards, etc.) on in-class discussions. They find no significant difference between any of the synchronous or asynchronous tools on the impact of class discussion, but the fact that prior communication took place over the internet in any form "removed fears" and increased the students' confidence to participate in discussion during class. They conclude that "computer mediated communication leads to face-to-face discussions which are perceived to be more enjoyable and include a greater diversity of perspectives than face-to-face discussions not preceded by

computer-mediated communication" (p. 281). Although their study did not analyze the impact of blogging (because that technology was not a common tool for self-expression on the Internet at the time the study was completed), it is reasonable to suggest that blogging prior to an in-class discussion would also have a positive impact on the quality of that discussion.

The Use of Blogs in a Business Education Context

This study of discussion blogs in the classroom was conducted at Bentley College, a business institution in the northeast United States, where approximately 90% of the students major in a business field. An essential component of a business education at both the undergraduate and graduate levels is to develop students' communication skills through classroom discussion. Unlike many professional programs, however, this institution puts great emphasis on integrating liberal learning into the curriculum in order to help students better succeed in a global economy in the 21st century. Students must complete 46 hours of coursework beyond their business education in a number of Arts & Sciences courses in order to fulfill the requirements of the core curriculum. In addition, many faculty design courses and implement pedagogical and andragogical techniques to engage the learner, which resonate with the liberal learning principles outlined by the LEAP National Leadership Council. These include "expanding horizons, building understanding of the wider world, honing analytical and communication skills, and fostering responsibilities beyond self" (College Learning; p. 39). As is likely the case at many colleges and universities across the U.S., students often do not engage or think critically about assigned reading material and many times have not even read the material. This prevents the in-class discussion from reaching much beyond a superficial level and then precludes any opportunity for developing higher-order thinking skills.

With these goals and concerns in mind, the authors drew from many of the studies discussed above to integrate discussion blogs in a writing seminar, two introductory American politics courses, and two graduate e-commerce courses. Most students in the undergraduate courses were 18 to 20 years old; students in the graduate e-commerce courses were 22 to 25 years old on average. These five classes were offered between summer 2005 and spring 2006 with a combined enrollment of 119 students. Discussion blogs were chosen over some of the traditional computer-mediated communication formats (Dietz-Uhler and Bishop-Clark, 2002; Shuler, 2004) because they are a newer Internet application whose popularity continues to increase, (Lenhart 2006; Raine, 2005) and whose impact has been noted as a tool for popular communication on topics ranging from composition to commerce to popular culture.

Each of the instructors who used blogs in the five classes implemented roughly the same exercises. In the writing course, which was composed almost exclusively of first-year students, each student was required to post to the class blog his or her reflections on course readings and service-learning experiences outside of the classroom on a weekly basis. They also were required to read each other's posts prior to each class meeting and to respond to at least one other student's post. Students then were able to assess their own writing based on the number of people who were engaged by their posts and the quality of the responses. Blog postings were selected at random each week and read in class to help generate discussions about writing.

In the two e-commerce courses, both offered as electives in the MBA program, the instructors devised a schedule such that four students per week had three days to post to the class blog an original discussion question based on the following week's readings for their classmates to review. Twelve students per week were assigned to respond to any of their classmates' questions during the next three days. On the seventh day (before class met that evening), all students were responsible for reading the class blog and coming to class prepared to discuss their classmates' questions and responses. A schedule showing which weeks students were assigned to post an original question to the blogger or to respond to one of their classmates' questions was distributed at the first class session. Randomly assigning groups of students to post and respond to each other's blog entries each week helped the instructors identify both the topics and issues of interest to students and the areas that might require further clarification or explanation.

Similarly, in the two American politics courses, four students used a class blog to post their original commentary on a topic covered in the New York Times or other major U.S. newspaper, while eight classmates had three-to-four days to respond to two posts. The remaining students were required to

monitor the discussions and had the option of participating in any of the discussions. In contrast to the e-commerce courses, there was less discussion of the blog posts in class, but the students initiating the process were required to post a rejoinder to those who had responded to their initial post by the time that next round of blogging had commenced. In all of these courses, the blogging assignments seemed to encourage a classroom discussion that was more substantive and engaging than what the authors had experienced in previous classes.

To assess how well discussion blogs enhanced classroom discussion and other liberal learning goals, the instructors presented students with an electronic questionnaire immediately after the last required post. Students were asked to answer 15 questions about general learning goals and outcomes, engagement in the classroom, and the technical aspects of using the blogging software. The answer choices consisted of a Likert scale ranging from one to seven, with one indicating that they strongly disagreed with the statement and seven indicating that they strongly agreed. For presentation purposes, responses 5, 6, and 7 are collapsed into a single category of agreement and 1, 2, and 3 are collapsed into a single category of disagreement. A response of 4, the mid-point of our scale, is interpreted and presented as neutral. The authors also included two open-ended questions that asked asking students to comment on how useful they felt blogging was to the course and to comment about the blogging component in general. Students had approximately 10 days to complete the questionnaire. In all, 98 students submitted a completed questionnaire for a response rate of 82%.

Results

Classroom Discussion

The responses from the survey strongly suggest that discussion blogs can be an effective pedagogical tool for encouraging classroom discussion. As can be seen in Table 1, 73% of respondents said that participating in the blog increased the level of meaningful discussion in class, while only 17% disagreed. The responses from the two open-ended questions indicate that blogs are useful to students because they have the opportunity to express their views. Moreover, students say that they like being exposed to a number of different perspectives and opinions. One student commented that:

> The blogs required students who are not likely to participate in class to post some of their thoughts and reflections which enriched discussion and allowed for more contributions to be made on a given topic since often there is not enough time to cover too many perspectives.

Other students added that the blog helped facilitate meaningful class discussions by "kick-starting" the conversation, ensuring class participation, and fostering more informed class discussions.

Table 1. Blogs and Classroom Engagement

	% Agree (5, 6, 7)	% Disagree (1, 2, 3)	Mean Score (1-7 scale)
Increased the level of meaningful discussion in class	73	17	5.19
Spent a lot of time thinking about entries before posting	57	27	4.64
Made me more interested in attending class	36	29	4.12
Helped establish a personal connection w/classmates off-line	29	49	3.62
Responded to the class blog more often than expected	24	62	3.16
Allowed interaction w/more classmates than in other classes	15	72	2.80

For the most part, students seemed to take their blogging responsibilities seriously. Over half of the respondents said that they spent a lot of time beforehand thinking about what they were going to post, while only about one-fourth put in the minimum effort or less. Few seemed to go beyond the requirements of the assignment, however, with only 24% finding that they responded to the blog more than they had expected, that is, responding more than they were required to do so. Some students mentioned in their open-ended responses that they would have preferred that posting and responding be made voluntary, while others believed that they would have responded more often if they did not have to adhere to a schedule but instead when they encountered a topic of interest. While these students may have been sincere in their commitment to participate, it is unlikely that class discussions would have drawn from the assigned readings without requiring students to address these readings in some written form.

While the data show that classroom blogs facilitate meaningful discussion on the blog and in the classroom, there was little evidence to support the view that that blogs encouraged further peer-to-peer interaction beyond discussion of the blog, either during class or outside of the classroom (Williams and Jacobs, 2004 Flatley, 2005, Oravec, 2003). Only 29% of the respondents felt that the class blog allowed them to interact with more of their classmates than they did in their other classes. And only 15% felt that the blog helped them establish a personal connection with their classmates offline.

Liberal Learning

The data also suggest that discussion blogs are useful for promoting general liberal learning goals. As evident in Table 2, 76% of respondents agreed that posting and responding to the blog assisted in their general learning for the course, and 71% agreed that simply reading the blog contributed to their learning. In contrast with earlier research (Oravec, 2003; Williams and Jacobs, 2004), the blogs were somewhat less successful in helping students achieve more specific liberal learning goals. A majority of respondents (55%) said that posting to the blog helped them to communicate their ideas more effectively, and a near-majority (47%) agreed that posting made them better critical and analytical thinkers. Still, this does not mean that the students felt that the discussion blog had a negative impact on their learning. Rather, it seems that a substantial number of students felt that the blog did not have an impact one way or another. For both of these two questions, 24% of students offered the neutral or middle response on the 7-point scale. Only 21% of respondents said that posting to the blog did not help them communicate their ideas more effectively and only 29% said that posting did not make them better critical and analytical thinkers.

Table 2. Blogs and Liberal Learning

	% Agree (5, 6, 7)	% Disagree (1, 2, 3)	Mean Score (1-7 scale)
Posting & responding to the blog assisted in learning for this course	76	11	5.29
Reading the blog assisted in learning for this course	71	11	5.09
Posting to the blog has helped me communicate ideas more effectively	55	21	4.51
Posting to the blog has helped me become a better critical and analytical thinker	47	29	4.23

A review of students' posting reveal that there was significant improvement over the course of the semester in reading and writing skills, critical-thinking abilities, and overall student learning (see Appendix 1 for access to blog archives). In all of the classes, the contributions posted from early in the semester tended to be briefer, less polished, and less imaginative than contributions posted in later weeks. In the writing class, for example, one of the first assignments required students to reflect on their initial thoughts about participating in the service-learning component of the class. In general, there was little development of thought regarding service-learning. In addition, sentences were short and somewhat conversational in style. Typical of students' postings were introductions such as these:

My name is _____ and I am a freshman at _____ College located in _____, MA. I just heard that part my Expository writing class involves service learning, and I can't wait. Sounds fun. Talk to you later.

In contrast, the length of the postings increased in word count as the semester progressed, from less than 100 words to an average of 600 words in the final weeks.

While feedback from the instructor and several follow-up assignments likely were most responsible for students' improvement, the public visibility of the blogs seemed to have contributed as well. Since blogs allow students to publish their writing in a more public forum, instead of limiting feedback to a single reader, i.e., the professor, students' work is exposed to a much wider audience, including their peers. It is possible that after reading their peers' postings, students demanded better explanations from each other. Moreover, students hold each other accountable for the success of the blog. For example, rather early on in the writing course, one student responds to another student's post by writing the following: "Continue to post your ideas and experiences that relate to the book. They will add value to the posts and our learning experience." Students use their questions to each other's blog postings as a vehicle for maintaining a level of engagement from one another.

A dialogue between writer and reader also may have helped improve the quality of students' postings. Questions from the instructor and other students in class or online seemed to encourage students to develop a more persuasive analysis in subsequent posts. For example, in a posting for the writing class that analyzed successful and unsuccessful classroom pedagogy, one student responded to another student's posting by posing the following question, "So do you think that there is any style of teaching where students would actually be able to retain the information in which they learn?" In the writing and government classes, two students occasionally engaged in an extended dialogue that allowed the initial poster to rework ideas to be used in a response. When a third student jumps into the exchange, each student's critical-thinking capabilities are stretched further since students must take into account the positions and ideas of multiple bloggers including their own. Ideally, each post serves as a draft, with students rethinking their ideas and revising their explanations with each posting.

Ease of Use and Technical Challenges

On the whole, the instructors did not encounter difficulties with any of the technical aspects of launching or managing their class blogs. In addition, only a few students indicated that they had any difficulty with accessing or posting to the blog. As can be seen in Table 3, 75% of the students agreed that using the blog website to post and respond was easy to do, while only 13% disagreed. When asked this question in an alternate format, student provided roughly the same responses. Only 22% said that they had difficulty using the blogging website to post an entry or respond to a previous post, while 68% disagreed. More encouraging was that only 18% of respondents reported feeling intimidated about posting to the blog.

Table 3. Blogs and Ease of Use

	% Agree (5, 6, 7)	% Disagree (1, 2, 3)	Mean Score (1-7 scale)
Using the blog web site to post & respond was easy to do	75	13	5.45
Wrote posts as if having a conversation with classmates	52	26	4.33
Would like to see blogs used more widely in my other courses	43	30	4.31
Had difficulty using the blogging web site to post and respond	22	68	2.99
Intimidated to participate in blog	18	67	2.83

One concern about using technology in the classroom is that students who arrive with greater sophistication and experience with computers and the Internet will adapt more easily to the blog than

those who are less sophisticated and experienced. At the same time, there is a concern that students with stronger verbal skills will feel more comfortable about expressing their opinions and questions in written form for the entire class to observe. The authors found no difference between students taking IT classes and students enrolled in Arts & Sciences classes. The authors also did not find any significant difference between students enrolled in the two graduate e-commerce courses and those enrolled in the three undergraduate courses.

Technology and Gender

Another concern the authors had about using the discussion blog as a pedagogical tool was that men and women might feel differently about the blog's accessibility. A number of studies have shown that female college students have had less experience online than their male counterparts, use the Internet in different ways, and have higher levels of anxiety and more negative attitudes towards the Internet (Broos, 2005; Joiner et al., 2005).   On the other hand, other studies have indicated that the gender divide has been rapidly closing among both college students and the public at-large (Fallows, 2005). Moreover, at the authors' institution, students arrive on campus aware of how widely technology is integrated into the curriculum; students are required to purchase a standard notebook computer and must take an introductory course on information technology as part of their general education requirements. Thus, the authors did not expect that integrating discussion blogs would put women students at a disadvantage or cause them to become anxious about completing the blogging assignments.

As can be seen in Table 4, however, women were significantly more likely than men to feel intimidated about participating in the blog and to have difficulty using the blogging website to post and respond to entries. Women also were more likely to disagree that using the website to post and respond was easy for them to do, albeit the difference was not statistically significant. None of the male respondents reported any concerns or problems with the blogging website in their open-ended comments. From women, however, there were these comments:

> The website was a little hard to understand. The way that the website posted the blogs was also a bit confusing, as it was just one big page. It should have been divided more effectively, like one page per subject.

> Sometimes it was hard to write anything because you really had nothing to say or had a fear of saying something stupid.

> As a way to deal with these challenges, one female student suggested more in-class demonstrations, while another suggested that:

> The professor might need to add a testing session in the first week of the class to ensure that all students have properly posted and responded to the test question before formally using blogs in the class.

Two other women were unhappy with the blogging website because they had used a different platform in a previous class and were not enthusiastic about adjusting to something new.

Although women reported greater anxiety and difficulty than men, the data also suggest that women received greater educational benefit from their blogging experience than men. A higher percentage of women agreed that participating in the blog increased the level of meaningful discussion in the class (87% vs. 68%) and that reading the blog assisted in their learning for the course (80% vs. 73%). And by a substantially large margin, more women reported that posting to the blog helped them become better critical and analytical thinkers. In each of these three cases, the difference in means between men and women was statistically significant. But as can be seen in Table 4, even in cases where the differences were not statistically significant, women reported a more positive experience with the blog than men.

In their open-ended responses, one woman expressed enthusiasm for the blog, stating that:

> Blogging had a positive impact on this course. It made both preparing for class and learning from class more interesting and in-depth, since deeper analysis of the material had to be done, but the scope of the analysis was our choice (which was very nice!).

Another female student added that "the blog made people think above and beyond what is just in our text," while another commented on how the blog "provided an environment to apply what we learned

inside the classroom with what is happening in the real world."

Table 4. Discussion Blogs in the Classroom by Gender

	Women % Agree	Men % Agree	Mean Difference Women-Men
Increased the level of meaningful discussion in class	82.1	67.8	**0.66**
Spent a lot of time thinking about entries before posting	69.2	49.2	0.47
Made me more interested in attending class	48.7	27.1	**0.56**
Helped establish a personal connection w/classmates off-line	20.5	11.9	0.33
Responded to the class blog more often than expected	25.6	23.7	0.11
Allowed interaction w/more classmates than in other classes	25.6	32.2	0.21
Posting & responding to the blog assisted in learning for this course	79.5	72.9	0.44
Reading the blog assisted in learning for this course	71.8	71.2	**0.61**
Posting to the blog has helped me communicate ideas more effectively	59.0	52.5	0.27
Posting to the blog has helped me become a better critical and analytical thinker	64.1	35.6	**0.72**
Using the blog web site to post & respond was easy to do	66.7	81.4	-0.34
Wrote posts as if having a conversation with classmates	59	47.5	0.47
Would like to see blogs used more widely in my other courses	35.9	49.2	-0.05
Had difficulty using the blogging web site to post and respond	30.8	16.9	**0.78**
Intimidated to participate in blog	33.3	8.5	**1.09**

Bold entries indicate that there is a statistically significant difference in the mean score between men and women

Conclusions and Future Directions

This study uses one approach to engage students in the course through the use of blogs. Variations of this exercise might permit students to select the weeks they will be posting to the blog based on topics of interest (or available free time), rather than by random assignment, or, in smaller classes, might require all students to respond most of the time. Doing so might better simulate a more natural discussion where participants contribute because of interest in the topic or because they have "something to say" rather than because they are required to participate at specific times.

While most blog providers offer free services, some blog providers offer advanced features for a fee. For example, LiveJournal supports a premium feature that enables readers to rate the usefulness of a particular post on a scale from 1 to 5 stars. It would be of interest to incorporate this feature in the classroom blog exercise, enabling students to rate each other's posts, and their ratings would be considered when calculating a student's grade.

Another enhancement might involve the use of multimedia to introduce a topic of conversation. Robinson and Dodd (2006, p. 59) and others have suggested that millennial students are more likely to be engaged by using "music devices as part of the teaching and learning process." As podcasting continues to become an increasingly popular channel for students and faculty to share course materials and lectures both prior to and following a class session (Frydenberg and Davi, 2006), a natural extension of this exercise would be to have students present their background information and discussion questions as audio or video podcasts, posted to a blog to which their classmates could respond in writing. The barrier to entry is slightly higher as students would need to become facile with appropriate software and hardware tools for creating and editing audio and video, and making the multimedia available for download. These skills are not complicated to master, and teaching them in introductory computer courses is becoming more widespread.

To assess whether blogs had an impact on students' engagement in the course and development of general learning goals, this study has relied almost exclusively on the self-assessment of the students. Although the instructors for each of the courses could see that students were more engaged and would participate in more substantive class discussion than in semesters where bogs were not used, a more objective assessment strategy is needed in order to better establish a causal link between blogs and learning. Furthermore, it is possible that many undergraduate students may not understand what concepts such as analytical reasoning and critical thinking mean and may view communication skills in its narrowest form. Ideally, instructors who teach multiple sections of a class in the same semester may want to use a blog in only one section, while using more traditional pedagogical tools in other sections. Exams and other measures of evaluation would be the same across sections, however, allowing the instructor to see the trends in each section and overall performance at the end of the semester.

Significant emphasis is now being placed on providing students in professional programs with a liberal education. Taking Responsibility for the Quality of the Baccalaureate Degree, a report coming out of the Association of American Colleges and Universities' Project on Accreditation and Assessment (PAA), states that:

> It is noteworthy that representatives from the four specialized accrediting agencies in PAA—business, education, engineering, and nursing—are unanimous in declaring that a strong liberal education is essential to success in each of their professions. Whereas some in the general public may see liberal education as impractical, as an unnecessary luxury, or as unrelated to their intended career, these leaders see it as a central aspect of educational quality in their fields. Further, their agencies have established standards and procedures that place a high priority on liberal education in the accreditation of these specialized programs. (qtd. in Hutton 2006, p. 57)

Using blogs across the disciplines can enhance liberal learning in professional programs. Each of the instructors in this study used blogs in a way that enhanced liberal learning in the classroom. The authors found that students came to class discussions having engaged in inquiry and analysis through online writing exercises. Thus, blogs helped students develop their critical-thinking skills and reasoning skills. In addition, by preparing students for class discussions, blogs helped them develop both their written and oral communication skills.

Liberal learning depends on students taking responsibility for their education. Instructors in any discipline can use blogs to begin conversations about course materials before students arrive in the classroom and continue them long after a class has ended, thus fostering a sense of active learning both inside and outside the classroom.

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