

Gender Differences in Student Discourse on Discussion Board and Blogs: An Instructor's Quest to Create a Level Playing Field in a Hybrid Classroom

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Abstract

The widespread use of innovative web-based technology in recent years has led to significant changes in the way students learn, communicate, and interact with one another. This exploratory single subject Scholarship of Teaching and Learning (SoTL) study, conducted in a hybrid graduate course, was designed to determine if web-based tools like Discussion Board and Weblogs afforded pedagogical benefits, and if these benefits extended equally to both males and females in the classroom. Data comprised of a total of 1,373 Discussion Board posts and 109 Weblog posts. Some interesting gender-related patterns were found. The findings, though not generalizable, are illustrative of the challenges instructors can face when experimenting with web-based technology in higher education classrooms. This study adds to the growing body of classroom research devoted to gender and online learning.

Since the mid-1990's, faculty in higher education have been experimenting with ways to engage students more fully in the learning process. This shift has been fueled by a growing body of literature that documents the link between engagement and key student outcomes. The National Survey of Student Engagement, which was initiated in 1998 and which discussed practices to improve student learning, was followed by similar initiatives such as the Documenting Educational Effectiveness Project (DEEP) and the Education Commission of the States in 1995; both recommend a shift away from the didactic method of information transfer towards a combination of academic rigor and creative, meaningful experiences.

The pedagogical practice of reflective thinking advocated by scholars like Dewey (1933), Schon (1987), and Palmer (1998), coupled with advancements in technology, are prompting faculty to experiment with innovative web-based tools like Discussion Board (Garrison, Anderson, & Archer, 2001; Meyer, 2003) and Weblogs (blogs) (Farmer & Yu, 2007; Huffaker, 2005). These tools offer new opportunities to encourage dialogue, critical engagement, and reflective practice both within and beyond the classroom.

Success of educational practitioners rests on their ability to engage in *reflection-in-action* (contemporaneous thought) advocated by Schon (1987), which is the process of observing ones thinking and action as they occur, in order to make adjustments in the moment. Equally important is *reflection-on-action* (retrospective thought), the process of learning from past experience in order to affect future action (Schon, 1987); and *reflection-for-action* or *reflection-to-action* (anticipatory thought), which requires practitioners to envision the effects of interventions on their students, colleagues, the learning environment, school, and community

(Killion & Todnem, 1991). While there is a dearth of literature that actually document whether or not innovative web-based technology can be used to scaffold the three types of thinking identified above, it has confirmed that innovative web-based tools have numerous other related pedagogical benefits.

Innovative web-based technology, by facilitating delivery of course information through multiple modes of knowledge representation and comprehension, promotes a positive attitude towards learning (Struyven, Dochy, Janssens, & Gielen, 2006); improves student engagement in course content (Dorman & Fraser, 2009); and enhances learning outcomes by contributing to both intellectual growth, reflective learning, and critical thinking (Black, 2005; Dixon, Kuhlhorst & Reiff, 2006; Pena-Shaff & Nicholls, 2004). Additionally, web-based instructional tools have been found to reduce some of the communication impediments associated with the face-to-face lectures by providing a forum for argumentative and collaborative discourse (Karacapilidis & Papadias, 2001). Students find the online environment to be less intimidating, less prone to be dominated by a single participant, and less bounded by convention (Redmon & Burger, 2004).

Although there has been considerable scholarly interest in issues related to gender in the classroom, few scholars have been studying gender issues in a computer-mediated learning environment (Davidson-Shivers, Morris, & Sriwongkol, 2003; Larson, 2002; Wang & Sierra, 2002; Young & McSparran, 2001). Some scholars have examined the ways male and female students interact with faculty and each other in the online learning environments (American Association of University Women [AAUW], 2000; AAUW, 2001a; AAUW, 2001b; Butler, 2000; Merisotis & Phipps, 1999; Palloff & Pratt, 1999; Rickly, 1999; White & Weight, 1999).

We know from a variety of research sources that that males and females experience the online learning environment quite differently (Anderson & Haddad, 2005; DeNeui & Dodge, 2006; Wolfe, 2000). Some scholars reported that females demonstrated negative attitudes and less confidence in computer-mediated learning two decades ago (Dambrot, 1985; Gutek & Bikson, 1985). Others found that the asynchronous nature of innovative web-based technology, which invites a less spontaneous, more reflective style of discourse, was more appealing to female students (Creed, 1997; Pagnucci & Mauriello, 1999; Savicki, Lingenfelter, & Kelley, 1996; Selfe, 1990, 1999). Additionally, female students were found to prefer the slightly different social dynamics and the anonymity that the online environment offers (Kiesler, Siegel, & McGuire, 1984; Selfe, 1990; Sullivan, 1999; Wolfe, 2000). Over the last decade or so, females have been demonstrating better use of computer-mediated platforms like Blackboard and have been outperforming males academically (DeNeui & Dodge, 2006).

Purpose of the Study

With the widespread use of different innovative web-based technologies to support teaching and learning in today's classroom, our understanding of these technologies and their underlying impacts on learners and instructors remains fragmented, specifically with regard to the pedagogical benefits of these tools in stimulating higher level critical thinking and reflective practice across gender. This study was designed to explore the following research questions:

1. Are there gender differences in the degree to which graduate students contribute to the Discussion Board feature of Blackboard during the course of a semester?
2. Are there gender differences in the degree to which graduate students post their thoughts on their personal Blogs during the course of a semester?
3. Do male and female students post consistently across the two forums?

4. Are there gender difference in the degree to which students engage in retrospective, contemporaneous and anticipatory reflection in the public forum (Discussion Board) and the private forum (personal blog)?

5. What are some implications for classroom practice and future research?

Methodology

Description of Study Participants and Context

A sequential exploratory design was used primary because of the absence of classroom research in this area. A total of 20 graduate students enrolled at 3 different satellite campuses, who signed up for a Masters level Theories of Instruction course in spring 2008, participated in this study. The class comprised of 6 males, and 14 females; 13 were Caucasian and 7 were African American. The course was a hybrid. A hybrid course has been described by Lin and Overbaugh (2009) to be one “in which a blend of both traditional classroom instruction and online learning activities are utilized, including synchronous and asynchronous communication modes” (p. 999). For a period of fourteen weeks, I, as instructor of the course, had face-to-face interaction with 14 students at one campus, and interacted simultaneously with 2 students at the second site and 4 students at the third through the Compressed Video Network (CVN), better known as interactive television. In addition to the weekly three hour CVN session, each student was required to engage in asynchronous use the Discussion Board feature of Blackboard – a course management system- and maintain a personal blog through blogger.com.

Data Collection Procedure

Data were generated from the following sources: (1) a preliminary survey which elicited demographic data and documented their experience with reflective writing and the value they placed on it, (2) their posts on Discussion Board, (3) their personal blogs, and (4) their individual action research reports. Analysis of the entire data set is underway. Given the nature of the research questions this paper contains an analysis of data that were generated through Discussion Board and their personal blogs only.

The purpose of each of the two forums was described on the first day of class. The public forum (Discussion Board) was described as “a public place to grapple collectively with ideas and arrive at a deeper understanding of pedagogical issues.” This private forum (blogs) was described as “a private space to introspect, confront personal beliefs and biases, process the application of course content to their own context, and generate workable solutions.” Students were asked to post approximately 3-4 times a week on Discussion Board during the fourteen-week semester. Given that their personal blogs would serve as more of a reflective journal, students were encouraged to self regulate and post there as often as they desired.

Students were told that their responses, on both forums, should be well thought out and reflective in nature. Given that the intent of the study was to determine the types of reflection that students use by default, they were not given direct instruction on “how to reflect.” The three types of reflections – retrospective, contemporaneous, and anticipatory – were explained with examples, when the informed consent letters were administered. Additionally, they were told that it would be used as an analytic framework at the end of the semester to learn more about the nature of their reflections. Over the course of the semester, students were encouraged to “reflect deeply” and directed to use the stimulus/prompts “as a lens to examine their own practices –

past, present, and future.” The researcher made a conscious effort not to use the terms *retrospective*, *contemporaneous* and *anticipatory* in order to minimize contamination of the data.

Participants were given a weekly prompt on the public forum (Discussion Board) that related to the content they were exploring in class. As evident from the examples in Figure 1, each prompt directed participants to some stimulus (literature, case studies, audio clips, you-tube clips, video, etc.) and included questions to scaffold their thinking. The questions typically required them to reflect on the stimulus and react to the prompt in terms of their experiences as K-12 teachers. They were also required to read and respond to others’ posts with comments, questions, and suggestions.

5	Week 5: Information Processing Family (Due: 19th Feb) Read the chapter on “constructivism” as well as 3-4 related peer reviewed articles. Can and should memorization exist in a constructivist classroom? Experiment with at least one of the approaches presented in class yesterday - one that you have not used in a while. Share your thoughts.	[131 Messages] [All read]	Modify Remove
4	Week 4: Brain Research (Due: 12th Feb) Over the last couple of decades Brain Research has produced an explosion of information about how information is represented and memories are stored in the brain. In some ways it supports what we know to be true, but it is also challenging some of the theories out there. Watch Brain Development and Neuroplasticity 1 and 2 in the external link section of Blackboard. Share with the class one thing that you learned (more if possible) and how you plan on using this information to inform your teaching practice.	[139 Messages] [All read]	Modify Remove
13	Week 13: Its not on the Test When you become a school leader you will have to function in a NCLB world. Watch this clip, and figure out what you (as school principal) will say to your staff of teachers at your first staff meeting when the issue of testing comes up. How will you articulate your vision for the students and the manner in which you want the school to respond to No Child Left Behind (NCLB)? Watch the clip 'Its not on the test': http://www.youtube.com/watch?v=WFSN5AttIGk before responding to this prompt.	[164 Messages] [All read]	Modify Remove

Figure 1. Examples of Discussion Board Prompts

While the data collection procedure on the public forum (Discussion Board) was structured, participants were given considerably more freedom on the private forum (blog) to self-regulate. As they were new to blogging they were initially, for the first two weeks, given a prompt to help them get started. An example of a one of these prompts is listed below in Figure 2.

Blog Prompt 1, Week 1:

A radio pioneer, Edward R. Murrow, began the *This I Believe* project in 1951 to engage Americans and encourage them to communicate openly about the beliefs and values that guide them through life. This series was revived once again in 2005 by independent producers Jay Allison and Dan Gediman. The essays are truly inspirational and encourage people to develop respect develop respect for beliefs different from their own.

Here is what I would like you to do:

1. Check out the website (<http://thisibelieve.org/index.php>)
 2. Use the following link to (http://thisibelieve.org/dsp_AdvancedSearch.php) to search for a couple of essays that might interest you. If you prefer to listen to the essay rather than read it use the 'essays on radio' link in the menu bar.
 3. Write a short essay of your own highlighting some of your key beliefs. Your essay should include your beliefs about some of the following: education/knowledge, effective teaching, assessment, educational issues etc.
- Post your essay on your personal blog.

Figure 2. An Example of a Blog Prompt

Subsequently they were encouraged to blog about ideas they were experimenting with in their classrooms, especially those that relate to course content, the pedagogical challenges that they encounter along the way, and their response to those challenges. Later in the semester, they were encouraged to use their blog to capture their reflective thoughts as they developed and implement an action research study that they conducted in their classrooms.

Assessment Criteria

Crème (2005) maintains that grades signal the importance of what is being taught, and Varner and Peck (2003) advocate the use of grades as a reward for energy invested in the task. As such, 10 of the 14 Discussion Board threads were graded in increments of five points. Students could secure a total of 50 points. As students were given the freedom to self-regulating with their blogs; they were graded in three increments of 20 over the course of the semester, making it possible for them to score a total of 60 points. The point value for both Discussion Board and blog posts amounted to only 25% of the overall grade.

Analytical Procedure

Qualrus, a qualitative research software, was used to analyze and quantify the data generated through Discussion Board and blogs. Based on the frequency of their posts over the course of fourteen weeks students were categorized into the following four groups: Advanced, Above Average, Average, and Below Average. Each individual post was then analyzed to identify the number of times a student made retrospective, contemporaneous, and anticipatory comments. SPSS was used to quantify the qualitative data. A series of independent sample *t* tests were run to compare for group differences across gender and participation levels between and across the two forums.

Findings and Discussion

Posting Across the Two Forums

Frequency of posts on Discussion Board and blogs. Students were instructed to post approximately 3 to 4 times a week on Discussion Board, during the fourteen-week semester. Over the course of the semester students posted a total of 1,373 posts. The majority of students posted between 2 to 3 posts each week on Discussion Board. Students were told that their personal blogs would be graded thrice during the course of the semester. They were given the freedom to post as little or as often as possible. Over the course of the 14 weeks, students posted a total of 109 posts. The total number of posts per student ranged from 2 to 7, with an average of 5 posts per student. Thirteen students posted between 6 and 7 posts.

Gender differences in frequency of posts on Discussion Board and blogs. As evident from Table 1, the majority of students enrolled in the class were female (70%), the rest (30%) were male. Females accounted for 71% of the posts on Discussion Board and males accounted for 29%. A similar trend was observed on students' individual blogs. Females accounted for 68% of the posts, and males accounted for 32% of the posts.

Table 1

Frequency of Posts: Gender Differences

Gender	Discussion Board Posts		Blog Posts	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Males (6)	396	28.84	35	31.53
Females (14)	977	71.16	76	68.47
Total	1373	100	111	100

An independent-sample *t* test was run to determine if there was a gender differences in the number of times students posted on Discussion Board and their personal blogs.

While there did seem to be greater variability in the number of times females posted ($SD = 41.21$) as compared to males ($SD = 32.75$) on Discussion Board the independent-sample *t* test results confirmed that there was no significant difference in mean scores on either of the two forums.

Students were divided into the four groups listed in Table 2; this was done following statistical elimination of outliers. Students who posted more frequently were categorized as Advanced (more than 100 posts), followed by Above Average (61-100 posts), Average (30-60 posts), and finally the Below Average (less than 30 posts). Similarly, students who posted 3-5

times on their blogs were categorized as Average, and the thirteen who posted between 6-7 times were categorized as Above Average.

Table 2

Gender Difference in Level of Participation across Discussion Board and Blogs

Participation Levels	Discussion Board	Blogs	Discussion Board & Blogs
Advanced			
Males	5		
Females	8, 19		
Above Average			
Males	16	5, 9, 17, 20	2
Females	1, 3, 7, 15	6, 8, 12, 14, 18, 19	11
Average			
Males	9, 17, 20	16	
Females	6, 12, 14,	1, 3, 7, 15,	4, 10, 13
Below Average			
Females	18		

Note. The numbers represent individual students.

As evident from Table 2, students' willingness to post varied across the two forums; students who posted less frequently on Discussion Board (students 1, 3, 7, 15, 16) posted more often on their personal blogs, and vice versa. Only 5 of the 20 students performed consistently across the two forums. Only 1 was male (student 2), the rest were female (students 4, 10, 11, 13). On blogs, three-fifths of the students were categorized as Above Average. The majority of the males (5 out of 6), and half of the females (7 out of 14) fell in this category. There was greater variability in the performance of males on Discussion Board. Of the 6 males, 3 were categorized as Average, 2 were Above Average, and 1 was Advanced. A similar trend was observed with females, the majority was placed in either the Average (6 out of 14) or Above Average (5 out of 14) category; 2 were Advanced and 1 was Below Average.

Gender Differences in Number and Types of Reflective Comments within Posts

Students' individual posts were coded to determine the extent to which they engaged in each of the three kinds of reflections. An example of each of the different kind of reflections is presented in Table 3. While students included comments of all three kinds within their posts, they did so to varying degrees. An independent-sample *t* test was run to determine if there was a gender difference in the number of reflective comments contained within students' Discussion Board and individual blog posts. The independent-sample *t* test showed that there was no significant difference in mean scores on either of the two forums. However, on Discussion Board there does seem to be greater variability among females ($SD = 40.59$) than among males ($SD = 24.29$).

Table 3

Three Types of Reflections: Examples of Student Comments

Type of Reflection	Student Comments
Retrospective	I introduced my tenth grade resource English class to Samuel Beckett. For those of you who are familiar with Beckett, you know that he is neither easy to read not easy to comprehend. My students were able to read and dissect his work better than the average college student. Setting our goals is higher is beneficial if it does not overwhelm the student. (Discussion Board, Student 7)
Contemporaneous	I feel that I use direct instruction and organizers most of the time. I agree that it would be great to use mastery learning in each subject area. Due to benchmark prep, chunk testing, pacing guides, etc., I am not able to use this model as much as I would like to. (Discussion Board, Student 18)
Anticipatory	I like the idea of helping me make out the test materials as we often make teacher made tests and do not adhere to just premade tests. I am also going to discuss the idea of parent/teacher conferences becoming more student/parent conferences, as this seems like a very good tool for students to express their feelings to me and to parents. (Discussion Board, Student 19)

Tables 4 and 5 confirm that males and females made many more contemporaneous comments than either retrospective or anticipatory comments on Discussion Board and blogs.

Table 4

Quality of Discussion Board Engagement over a Period of 10 Weeks: Gender Differences

Gender	Retrospective	Contemporaneous	Anticipatory
Males (n = 6)	83	217	30
Females (n = 14)	192	492	57

Table 5

Quality of Blog Engagement over a Period of 10 Weeks: Gender Differences

Gender	Retrospective	Contemporaneous	Anticipatory
Males (n = 6)	31	100	24
Females (n =14)	39	152	31

A series of independent-sample *t* test were run to determine if there was a difference in the degree to which males and females engaged in each of the three kinds of reflections – retrospective, contemporaneous, and anticipatory – on each of the forums. The independent-sample *t* test results shows that although the mean score for males ($M = 13.88, 36.16, 5.00$, respectively) on Discussion Board was slightly higher than females ($M = 14.71, 35.14, 4.07$, respectively); this difference was not statistically significant at the .05 level. While there was no statistically significant difference in the number of retrospective or anticipatory comments made by males ($M = 5.17, 7.67$ respectively) and females ($M = 2.79, 2.21$, respectively) on their blogs, a statistically significant gender difference was observed with contemporaneous comments ($p = .05$). Males posted comparatively more contemporaneous comments ($M = 16.67$) than females ($M = 10.86$).

Implications for Classroom Practice

Although the literature suggests that females prefer the asynchronous nature of innovative web-based technology (Creed, 1997; Pagnucci & Mauriello, 1999; Savicki, Lingenfelter, & Kelley, 1996; Selfe, 1990, 1999) and the slightly different social dynamics that the online environment offers (Kiesler, Siegel, & McGuire, 1984; Selfe, 1990; Sullivan, 1999; Wolfe, 2000), there appears to be no significant difference in the number times females and males posted on Discussion Board and their personal blogs in this study. Based on the number of posts, Discussion Board appears to be the preferred forum. The weekly grade incentive and the opportunity for social interaction that this forum offers could account for students' active participation on this forum.

On both Discussion Board and blogs, students engaged in reflection-in-action (contemporaneous) to a higher degree than reflection-on-action (retrospective) or reflection-for-action (anticipatory). While it is essential for education practitioners to observe their thinking and actions as they are occurring, it is equally important they learn from past experience and envision the effect of actions and interventions on students, colleagues, and the learning environment. In subsequent Scholarship of Teaching and Learning (SoTL) projects, I will discuss the value of all three types of reflections and provide more explicit guidelines about what constitutes 'self-reflexivity.' Careful ongoing analysis and feedback regarding progress will enable students to work on areas where they fall short.

There did appear to be greater variability in the frequency of posts among females on Discussion Board as compared to men. Not only were females placed in all four of the categories including the Advanced and Below Average categories, but there were also proportionately more males placed in the Above Average category on blogs than females. Additionally, males posted more contemporaneous comments than females on their blogs. This study was not sophisticated enough to identify the factors that inhibited some female students. Early identification and

support of students who are struggling, particularly female students, may be required. In subsequent studies a mid-semester survey will be used to identify and reduce the factors that could be preventing students from participating more actively on both of the forums.

The majority of students' participation level varied across the two forums; students who posted less frequently on Discussion Board posted more often on their personal blogs and vice versa. To maximize student achievement, I will offer them the option of engaging in either the private forum (blogs) or public forum (Discussion Board) and give them an opportunity to choose the one that works best for them.

Limitations of this Study and Implications for Future Research

Like any exploratory study using qualitative methods, this study did have some inherent limitations. First is the subjective nature in this study. As a participant observer of the learning process, my views could have been inevitably influenced by preconceived ideas and available resources. The second limitation is related to the learning environment. The setting of this study was unique; hence, the results might be difficult to duplicate in other situations. The sample of subjects participating in the study might not be representative of every leadership preparation classroom; any generalized implications should be taken with caution. Another limitation is the sample size. However, it is difficult to have large sample sizes when working with a classroom situation without tainting the results of the study.

This study could be methodologically strengthened by including focus group interviews with male and female students, either separately or together. It will be helpful to gather information from additional courses to help instructors better understand the impact that innovative technology has on male and female discourse online. Future research could also look at other demographic variables such as age, computer literacy, and ethnic groups to determine if these factors influence the degree to which Discussion Board and blogs can be used as effective and efficient tools to enhance classroom discussion and participation or if it adds an additional expense and complexity to the classroom without adding benefits.

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