

**Using Focused Web-based Discussions to Enhance  
Student Engagement and Deep Understanding\***

by

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## **Abstract**

### **Using Focused Web-based Discussions to Enhance Student Engagement and Deep Understanding**

To increase student engagement and enhance critical thinking and deep understanding, I supplemented weekly seminar meetings with focused web-based discussions of issues in a senior sociology seminar. These web-based discussions were structured by specific questions and discussion roles. Before seminar, **Staters** posted on the course website the most important thing they learned from a reading, describing what was most difficult, and raising new sociological questions. After seminar, **Responders** replied to the questions and difficulties posted and posed further sociological questions. Two days later, **Integrators** synthesized and integrated what they had learned that week from others' postings, readings, and seminar discussion, and raised further questions.

Analysis of student postings suggests that students' engagement with the ideas of others increased during the semester and their thinking became more complex. The paper discusses the processes that contributed to students' learning, led to pedagogical changes, and raises questions for further research.

# **Using Focused Web-based Discussions to Enhance Student Engagement and Deep Understanding**

## **PEDAGOGICAL AND THEORETICAL QUESTIONS**

The research reported here grew out of several pedagogical problems I faced in teaching a senior seminar in sociology in 1998 and 1999, in a large, urban, private university. Each week I had several members of the seminar write papers on the week's readings which they photocopied and left in a central place the day before the seminar for others to pick up and read in advance. While most students met this deadline, some did not. Furthermore, some students found it difficult to obtain and read the papers before they came to seminar.

While very interested in the topic, "Race and Education," students appeared to be distracted by many things-- work, illness, applications to graduate or professional school, and other post-college plans. Because the seminar met only once a week, they almost seemed to forget it from one meeting to the next. In seminar, I was struck by how difficult it was for students to engage directly with questions about the readings for the week or with comments and questions raised by classmates. As a result, our discussion in seminar, while good, was not as deep as it might have been, an experience similar to that reported by Crone (2001). Moreover, not everyone participated in discussion, a problem noted by Nunn (1996) and others. Further, I wondered how the seminar might help students to think and write more analytically, sociologically, and with greater complexity about the social issues we were considering, including being able to ask better sociological questions. Finally, I wondered how students might be encouraged to attend seminar regularly, well-prepared, and having thought about the issues we were considering.

I began to think about whether digital technologies could be used to foster social interactions in ways that might change the relationships among students and between students and ideas. Put another way, I wondered how digital technologies might be utilized to further the development of a community of learners. And, I wondered if changes in those relationships might affect students' deep understanding of sociological ideas. I decided to study the design changes I was making in the seminar. My goal was to understand some of the complex

processes that may occur when technology is used in particular ways, and to generate questions for further research. In this respect this project is an example of the scholarship of teaching and learning, implying an inquiry model of teaching and a somewhat different view of problems and questions. As Randy Bass writes:

One telling measure of how differently teaching is regarded from traditional scholarship or research within the academy is what a difference it makes to have a "problem" in one versus the other. In scholarship and research, having a "problem" is at the heart of the investigative process; it is the compound of the generative questions around which all creative and productive activity revolves. But in one's teaching, a "problem" is something you don't want to have, and if you have one, you probably want to fix it. Asking a colleague about a problem in his or her research is an invitation; asking about a problem in one's teaching would probably seem like an accusation. Changing the status of the problem in teaching from terminal remediation to ongoing investigation is precisely what the movement for a scholarship of teaching is all about. How might we make the problematization of teaching a matter of regular communal discourse? How might we think of teaching practice, and the evidence of student learning, as problems to be investigated, analyzed, represented, and debated? (Bass 1998-99)

Theoretical ideas from exchange theory guide my reflections on student relationships, the concept of "information ecology" (Nardi and O'Day 1999) raises questions about whether changes in social contexts can affect human behavior and learning, and Zuboff's observations about how information may make previously opaque processes more transparent suggest possible consequences of using technology in teaching.

One way to think about student engagement is in terms of the degree to which students are involved in exchange relations with each other. If we assume that they learn more when they exchange with others, we need to understand how we might increase their chances for productive exchange relations. According to Molm and Cook, "Exchange relations develop within

structures of mutual dependence between actors.” (1995:210). They suggest further that “Social relations are formed and maintained because actors provide reciprocal benefits to one another over time” (1995:211). Requiring everyone to post on a website means that even actors who might not speak in class are providing benefits to others through their postings. Thus, the requirement of web-posting can foster social relations even among people who do not engage in them in the usual classroom format, a structural condition that may foster exchange. This paper investigates whether using supplemental web-based discussions changes the arrangement of social contexts in ways that are consequential for human behavior and learning (as suggested by Nardi and O'Day 1999, Snow 1999, Wiggins and McTighe 1998). More specifically, the paper considers whether and how digital technology might be used to change the nature of relationships among students and between students and ideas, and whether those changes in relationships are related to deeper understanding of sociological ideas and thinking.

Schematically, the set of relationships being explored are modeled in Figure 1.

However, there may be symbolic conditions that are necessary as well to encourage the value of exchange and to change the nature of relationships between students. Students may be used to thinking of their graded work as an exchange with a professor: they do the work and in return, they receive a grade from the professor. They may be less familiar with thinking of their intellectual work as being part of an exchange relationship with other students. Yet, in a seminar one of the goals is to have students realize that their understanding is partly dependent upon the learning and participation of others in the seminar. Each individual will learn more if others are more involved in the seminar, and vice versa. This sociological premise underlies the use of collaborative learning arrangements of various kinds (see, for example, Bruffee 1984, 1993; McKeachie 1994; Nelson 1994; Rau and Heyl 1990).

If one of our goals is to increase the potential for students to learn from each other, we may need to change the way they think about and relate to their fellow students. Students in prior seminars and in the beginning of this seminar did little to relate to the comments made by their fellow students. Indeed, they tended to ignore them. In an effort to change the social meaning of their postings, I provided feedback stressing the importance of relating to peers' prior postings, and they were graded in part on how well they did this.

Finally, drawing on the insights of Zuboff (1988), the paper considers the potential technology may have for increasing the transparency of teaching and learning. One question is whether using technology increases our insights into student learning (and impediments to it), thereby increasing our capacity to be reflexive about teaching and learning.

### **PEDAGOGICAL DESIGN ISSUES**

The first issue was considering how to use technology to foster student engagement. Several empirical studies suggest that if technology is used to create "collaborative learning communities" via web-based discussions, it can enhance student learning (Benston 2000, Jaffe 1997, Schutte 1996). Other studies note problems that may arise from the use of unstructured web-based discussion forums, for example, the problem of free riders who lurk but don't post on such forums (Groeling 1999), while Winiecki (1999) notes some of the conversational cues that are missing in on-line communications and how their absence might be overcome. Other research (Scheinberg 2000, 2001) suggests a non-digital strategy for structuring class discussion to help students become more aware of the roles they are playing (e.g., introducing a new topic, adding to an existing topic, making a transition, and so forth) with the goal of transferring those insights to their writing. Drawing on insights from these studies, I decided to use the web in an effort to facilitate student exchanges of ideas in ways that would supplement and enrich weekly

seminar meetings, increase student engagement, and enhance student understanding. For me this represented a new and potentially exciting way of using technology, and one I had not explored in earlier reflections on the potential of digital technologies for teaching (XXX 19XX).

Using web-based discussion may be especially valuable for students who understand best when they process information in visual or tactile ways (Gardner 1993, Johnson 2001, Sarasin 1999). Johnson also found that "Few students could be classified as exclusively visual or auditory or tactile learners based on the verbs they used in their written or classroom discourse; most used at least two and many, all three-- visual, auditory, and tactile verbs" (2001:174).

In an effort to overcome the limitations of unstructured web discussions, I decided to structure students' web-based discussions in two ways, first by the topic or question of the week and second by assigning specific discussion roles to different students on a rotating basis. Each week students played one of three roles. 1) **Staters** introduced one or more ideas by stating something important they learned from a reading, discussing what was the most difficult or confusing part of the reading<sup>1</sup> and raising new sociological questions that the reading suggested. 2) **Responders** replied to the ideas already posted and then posed further sociological questions. 3) **Integrators** combined and synthesized the readings, what others had said that week in seminar and their postings, and raised additional sociological questions. (See Appendix A for a copy of the instructions given to students). The reason for assigning specific discussion roles was to help students become more aware of the roles people play in discussion, help them to become more self-reflexive about how they play those roles, and facilitate their focusing on sociological ideas. To overcome the free-rider problem, the web-postings were a required part of students' work for the seminar, and after the first "practice" week, their postings were graded.

## CONTEXT OF THE STUDY

I conducted the study in the Fall 2000 semester. While the seminar is usually limited to 15 students, that semester there were 16. Of those 16, five were "whites" (one Italian-American, one Irish-American, one recently immigrated Russian-American, one Jewish-American, and one Greek-American), five were "blacks" (two African-Americans, two Caribbean-Americans, and one Native American/African-American biracial), three were Hispanic or Chicano (one Puerto Rican American, one Dominican-American, and one Chicano), and three were Asian (two Chinese-Americans and one Korean-American). This ethnic diversity was a tremendous learning resource throughout the entire semester, and it underscored the importance of developing a learning community among the students in the seminar.

There was also some diversity in the academic backgrounds of the 16 students because two had transferred in as juniors from community colleges, while the others had been at the university for their entire undergraduate career. While 12 were senior sociology majors, one was a senior political science major, one was a communications major in the school of education, one was in a division where students create their own majors, and one was a law and society major. This diversity meant that some had little understanding of what was expected of them in the way of sociological thinking, writing, and analysis. Also, many of the students did not know each other before the seminar. As Duffy (2000) notes, it is important to learn about our students so that we can understand more about their backgrounds, strengths, and needs.

I decided to use Blackboard as the course management software for organizing the discussion board rather than a designed-from-scratch course website (as I have done in some prior courses) because it offered an easy way to set up discussions and those discussions were easy for students to use. Students could simply cut and paste from their word processors rather

than needing to convert their comments or writing into *html* (hypertext markup language) web-formatted documents. The discussion feature of Blackboard works much better, in my experience, than using a Listserv that simply streams postings into students' (and instructors') email. Another plus of Blackboard is that it is accessible from my university's Home page. Finally, Blackboard is supported by ITS (Information Technology Services) at my university. Ease of use for students and faculty, access, and technical support are all important criteria that digital technologies need to meet if they are to be used in teaching. My reservations about Blackboard include its proprietary nature, its rigid and pedestrian format, and the fact that it is a closed system, making it difficult for other scholars and teachers to access the course materials or modify the courseware.<sup>2</sup> Access is a critical threshold condition for using any digital technologies in teaching. If students do not have ready access either from home or through easily accessible university labs, we cannot, in my view, use such technologies for required graded work.

In a conceptual sense, using the web as a forum for focused discussion in this way is the "independent variable" of interest. The first question is what evidence exists for changes in the nature of students' interactions with each other, with the readings, and with the ideas they were encountering during the course of the seminar?

### **EVIDENCE FOR ENGAGEMENT WITH THE IDEAS OF OTHERS AND THE READINGS**

To assess students' engagement with each other I coded and counted the number of references they made by name to other students' work in the first set of postings they did for the week of September 22, 2000 and for the last two weeks of the seminar (November 21 and 28). I calculated this as a percentage of the total number of other students' postings they could

potentially cite. In the first week, the Responders and Integrators responded to 30 percent of the other students by name. However, by the last two weeks, they responded to 100 percent and 88 percent of the other students' postings respectively (Table 1). This suggests that they had become substantially more likely to refer to other students' ideas by the end of the semester.

To measure engagement with the readings and with sociological ideas, I counted and coded the number of references they made by name to the author(s) or source(s) read and to sociological ideas and concepts. The average number of references in their postings to author(s) and/or readings declined from 8.91 in the first week to 3.14 in the last week of seminar, while the average number of references to sociological ideas increased from 17.91 to 22.0 from the first to last weeks (Table 2). This suggests that students focused more closely on the readings in the early part of the seminar, while toward the end they were becoming more involved in sociological ideas. While some might interpret this as indicating that students became less involved with the texts they were reading as the term progressed, others might interpret these results as revealing that they were using the readings as a springboard for discussing sociological ideas and were doing more of this as the term progressed. Both interpretations are consistent with the data.

### **EVIDENCE OF CHANGES IN SOCIOLOGICAL THINKING**

To obtain quantitative indicators of the degree to which students increased their ability to think sociologically, I computed the percentage of students who raised sociological questions and the mean number of questions they raised. These are two fairly objective measures on which we can reasonably assume a high degree of interrater reliability. In the first week's postings, 55 percent of the students raised one or more sociological questions, while by the last week 86 percent raised such questions (Table 3), and the mean number of questions raised in the first

week was 2.09 compared to 3.71 in the final week. These results indicate that students became more likely to raise sociological questions and raised more of them.

Complexity of thought and critical thinking are issues that have been widely discussed in the literatures of teaching and learning (see, for example, Bean 1996, Browne and Keeley 1998, Halpern 1998, Kurfiss 1989 or 1988, McMillan 1987, Nelson 1994, 1999, Perry 1970, 1981, Vygotsky 1978, Weast 1996). In an effort to assess the complexity of thought and critical thinking in their writing, I used a three point scale to code how sociological the most sociological question they raised was (coded 1 = "not at all," 2 = "somewhat," and 3 = "very"), and the complexity of thought they revealed in their postings (1 = low, 2 = medium, and 3 = high) and computed a mean score on these two measures for the first and last two weeks of the seminar. Finally, I coded their ability to distinguish between normative and empirical statements on a one to three point scale (coded 1 = "not well," 2 = "pretty well," and 3 = "very well") and computed a mean score (Table 4). On these three measures there is consistent evidence in the direction of greater complexity, with the largest increase occurring in the complexity of thought measure.

This quantitative coding scheme cries out for qualitative illustrations of postings coded as revealing greater or lesser degrees of complexity. In the first week of postings on Beverly Tatum's book, *Why are All the Black Kids Sitting Together in the Cafeteria*, an example of a posting coded as revealing somewhat less complexity of thought is the following excerpt:

But, how are individuals living in our society able to grow up with a clear sense of self and identity when they are sent contradictory and derogatory messages about who they are. As it is, individuals who belong to a certain, definitive group frequently develop a sense of uncertainty of identity as they age because of the prejudice and stereotypes that plague our society. But, it

seems almost impossible for individuals who are taught to avoid one group (or pretend not to be a member of that group) to grow up with a proud identity. I guess, Tatum would say that for kids who have some sense of racial identity and who choose to sit at the cafeteria table with others of the same race serve an important role of reaffirming their identity-- of creating pride in their heritage. And, in that sense, her analogy with the cafeteria table seems to make perfect sense. (07)

This statement is a reasonable summary of one of the themes in the Tatum book in which she discusses the problematic aspects of achieving a positive self-conception when one's racial or ethnic identity is denigrated by the larger society. However, there is no critical distance from, or evaluation of, Tatum's ideas. Compare the following excerpt which was coded as being of a higher level of complexity:

And if people take this book's words to heart, what would be the implications? For example, in Chapter 5 Tatum mentions considerable evidence that Black students at historically Black colleges and universities achieve higher academic performance, enjoy greater social involvement, and aspire to higher occupational goals than do their peers at predominately White institutions (p. 79). Should Black students be encouraged to go to Black colleges? And even if such would be better for students on an individual level, what will be the larger social implications? If Blacks are better off-- perhaps even best off-- when interacting with other Blacks does this suggest that various groups are best off only socializing intra-, rather than inter-, group?

Does such a notion preclude the possibility of a racially-mixed and/or racially-harmonious society once and for all? (14)

In this posting the student is using a basic understanding of a central theme in Tatum's book as a launching point for considering its implications for a racially-mixed society. The posting goes beyond simply summarizing what Tatum is saying to raising new questions about what her ideas might mean for social values, policies, and decisions. As such it opens up further discussion. For these reasons I coded it as revealing a higher level of intellectual complexity. Another posting coded as revealing a higher level of complex thinking noted:

Although Tatum is a psychologist, I believe she incorporates a view that is highly sociological within this work. She is addressing society, and all the ethnic groups contained within, and giving a prescription on how to become comfortable with race and openly discuss it. My question is if it does happen that we begin to unload the term 'race' and are able to discuss it, not only within our own racial or ethnic grouping, will that actually work to break down the system of advantages? Will an open discourse of race relations lead to the end of racism? Is this possible? (11)

This comment raises a profound sociological question about whether improved discourse can change power relations. Like the previous example, it builds upon the ideas presented by Tatum to question their ultimate relevance and efficacy. In my view this shows a deep understanding of sociological principles, and a high level of complex thinking.

Another source of data on whether and how using the web for focused discussion may have influenced student learning are the open-ended surveys I gave students in the middle of the term and in the last seminar. In the October 27 survey I asked, "What about this seminar is

helping you to gain a sociological understanding of the relationship between race and education?" Thirty-eight percent (6/16) volunteered that the postings of other students were helping them gain a better understanding, while 63 percent did not volunteer that the web postings were helpful, stressing instead the readings, class discussions, or other factors. However, when asked directly in the mid-term survey, "How do you think using a web-site for the seminar is affecting your understanding?" 63 percent were uniformly positive, and 38 percent had mixed responses.

In the optional end-of-term survey I asked, "How has using digital technology enhanced and/or hindered your learning in the Race and Education seminar during the Fall 2000 semester? Please give examples showing how and why." Of the eight<sup>3</sup> students responding, 75 percent were uniformly positive, 13 percent gave a mixed response, and 13 percent gave a negative response.

Many students noted in these anonymous surveys that they learned from others' comments on the readings. For example, one wrote: "I think that digital technology has definitely helped my learning experience in this class. Using Blackboard was very helpful because it allowed us to read all of our classmates writings, showing us their ideas and questions. I also felt that these postings were helpful because I was able to go back and review these writings to refresh my memory on readings and issues that we discussed in seminar." (02)

Another wrote, "The discussion board was a great way to find out what other people thought of the reading assignments. Coming to class with printed out postings of others work allowed me to really concentrate on the discussion instead of having to write down what others were saying. Plus by reading others opinions before class allowed me to ask questions I still had about the readings or their thoughts (clarification). Postings to the web itself was not difficult

and except for a few problems in the beginning of the semester (not being able to login) was actually fun." (05)

A third wrote, "using the Blackboard allowed me to become more easily acquainted with other members of the class. Using the postings of classmates as a resource; enhanced my understanding of the material, and allowed me to compare and contrast various views & opinions." (06) (For a complete listing of their end of term comments, see Appendix B.)

This quantitative and qualitative evidence suggests that students gained greater understanding of sociological concepts and thinking. It raises the further question, however, of what processes might be operating to facilitate such learning.

### **PROCESSES CONTRIBUTING TO OUTCOMES**

There seem to be a number of processes that helped students learn from the web-based discussion. These include availability and ease of review, hearing from silent classmates, raising valuable new questions, becoming knowledge producers, "going meta," and seeing the excellent work of others.

#### ***Availability and Ease of Review***

Many mentioned the benefits of having the discussion board available 24/7 (i.e., 24 hours a day, every day of the week) and from anywhere there was a web connection. Others noted how much easier it was to retrieve and review earlier postings than if they had a sheaf of papers. Kelly observed a similar consequence in his American history course (Kelly 2000).

#### ***Hearing from Silent Classmates***

Another mechanism was the way web-based discussion made the thinking of silent members of the seminar visible to all. One of the most profound thinkers NEVER spoke in seminar, despite my continual encouragement in private conversations. An excerpt from one of

her early Integrator postings shows what she had to contribute.<sup>4</sup> In a seminar or class where students did not share their work, none of the other students would ever have seen the way she thinks. This is one of the strengths of using web-based discussion to supplement class discussion, and it was recognized as such by the students. One wrote in the mid-term survey, "It is helpful to require postings from everyone-- then people who perhaps do not get a chance to speak in class can still have their views heard (or seen, as it may be)." (097) Thus, the web postings require everyone to be involved in the community of learners. This eliciting of the silent voices encourages me to continue using web-based discussions to supplement class discussions in the future. As well as increasing participation, however, the web postings provided substantive contributions by raising valuable questions.

### ***Raising New Questions***

Student postings generated helpful questions that were productively discussed in seminar. For example, several students puzzled over the role of grandparents. As one wrote, "This topic seems to be fuzzy because it does not say how they affect the children through the parents of the grandchildren..."(05). Part of the next seminar was spent discussing how the educational levels of grandparents might affect the educational achievement of grandchildren and many members of the class, from various racial/ethnic groups, had many interesting ideas to contribute. Their illustrations suggested possible reasons for the statistical correlation reported without elaboration in the readings. The clarification obtained was evident in a subsequent student posting that synthesized the discussion very well, putting the understanding developed in seminar into the student's own words.

### ***Becoming Producers of Knowledge, Not Simply Consumers***

Most importantly, the moments of difficulty portion of the "Stater" role sometimes encouraged students to pause and ponder a difficult idea and then struggle to make sense out of it themselves. For example, one student noted, "The murkiest part of this reading was the difference between prediction bias and selection system bias. When I first read about them, they seemed to be the same type of thing just dealing with different institutions, prediction dealt with schools and selection dealt with work places." Having paused, she went on to formulate her own interpretation,

I think what Jencks is trying to express is that using tests as a determinant of how one will perform at school or in work is not a good idea because tests can both under and over predict one's actual performance. Jencks mentions how it is hard to break with tradition and to understand terms in a new and more correct way. If so many psychologists and sociologists know that the majority of people and institutions are using both the terms and the tests in an incorrect manner, why isn't more work being focused on this rather than trying to figure out what causes the gap? (10)

We know from research on learning that when students put new ideas into their own words they are more likely to understand and retain those ideas. The author is also raising a profound challenge to the way the field has defined and analyzed the problem of racial differences in school achievement.

### ***"Going Meta"***

The postings also provided students with opportunities for engaging in metacognition, that is, becoming reflective and self-aware about how they and others were thinking and writing.<sup>5</sup> The process of identifying difficulties gave one student taking the role of "integrator and

synthesizer" of the postings, discussion, and readings for the week a gentle way of asking fellow students to elaborate or clarify the points they were making. She wrote,

Also, on a side note, I would like to express the difficulty I sometimes have in understanding various postings. I think that people sometimes assume a certain understanding or body of knowledge on the part of the reader and thus do not go into great enough detail or fully explain their positions or statements. For instance, in [09's] and [10's] [posting] the statement is made that 'I do not believe that on an individual level, racelessness is pragmatic' and... simply left it at that. I was left wondering why they felt that way and in what manner they were referred [referring] to 'individual level.' Also, [05] writes about various subcultures that emerge with second-generation immigrants, discouraging hard working students; 'but on the flip side to this an educational movement was starting throughout universities all over California.' I was unsure as to exactly why such subcultures were formed, why and in what way it is 'evident among Chicano/Latino students,' what educational movement was being referred to, and how that movement was in opposition to the various subcultures. [13]

One goal in teaching is to help students become critically aware of how they can improve their own thinking, writing, and learning. A comment such as this from a peer may be more effective than one from a professor.<sup>6</sup> If our ultimate goal is to help students become successful learners, producers of knowledge, and contributors to educated and/or scholarly discourse, these examples illustrate some of the ways that the focused web postings may encourage undergraduates to practice such performances.

### ***Seeing Excellent Work***

Making outstanding student thinking visible also helped other students to see what really good work looks like. Several students said during my office hours, "some of these papers and postings are brilliant." One of these speakers was someone with very high ambitions who needed to understand more about what her own work needed to meet the goals to which she aspired. Besides facilitating learning, the weekly web postings also contributed to more effective teaching.

### **LESSONS FOR TEACHING**

Using the web made student thinking more visible and provided helpful feedback to me as the instructor, so I could modify what I did either in subsequent meetings or in future iterations of the seminar. The use of web-based discussions encouraged me to slow down and look more closely at student understandings. By having all student writing on the web, it made their thinking more visible and, like the students, I could more easily review it and go back to it with new questions. Of course, such review is possible with paper copies of student work, but that requires making copies of everything students write and having them with us at the office and at home, or whenever we might wish to systematically review what they have done. Slowing down and continually reviewing their work allowed me to identify knowledge or skill gaps and to see problems students were having understanding new material. Both of these types of problems showed me several places where I could and should provide more "instructional scaffolding"<sup>7</sup> to them to help advance their understanding and level of performance. It also encouraged me to adjust the workload required of students as the term progressed, and it led me to reorganize the design of some aspects of the seminar for the future.

#### ***Identifying Knowledge or Skill Gaps***

The "moments of difficulty" portion of the "Stater" postings helped to me to identify gaps in students' knowledge, skill, or tool repertoire that could be addressed in the continuing conduct of the seminar. For example, terms that were not understood could be identified and clarified by another student or the instructor. Other times, a reading assumed certain background knowledge. For example, a student wrote, "The murkiest point in this reading is that a child's birth weight affects their educational attainment. What does birth weight have to do with vocabulary and math scores?" (16) The missing "common knowledge" could then be supplied not only to that particular student but to everyone in the seminar via the web. The approach also helped to identify skills and tools that students needed. Several students noted that the murkiest part of some readings was "all the graphs and statistics." These comments changed the conduct of the seminar. When discussing important studies I did not assume that everyone understood the tables, but instead we discussed important tables in the seminar. Web postings identified other murky aspects of readings as well.

### ***Articulating Problems in Understanding New Material***

Asking students to post what they found most difficult made their problems understanding new material visible so those problems might be engaged. For example, one student wrote, "Although I am clear on reactive correlation I am a little unclear on the fundamental differences between active and passive correlation" (15). This posting prompted me to post a lengthy response on the discussion board, something I could have done in class if we had unlimited class time. So, using the web allowed the dialogue to continue outside of class, gave me more time to reflect on my response, and resulted in devoting more time to considering the issues raised, as Bass and Eynon (1998) have also noted. The give and take fostered by the

web postings and my responses to them seemed to make students feel comfortable about discussing the workload in the seminar.

### ***Adjusting the Workload***

After the first few weeks some students began saying that 16 postings per week were too many, both to write and to read. They also had to write longer memos on outside readings, and they were trying to work on a mid-term oral report and a final project and paper. So, beginning in the week of October 10, I suggested they do the posting in teams of two. My rationale for this was that it would keep them all involved each week while at the same time reducing their work. Within several weeks students were saying that it was difficult to collaborate, since they didn't have the same schedules and there wasn't much time in a week to read the assignments, discuss them, write a draft, exchange the draft, and finish it for posting. What sometimes happened was that one person would write the first half of a posting and the other person the second half, with little or no interaction between them. One person asked if she could do the postings alone. Some liked this idea, while others preferred collaboration. I agreed that starting November 7, they could have the option but not the requirement of collaborating with someone else who was doing the same role that they were. By the week of November 12, after some further discussion, we agreed that half the seminar would play a posting role each week, giving the others the chance to do an outside reading memo or work on their term papers. Since they all had a considerable amount of reading to do each week, this seemed to me to be a reasonable adjustment in the required workload. Besides adjusting the amount of work, the visibility of students web postings suggested additional ways I could facilitate their learning.

### ***Seeing the Need for More “Instructional Scaffolding”***

As I saw some of the students struggle to figure out what to write, I decided that it would be helpful if they could see some sample postings in advance. I had their first posting be a practice one, on which they received written feedback from me of the type they would continue to get for the semester, but which did not count toward their grade. However, when I next taught the seminar (fall 2001) I prepared a collection of samples of anonymous prior "performances" (postings) to hand out,<sup>8</sup> and asked students to analyze the strengths and limitations of those postings. The purpose of this was to help them to discern differences in the connections made to others' postings and to sociological ideas, as well as in degrees of complexity of thought. One consequence of doing that was that they were much quicker to respond directly to other people's postings that semester.

I also began developing a taxonomy of what I mean by "thinking sociologically," to try to make my tacit knowledge more explicit. In the fall 2001 term I gave students a copy of my work in progress, "Thinking Sociologically: Some Points of Entry," for them to refer to as they try to formulate "sociological" questions. I also modified the feedback form (Appendix C) I gave students. In Fall 2001 I made a separate feedback form for each of the three roles, so they could see more clearly what was expected (Appendix D). Besides adding to the pedagogical aids I provided, I saw some ways to redesign the seminar.

### ***Reorganizing Some Design Elements of the Seminar***

I decided to open each subsequent seminar by discussing the Responder and Integrator postings that were made after the prior week's seminar. The prior year I often tended to press ahead with the new topic of the week, which meant that some very stimulating questions were not pursued. While I did sometimes open with an exceptionally good question (for example, "were there any slave societies that did not become caste societies, and if not, why not?"), I did

not do this as a general rule in 2000. However, I decided that doing so it would affirm the efforts of students who posted after the prior week's seminar, and encourage other students to read those follow-up postings.

In fall 2001 I also announced the existence of an open-ended discussion board on each week's question or topic where people could post comments or questions that were outside the highly structured assigned roles. Here students could write whatever they wanted to, bringing in rich anecdotal material from their lives. I hoped this would help them to become more self-aware about various types of writing in the social sciences, and the value of those various kinds. However, I did not require students to make some number of these free-form postings in a term nor did I grade them, and therefore I did not avoid the free-rider problem identified by Groeling (1999). Few students availed themselves of the opportunity, perhaps because of the very high work load. So far this discussion suggests that the use of supplemental, web-based discussion was uniformly positive. It is important, however, to consider possible negative consequences.

### **WERE THERE ANY NEGATIVES?**

One student said the 2000 seminar was too much work. I was surprised it was only one. She was the only student in the seminar who did not have access to the web from home. Although there are numerous labs and locations around the university where students can obtain access to the web, she only came to campus three times a week. I know from the fact that she was my advisee and had failed several other courses in the past, that she sometimes had trouble sustaining interest in her courses. Nevertheless, the issue of equal access to the web that she raises is a very real one, and needs to be a major factor affecting decisions to use technology in teaching.<sup>9</sup>

There were technical difficulties gaining access to BlackBoard at the beginning of the semester, but they were resolved relatively early in the term. I dealt with this by promising not to penalize students for late postings due to technical problems beyond their control. These technical problems did not recur in subsequent semesters.

The workload for me as instructor was quite high. Reading and writing comments on each posting took me between 30 and 60 minutes per student each week, so I found that my engagement with the seminar also increased. Like their peers, I was curious to see what students thought about the readings for the week, what problems they were identifying, and what new questions they were raising. Thus, I also stayed engaged with the subject of the seminar on a nearly daily basis. I got to know the students better as individuals than I have in the past. Perhaps as a result, I initiated several outside events with them, including a field trip to the Ellis Island museum of ethnicity and immigration and a pot-luck supper in my home where each student brought food associated with either their ethnic group of origin or an ethnic group they were studying for their mid-term reports. As a result, this was one of the most interesting and satisfying teaching experiences I have ever had. However, it was also very time-consuming.

### **CONCLUSIONS**

There is some evidence of covariation in the quantitative data reported here. Using the web is correlated with more interdependency, more engagement, and greater complexity of thought through time. Furthermore, we have been able to identify some of the processes through which it may exercise its influence. However, it would be a stretch to claim that this evidence proves a causal relationship, since we have little evidence ruling out rival explanations for the observed relationships. Such factors as self-selection, maturation, external events, getting to know each other better, the readings themselves, or other things might be the real explanations

for changes in student interactions and deeper understandings, rather than the use of the focused web-based discussions.

Nevertheless, my provisional conclusions include the idea that students can learn a great deal from their peers if we can design creative ways of structuring their interactions. Using focused web-based discussions seems to offer some valuable potential for doing this. By requiring students to post on particular topics or questions and by giving them specific roles to play, the problems of free-ridership and unfocused discussion were at least partially overcome, and some benefits of web-based discussion were realized. The posting process heightened students' engagement, partly because they were interested in what others thought about the readings. The structured nature meant they consulted the website at least three times a week outside of class, thereby increasing "time on task" i.e., the time they were involved in discussions of issues for the seminar.<sup>10</sup>

Students were able to review their peer's writings easily throughout the term. They drew on each other's comments increasingly as the term progressed. They saw what exceptionally good work looked like, which was humbling for some students, and they learned the views of silent members. The questions or difficulties that some students articulated were helpful to others, and peers contributed useful responses to those questions from their backgrounds. Public posting also elicits a certain level of peer pressure for timely and cogent postings. Moreover, anyone who fails to do the work is highly visible to everyone else. This puts additional urgency on the need to participate in a timely way.

Although the students did not articulate it, I think having multiple responses posted about a particular reading shows that there are a number of important points in any reading, and that various people see different things as most valuable. Consequently, I believe it also helped

students gain additional insights into the readings. While the technology may have facilitated some of these outcomes, it is not implausible that many of them might be obtained through pedagogies that do not use technologies. What is unique to the use of digital technologies is the potential they offer for greater reflexivity within any given activity.

As Shoshana Zuboff, *In the Age of the Smart Machine*, notes, information "makes its contribution to the product, but it also reflects back on its activities and on the system of activities to which it is related." Thus it "not only produces action but also produces a voice that symbolically renders events, objects, and processes so that they become visible, knowable, and shareable in a new way.... It provides a deeper level of transparency to activities that had been either partially or completely opaque" (1988: 9). Using focused web-based discussions forced me to confront some very basic questions both in my discipline and in my teaching. Within the discipline, I became increasingly aware that we need to make explicit what we mean when we say "thinking sociologically" or "doing sociological analysis" or a good "sociological question." What central principles are most important for students to understand? This led me to develop the handout entitled "Thinking Sociologically: Some Points of Entry," which is my preliminary attempt at constructing a taxonomy of sociological thinking.

The second level of transparency concerns pedagogical practice. How might I best teach these principles to students? What knowledge and skills do they need to gain deep understanding? What background knowledge and skills am I assuming they have? What else might I do to help them understand better? How do I need to adapt my pedagogical practices to enhance their learning? I am amazed at how much making student thinking visible by using the web and analyzing their postings taught me about my teaching and how it might help students to learn better. I obtained many ideas about what worked, what did not work so well, and what else

I might do to facilitate their understanding. I have also been interrogating the readings used more critically and have made some changes in those. For example, I have been adding more readings on educational "success stories" to deepen our analysis of theories trying to explain the educational gap by ethnicity. What more do we need to learn about the conditions under which students of all ethnicities can learn successfully?

The “difficulties” strategy adapted from Mariolina Rizzi Salvatori helped to identify lacunae in background knowledge or problems in understanding new concepts that could be addressed. It also led students to develop their own interpretations. I plan to continue to stress this very productive strategy. Walking through the statistical tables and charts in seminar helped to offset skill deficiencies that interfered with understanding. I began doing this earlier in the term in subsequent semesters. I revised the guidelines and feedback forms for student postings and prepared a packet of samples that students analyze in class before they do their first posting.

This research provides some provisional insights into how focused web-based discussions may increase student engagement and understanding and suggest ideas for improving pedagogy. It also stimulates questions for additional research.

## **QUESTIONS FOR FURTHER RESEARCH**

### ***More Consideration of the Implications of Technology in Higher Education***

What can we do to insure that digital technologies are used in mindful ways in higher education, to further the pedagogical goals of deep understanding and inquiry, rather than for their own sake, in an effort (misguided in my view) to make money, attract students, or because it is “the thing to do”?

### ***Need for Organizational Analyses of Higher Education***

I see a need for case studies of different types of higher educational institutions that have developed and sustained a culture of reflexivity about teaching and learning and encouraged the scholarship of teaching and learning in general and the use of technology in teaching in particular.

### ***Developing a Theory of Teaching/Learning***

A qualitative case study is useful for generating hypotheses and helping to build theory. The theory of teaching/learning I am evolving is an incremental one, rather than a big bang theory or a single factor, “silver bullet,” solution. It involves how reflections about, and optimization of, many small decisions, choices, and actions can improve learning. Of course overall curricular and course design matters, but within that framework, reflection on and attention to many smaller processes may also make a difference. We need to remember that a single course cannot teach critical thinking by itself, as we are reminded by Halpern 1998, McMillan 1987, and Pascarella and Terenzini 1991.

### ***The Scaling Up Issue***

How might I or others apply what has been learned here about the value of focused, web-based discussion to a large Introductory Sociology class? The work of Althausser (1992), Althausser and Matuga (1998), Chong (1998) and McKinney (1993) provide some useful starting points. Spring semester 2002 I tried to apply what I had learned from this sequence of pedagogical reflections to a relatively large (50-student) section of Introduction to Sociology. I decided that I could not read postings from 50 students twice each week, nor could they read that many. So, I tried to adapt what I had learned. I formed students into groups of about six apiece. Each class period, one group led off with a brief oral presentation on the readings for the day. They were asked to 1) state the most important thing they had learned from that reading, 2)

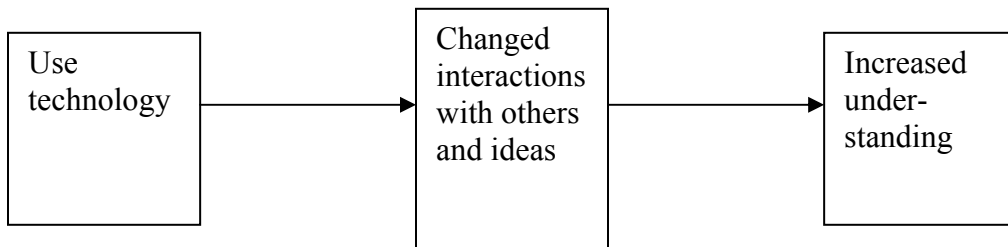
indicate what was most murky about it, and 3) raise one or more new sociological questions.

The groups were encouraged to use web spaces I set up for them to discuss their presentation in advance. I report this to suggest that there are multiple ways to use the web in teaching sociology and to increase student engagement. What we learn from one application may be adaptable to different venues, but may require modifications and further trials.

Perhaps the most important conclusion to take from this paper is that the scholarship of teaching and learning is an on-going process of experimentation, reflection, adaptation, further reflection, and assessment. If our goal is to improve student understanding, we cannot simply do one study and be finished. We need to continue our investigations, share them with others for their feedback, learn what others are doing, and try to improve our educational designs.

Figure 1

Schematic Representation of Variables being Investigated



**Table 1**

**Percent of Total Number of Potential Students Cited**

<b>Date</b>	<b>Percent Cited</b>
9/22/00	30.36%
11/21/00	100.00
11/28/00	87.5

**Table 2**

**Mean Number of References to Author(s) and/or Readings and to Sociological Ideas**

<b>Date</b>	<b>Mean Number of References To Author/Readings</b>	<b>Mean Number of References To Sociological Ideas</b>
<b>09/22/00</b>	<b>8.91</b>	<b>17.91</b>
<b>11/21/00</b>	<b>4.5</b>	<b>22.0</b>
<b>11/28/00</b>	<b>3.14</b>	<b>22.0</b>

**Table 3**

**Percent of Students Who Raised Sociological Questions  
and Mean Number of Questions Raised**

<b>Date</b>	<b>Percent Who Raised Sociological Questions</b>	<b>Mean Number of Sociological Questions Raised</b>
<b>9/21/00</b>	<b>55%</b>	<b>2.09</b>
<b>11/21/00</b>	<b>88</b>	<b>3.25</b>
<b>11/28/00</b>	<b>86</b>	<b>3.71</b>

**Table 4**

**Complexity of Questions Raised, Complexity of Thought, and Ability to Distinguish  
Between Normative and Empirical Statements**

<b>Date</b>	<b>Mean Complexity Score of Questions Raised</b>	<b>Mean Complexity of Thought Score</b>	<b>Mean Score on Ability to Distinguish Empirical &amp; Normative</b>
<b>9/21/00</b>	<b>2.50</b>	<b>1.73</b>	<b>2.0</b>
<b>11/21/00</b>	<b>2.71</b>	<b>2.38</b>	<b>2.5</b>
<b>11/28/00</b>	<b>2.71</b>	<b>2.43</b>	<b>2.71</b>

## Appendix A

### Instructions Given to Students about their Postings

Department of Sociology

Fall 2000

#### Seminar on Race and Education, V93.0936.001

##### Description of the Web-site Discussion Group Postings You will be Doing

In order to improve your understanding of the materials being read and discussed, to improve the quality of the discussions in seminar, to improve the quality of sociological questions you can formulate, and to enhance your sociological thinking, you will be asked to play various roles in the web-based discussion group connected with the seminar.

In the weeks you do not have a brain dump memo, you will sign up to play one of three roles in the Web Discussion Group:

- 1) **Staters.** In this role you will draft and post on the class web-discussion site **no later than 1 p.m. of the Monday** before our seminar on Tuesday, your one- to two-page reflections (no more) on the following:
  - A) The most important understanding I obtained from these readings is \_\_\_\_\_.
  - B) The murkiest part (or point) in these readings is \_\_\_\_\_. (Being able to identify a problem with understanding is already a form of understanding.)
  - C) Important concepts, terms, references, or examples I don't understand in this reading are \_\_\_\_\_.
  - D) One or more sociological questions this reading suggests to me are \_\_\_\_\_.
- 2) **Responders.** In this role you will reflect on the questions raised by the Staters, drawing upon your understanding of the readings for the week and our discussion in the seminar, and you will raise further sociological questions that the readings, Staters' postings, and seminar discussion suggest to you. You will post your one- to two-page responses and queries **no later than 6 p.m. of the Wednesday immediately after our seminar.**
- 3) **Integrators.** In this role you will read all the Stater and Responder postings by others, reflect on them in light of your understanding of the readings and our seminar discussion, and write a one- to two-page posting **no later than 6 p.m. of the Friday after our seminar.** Your Integrator posting should address the following:
  - A) What common themes or issues do you see in the readings, postings, and seminar discussions to date?
  - B) What major points of divergence, if any, do you see in these materials?

- C) What issues do you feel have not been explored or discussed so far that need to be raised?
- D) What further questions do you think we should carry forward to our future readings and seminar discussions?

While some of you may feel more affinity with one rather than another of these roles in a discussion group, you will get the chance to play all three roles.

## Appendix B

**Open-ended Responses from Students to Question: How has using digital technology enhanced and/or hindered your learning in the Race and Education seminar during the Fall 2000 semester? Please give examples showing how and why."**

01: Using technology this semester was quite interesting & new. It was the first time I used Blackboard & I found it very useful. Because everything was posted I never had to worry about losing anything. Also, it was accessible anytime anywhere. I also liked the fact that I could post my assignment at anytime. In this way we were able to read each other's posting, which would have been quite timely & difficult if they weren't posted. (sic.)

03: I think the digital technology we used this semester was helpful in gaining more knowledge in the Race and Education seminar. It was helpful to hear people's reactions to the often-difficult material we were reading. However, I think the strict barriers that were placed on our postings hindered our ability to freely express our thoughts. For example, having to answer all those questions (what was murky? Etc) prevented me from freely responding to the material and/or to the peers in class.

04: Blackboard System: Digital technology has enhanced my learning a lot. It has given me the opportunity to share and reflect on my ideas on readings. Also it gives me a chance to view other peoples responses to certain issues and feed off them. It allows me to come to my own conclusion, as well as come to a collective conclusion with the class.

ERIC: I enjoyed using the ERIC database because it holds a lot of information and articles. Even though I didn't find anything relevant to my topic on ERIC, the display of key words at the bottom of the page gave insight to my research. It gave me keywords for other searches.

05: Using digital technology really enhanced my learning experience in the Race and Education seminar (fall 2000). I found the postings of course materials and announcements especially critical. Since I do not use [campus] email it was wonderful to have important information

posted where I did not have to worry about missing it. These postings also cleaned up a lot of confusion about which assignments were do (sic) and who was doing them. This is also convenient if you loose (sic) or missplace (sic) something. The discussion board was a great way to find out what other people thought of the reading assignments. Coming to class with printed out postings of others work allowed me to really concentrate on the discussion instead of having to write down what others were saying. Plus by reading others opinions before class allowed me to ask questions I still had about the readings or their thoughts (clarification). Postings to the web itself was not difficult and except for a few problems in the beginning of the semester (not being able to login) was actually fun.

06: Using the online Blackboard enhanced my learning this semester. It was easy to get information that is otherwise not readily available. Also, using the Blackboard allowed me to become more easily acquainted with other members of the class. Using the postings of classmates as a resource; enhanced my understanding of the material, and allowed me to compare and contrast various views & opinions. In addition, evolving versions of the syllabus, and announcements made communication between myself and the professor very easy and efficient. Overall, I was very pleased w/ using the Blackboard and look forward to using it again in the future.

07: 1) I thought that because we were using blackboard a lot more was expected of us outside of class. On top of all the reading, we were expected to read and post on blackboard. It was a little disorganized and disorienting. E-mail use was fine.

2) We should focus more on the readings-- not the postings. We lost a lot somewhere along the line.

3) Digital technology forced us to focus on quantity as opposed to quality.

08: I would not say my experience was hindred (sic) but technological problems often bought (sic) undo stress. I did enjoy reading the postings but am generally more attracted to course discussion. I do understand that since the class meets once a week it is necessary to have another way to present, however, reading the postings, creating the postings all within a time limit was quite difficult.

I think the process would have been better if the Queries were posted by one or two people as the Brain Dump was. Having five people each respond on three separate days was very hard to keep up with.

Sociofile and ERIC are electronics I have frequently used as (and) (sic) think are great assets.

The Blackboard was also an asset but I think less postings should be implemented for next time.

## Appendix C

### Feedback Form I used to organize comments for Students, Fall 2000

Comments on \_\_\_\_'s [Name] \_\_\_\_\_ [type of] Posting on \_\_\_\_ [Name of Authors] for  
\_\_\_\_\_ [date]  
from XXX [date]

#### Major Elements:

- 1) The memo clearly states, responds to, or integrates and synthesizes important ideas from the readings, seminar, and others' postings.
- 2) It helps to advance our understanding of the big questions we are considering.

You bring out more than others have that part of the reason for adopting a raceless persona may be to drop the negatively stigmatized racial identity imposed by the dominant group.

- 3) It poses good new sociological questions.

#### Less Major, but still important Elements:

- 4) The memo is grammatically correct, uses correct spelling and punctuation, and is proofread carefully.
- 5) The author reveals his or her awareness of the difference between normative and empirical statements and is cautious about making normative statements.
- 6) The author supports general statements with credible data or evidence.

#### Common abbreviations I use:

ROS= run-on-sentence

SS= sentence structure (as in there's a problem with it)

sp=spelling

Qs=questions

AWK= awkward sentence structure

?= I'm not sure what you mean here

## Appendix D

### Specialized Feedback Forms Used to Respond to Students' Postings, Fall 2001

#### **Comments on \_\_\_\_\_'s Stater Posting on \_\_\_\_\_ Readings for \_\_\_\_\_(date), from XXX, (date)**

Here I provide feedback on whether or not I can see in your posting the major and minor elements asked for the role you are playing, and my assessment of how well you provide those elements. Finally, I offer any additional general comments I have on your posting.

#### Major Elements:

- 1) Your posting clearly states important ideas from the readings.
- 2) You identify what was the most difficult part of the reading for you and/or note important concepts, terms references, or examples that you did not understand in the reading.
- 3) You raise good new sociological questions.

#### Less Major, but still important Elements:

- 4) The memo is grammatically correct, uses correct spelling and punctuation, and is proofread carefully.
- 5) You reveal your awareness of the difference between normative and empirical statements and you are cautious about making normative statements.
- 6) You support your general statements with credible data or evidence.

#### General Comments:

Common abbreviations I use:

ROS= run-on-sentence

SS= sentence structure (as in there's a problem with it)

sp=spelling

Qs=questions

AWK= awkward sentence structure

?= I'm not sure what you mean

evi? What evidence do you have to support this statement?

**Comments on \_\_\_\_\_'s Responder Posting on \_\_\_\_\_ Readings for \_\_\_\_\_ (date),  
From XX, (date)**

Here I provide feedback on whether or not I can see in your posting the major and minor elements asked of the role you are playing, and my assessment of how well you provide those elements. Finally, I offer any additional general comments I have on your posting.

Major Elements:

- 1) Your posting clearly responds to the questions raised by the Stater postings, drawing upon your understanding of the reading and our seminar discussion.
- 2) You try to respond to what Stater postings have identified as the most difficult part of the reading and/or important concepts, terms references, or examples Stater posting flagged?
- 3) You raise good new sociological questions drawing on the readings, Stater postings, and seminar discussion.

Less Major, but still important Elements:

- 4) The memo is grammatically correct, uses correct spelling and punctuation, and is proofread carefully.
- 5) You reveal your awareness of the difference between normative and empirical statements and you are cautious about making normative statements.
- 6) You support your general statements with credible data or evidence.

General Comments:

Common abbreviations I use:

ROS= run-on-sentence

SS= sentence structure (as in there's a problem with it)

sp=spelling " " " " " " " "

Qs=questions

AWK= awkward sentence structure

?= I'm not sure what you mean

evi? What evidence do you have to support this statement?



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<sup>1</sup> This part of the assignment was inspired by Mariolina Rizzi Salvatori (2000).

<sup>2</sup> For an alternative to proprietary software such as this, see the discussion of MIT's proposed open system software (Young 2001a, 2001b).

<sup>3</sup> The response rate may have been so low because the students also had end of term evaluation and reading evaluation forms to complete during that last class. They were also wanting to continue our discussion of affirmative action.

<sup>4</sup> A partial quote from what she wrote: "Our discussion in-class and via Blackboard regarding the relationship between race and education has centered on essentially three aspects of this relationship: 1) its causes, 2) potential solutions, and 3) the concerns it raises for each of us on a very personal level.

A consensus seemed to be reached in terms of the causes for the racial disparity in test scores, school achievement, educational attainment, etc.—or at least, that there are multiple reasons/explanations...." (14)

<sup>5</sup> For further discussion of "metacognition," see Althauser and Darnall 2001: 26 and Halpern 1998: 451, 454.

<sup>6</sup> For further discussion of peer feedback see Althauser and Darnall, Annis 1983, Bargh and Schul 1980, Bean 1996: 222-225, Nebware and Deci 1984, Flynn, McCulley, and Gratz 1982, and Herrington and Cadman 1991.

<sup>7</sup> The pedagogy of "scaffolding" or "assisted performance" is discussed by Collins, Brown, and Holum 1991, Hedegaard 1990, Moll and Greenberg 1990, Tharp and Gallimore 1998: 44-56, and Vygotsky 1978.

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<sup>8</sup> This idea was suggested by Jack Bookman of Duke University, personal communication, January 2001.

<sup>9</sup> The issue of the “digital divide” has been widely discussed by such authors as Benson et al. 2001, Department of Commerce 2000a, Ebo 1998, and VanDusen 2000.

<sup>10</sup> Blackboard reports the number of times a particular posting has been accessed and allows instructors to see which students in particular have accessed a specific posting. Of course, accessing a posting is not an adequate indicator of how carefully and thoughtfully a given posting has been read. That is better measured by a content analysis of their responses to postings.