

# ***FACILITATING STUDENT INTERACTIONS THROUGH DISCURSIVE MOVES***

## ***An Instructor's Experience Teaching Online Graduate Courses in Educational Technology***

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As more and more higher education programs are offered using Web-based learning environments, instructors need to better understand the implications of using BlackBoard or similar tools to maximize student participation and facilitate learning through rich, thoughtful discussions. This study explores student participation in electronic discourse (e-discourse) in several graduate-level courses in an educational technology program, using discourse analysis methods to help understand online students' participation patterns. The instructor used discursive moves in the threaded discussions in these classes to stimulate student participation and improve the overall quality of participation with the hopes of increasing learning. The results are promising with regard to the potential of Web-based environments to challenge students and promote conceptual learning through discussion.

According to the International Society for Technology in Education (ISTE, 2000), teachers should use technology for professional development (NETS-T, standard V.A) and to communicate and collaborate with their peers (NETS-T, standard V.D). As a result, and to broaden their graduate offerings, many colleges and universities are moving their educational programs online, via Web-based learning environments (WBLE) like BlackBoard and WebCT.

In this study, discourse analysis was used to examine a corpus of data collected over several terms to begin to answer questions about the nature of student participation online and the impact instructors can have shaping student learning. The term electronic discourse or *e-discourse* is used here to represent the breadth of discourse students and instructor participated in online, including postings to the discussion board, e-mail exchanged, chat sessions, assignments, and final projects.

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## *LITERATURE REVIEW*

Interaction, engagement, and communication are at the heart of any conception of good teaching and learning. Literature suggests the same is true for distance education. There is a strong relationship between student perceptions of learning, quality of instruction, and their participation or interaction in a course (Burnett, 2001; Jiang & Ting, 1999; Trentin, 2000).

Moore (1989, 1991) identified four kinds of interaction in an online course: learner-content, learner-instructor, learner-learner, and learner-interface. While interaction has been studied in various online learning environments, there is still much to be explored about learning that results from different kinds of interaction, the role of the instructor in facilitating this learning, and the extent to which students might engage in these interactions to promote deeper, conceptual learning.

Some have reported on learner-instructor interactions in which the role of instructor is assumed to be static, taken (or held) exclusively by the instructor (Bannan-Ritland, 2002; Berge, 2002; Hirumi, 2002). But if we view these roles as dynamic and fluid, in which the role of instructor might be adopted or taken by anyone, even another student, in a thread or series of postings, this opens up the opportunity for a more complex perspective on these types of interactions.

For the instructor, possible roles might be: to make problematic simple explanations, to request that evidence be provided when claims are made, to ask for clarification or offer alternative points of view, and to model and encourage self questioning and reflection in the e-discourse. These roles reflect a perspective taken by an instructor, but also ways of thinking about issues that may be a goal for student learning as well. These roles are negotiated (or can be, depending on the instructor and the ethos of the e-discourse community) dynamically so that everyone has a chance to learn from everyone else by adopting them over time. If this is the case, the concept of

interaction and the role of each participant can change over time and across threads of e-discourse. But in order for this to occur, the instructor needs to facilitate and support these kinds of interactions.

Parker and Gemino (2001) compared outcomes from an asynchronous learning network (ALN), defined as an interactive virtual seminar, and a traditional face-to-face course and found no significant difference in students' overall scores on a final exam. However, they did find that students in the ALN course scored significantly higher in the conceptual contribution but significantly lower on the technique contribution on the exam. Parker and Gemino suggested that ALN courses may be a better environment for conceptual learning, while traditional courses may be superior for learning application of techniques.

King and Doerfert (1995) identified differences in students' interaction needs as a critical factor in determining how successful they felt in an online course. They strongly urged instructors to have personal contact with all students, regardless of the delivery methods used, to ensure high quality interaction and better learning outcomes. They attributed high attrition levels with low interaction levels in some distance education courses.

Picciano (2002) explored the relationship between performance in an online course and student interaction, finding that discursive moves—like complementing students, using self-disclosure, and warmth—improved interaction quality and quantity. He also found a strong positive relationship between student perceptions of interaction and their perceptions of quality and quantity of learning. This is especially relevant as we look at the impact of interaction on student learning outcomes and the role of the instructor as facilitator.

Burton (1998) found that when instructors use facilitative discursive moves, defined as accidental or intentional methods for creating and sustaining an atmosphere of learning, it produced higher levels of student participation and more complex interactive patterns. Burton encouraged instructors to use patience when

working online to encourage learner-learner interaction and interdependence that often precedes collaboration.

Ahern, Peck, and Laycock (1992) investigated the style of discourse used by instructors in online courses and found it to be the most important factor in determining the amount of student participation as well as improving the overall quality of student responses. They suggested that an informal, conversational style of discourse produces higher levels of student participation with a more complex interaction pattern and higher frequency of learner-learner interaction with more sophisticated responses.

The Ahern, Peck, and Laycock study (1992) provides guidance for this work by suggesting that the facilitative moves, or discursive actions, used by the instructor can promote a style of e-discourse that encourages and supports students taking on a variety of roles, including those modeled by and normally adopted by the instructor. Their results suggest that if instructors can structure the e-discourse in these ways, more learner-learner interactions may occur and the resulting discussion threads will be more thoughtful and reflective, thus providing more opportunities for conceptual learning.

Pawan, Paulus, Yalain, and Chang (2003) reported on patterns of interaction and engagement in three graduate-level teacher education courses. Their data came from online discussions held by these students without direct facilitation by an instructor. They found no evidence in their data of students challenging ideas and a lack of student awareness of purpose and structure to the discussions.

Christopher, Thomas, and Tallent-Runnels (2004) provided suggestions for facilitating higher-level thinking in online discussions, including prompts to stimulate this kind of thinking. This study reports on a discussion in which the instructor was passive, with the students engaging on their own, leading to questions about how a more active participation by faculty might help students attain these higher levels of thinking. "The professor might have guided and facilitated the discussion forum to

add information or ask follow-up questions to ensure a depth of understanding or synthesis and evaluation of topics discussed" (p. 170).

MacKnight (2000) shared her experiences stimulating critical thinking through discussions online, beginning with thought-provoking questions asking students to use their knowledge and experience as they considered issues and ideas brought out in the discussion, as well as asking them to clarify or elaborate on ideas they shared. She also encouraged instructors to model ways of thinking and allow students to accept more of the responsibility for keeping the discussions going. "Unless the pedagogical role of faculty includes modeling, coaching, questioning, reflection and task structuring, it will be difficult for online discussions to escape the superficiality of classroom talk" (p. 41).

Lapadat (2003) provided a comprehensive analysis of the discourse in an online graduate course and its connection with changes in classroom practice. Students in this course read articles and discussed them online, as well as planned an empirical research project in their classroom. One exciting finding from this work was that some students' points of view developed and changed over time, after reflecting on their assumptions about teaching and learning, which the author attributes directly to discussions in the course, and the emergence of a "critical stance" for some of the participants. Lapadat was careful to model this critical stance, post provocative questions, and refused to take the sole role as authority in the discussions. "[The] online course format was successful in fostering genuine, deep, and critical discussion" (p. 36).

After reviewing the literature on distance education, and use of computer-mediated communication (CMC) for learning, it is clear that there is a connection between students' participation and their perceptions of learning. It is also clear that instructors, by using particular discursive moves, play a critical role in promoting and nurturing participation by structuring discussions in a conversational style. What remains unclear is how instructors, by making

a conscious effort to increase the quality and quantity of student interactions in an online course, can nurture the kind of rich, deep, and reflective discussions that can lead to learning.

While there is a wealth of information online and in publication on general suggestions for facilitating online interactions, missing are any specific recommendations for instructors that grow out of their own experiences in this genre of e-discourse. This study attempts to explore and document, using a case study approach, one instructor's experiences teaching graduate courses and drawing on the existing literature on face-to-face conversational techniques.

### **RESEARCH QUESTIONS**

The following questions guided this work: How can online instruction be structured to facilitate learning? How can e-discourse be analyzed looking for evidence of student learning? How can instructors use discursive moves to facilitate learning and encourage high quantity and quality of interaction and participation?

### **THE STUDY**

The context for this study was four graduate courses taught using BlackBoard, a commercial Web-based learning environment. All were educational technology courses that met face-to-face only three times during the regular, 15-week term: once during the first week, once in the middle of the term, and once at the end of the term. All other interactions took place online, either in the threaded discussion forums, through e-mail or in synchronous chat sessions. Students in these courses were practicing teachers or educational professionals participating in these educational experiences voluntarily as part of a graduate program in educational technology at a regional teacher education institution.

As part of the course, students read articles (found online), discussed them in BlackBoard,

participated in chat sessions, posted assignments to the Digital Dropbox, and developed and presented a course project that integrated technology into their professional life. A survey was distributed to students online to collect feedback and suggestions for improvement at the end of each term.

### **THE PARTICIPANTS**

The participants in the fall 2002 term included 11 women and 2 men, and 77% of the students were enrolled in their first online course. Initially, the course included 15 students, but after the first week, two students dropped the class ( $n = 13$ ). The topic for the course was integrating technology into K-12 settings.

In the winter 2003 term, 21 students participated in the online class, including 11 women and 10 men. Two students dropped the course, one after the first week and another about 5 weeks into the term. Of the remaining students ( $n = 19$ ), 75% were enrolled in their first online course. The topic for the winter course was evaluating and selecting instructional software and Websites.

During the fall of 2003, another online course was offered focusing on technology integration; it included 11 women and 6 men ( $n = 17$ ). For 40% of the students taking the course, it was their first online class.

In the Winter 2004 course, again focused on evaluating instructional media, there were 13 women and 9 men ( $n = 22$ ). Given the large size of the course, it was split into two sections—one with 13 students and one with 9—with 55% of the students enrolled in their first online course.

### **INSTRUCTOR ROLE**

The instructor approached teaching an online course in similar ways to teaching face-to-face graduate courses. That is, to encourage rich and reflective discussions of articles and issues, to encourage students to bring their professional experiences into the discussions, to

model for students a critical perspective on educational technology, and to challenge students to align class activities and assignments with their professional needs and goals. This was accomplished using a variety of methods and techniques, some overt and some more subtle, which are described below.

### **METHODS OF ANALYSIS**

Following the tenets of grounded theory development (Glaser & Strauss, 1967), the author analyzed qualitative data looking for patterns that emerged with the goal of identifying categories that helped to describe students' experiences.

During the first online course, the instructor was unsatisfied with the quantity and quality of participation in the e-discourse. While there were instances in which students participated in rich, deep discussions, these were the exception rather than the rule. This led to an initial analysis and subsequent changes in the course materials and actions taken by the instructor in an attempt to nurture and stimulate discussion and participation.

One obvious challenge to this kind of work is the dual role of instructor as participant and observer, engaged in helping to shape the e-discourse while also studying it. To help reduce this potential bias, the author kept a regular journal of his observations during the term, but did not analyze the data until after the term was over. Analysis of first term data occurred before the instructor taught his second online course, and the results led to substantive changes in his approach to instruction.

Using a cyclical approach, the author used discourse analysis (Coulthard, 1985) to examine students' participation in the e-discourse. This analysis revealed themes that the researcher triangulated with other sources (e.g., student journal entries, assignments, etc.) to ensure that they were genuine and evidence could be found across time and data points to ensure their reliability. Over time, the themes that emerged, and those that did not reappear,

were discarded. Using this approach, a set of common themes grew out of an ongoing analysis that resulted in the work reported here.

## **RESULTS**

### ***Student Survey Data***

During the first term, students reported being satisfied overall with the course—92% reported that they learned as much in the online class as they would have if they had taken it as a face-to-face class, and the overall quality of the course was indicated as “High” by 31% of the students, and “Average” by the remaining 69%.

These initial results were observed in subsequent online classes, with the majority of the students reporting the quality of the online course as “High” (average of 59.9%) or “Average” (40.1%). On average, over 90% of students reported that they learned as much in the online class as they might expect to in a face-to-face class.

When asked about how their level of participation in the online class compared with a traditional class, an average of 67.74% reported that they participated more in the online course. Almost 90% of the students indicated that they would be interested in taking another online course.

### ***Analysis of the E-discourse***

While the total number of postings to the discussion forums represents a gross measure of overall participation, they do not provide meaningful data on the nature of the postings or their possible impact on students (see Table 1). In an attempt to further examine the e-discourse with an eye towards more explanatory information, the instructor developed a measure of postings under each major heading using a tree branch metaphor. In the first course threads, the branches of postings were narrow but not deep.

One way to visualize this is to look at a screen capture of the BlackBoard discussion

TABLE 1  
Average Postings/Student for Each Forum

	<i>Term &amp; Year</i>			
	<i>Fall 2002</i>	<i>Winter 2003</i>	<i>Fall 2003</i>	<i>Winter 2004</i>
Readings	14.31	24.63	35.76	29.77
Open Forum	9.46	5.53	4.88	3.23
Assignments	17.92	11.16	18.29	17.32
Totals	41.69	41.32	58.94	50.32

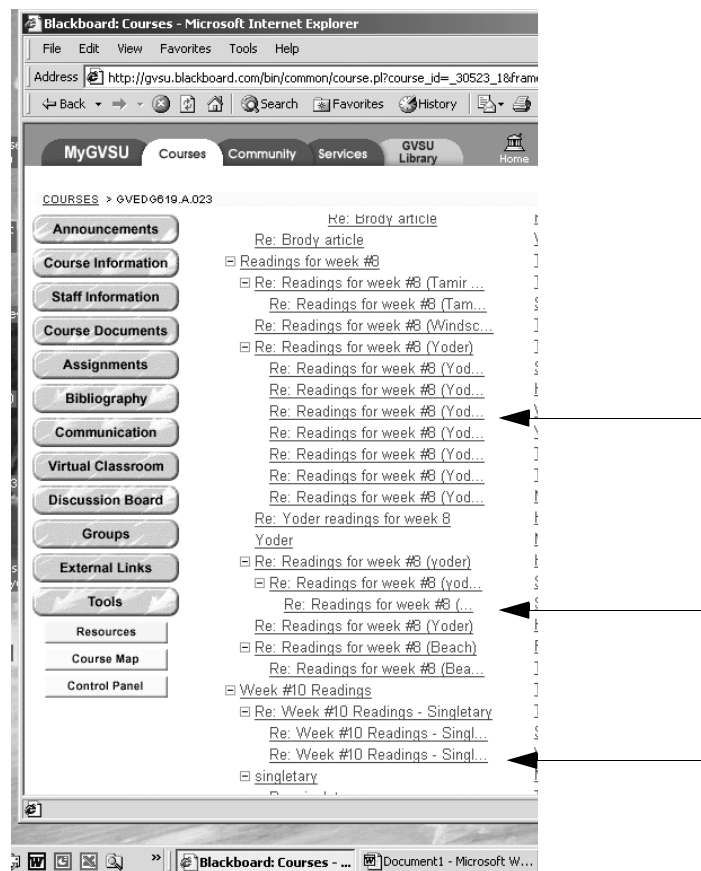


FIGURE 1

board for threads of discussion in the Readings forum in the fall class (see Figure 1). You can see from this screen that the postings for this reading are shallow, with students responding to the instructors' questions but not reading or connecting what they write with what's already been posted. The figure clearly shows

that, for the threads displayed, the postings are shallow and disconnected. While this was not the case in all of the online threads, it was a pattern that emerged throughout the first term and across threads of discussion.

While the quantitative analysis above reveals that the first online class did not

achieve a level of student participation expected, measured by the number of postings to the threaded discussion board, it did not help the instructor understand why students participated in such limited numbers or how their participation influenced their learning. There were qualitative indicators that suggested that students were not participating in expected ways that appear in the regular journal entries of the instructor (below) and in the lack of substantive multithreaded (deep) postings in the discussion board.

The term is about ½ over and I'm still a bit concerned about the level of participation in the online class (619). There seems to be a fairly narrow perspective on the part of the students in this class regarding how to participate in the discussion of the articles for this class. Most of the comments posted in the Discussion Board under the thread I put out with the guiding questions are responses to my questions. Students are not reading what others are saying, or if they area, they are not responding to their comments.

As a result of this preliminary analysis, the instructor made changes in the course structure trying to stimulate more meaningful participation in the e-discourse in subsequent terms. These changes included elaborating on expectations for students in the guidelines for online discussions, asking students who had taken previous online courses to talk in the first class about the nature of the online discussions and the time required to do so, and encouraging student-to-student collaborations and interactions throughout the term, using specific discursive actions.

Other changes included scheduling regular, once-a-month chat sessions, identified in the literature as a possible way to improve the online course (Roberson & Klotz, 2001) and suggested by the student survey results.

During the second online class, the number and quality of student postings in the Reading forum improved dramatically. This can be seen clearly in Table 1 where data are compared across the online courses. Notice how

the postings in the Assignments forum are comparable but also how the postings from the winter 2003 online Readings forum are dramatically higher than those from the fall 2002 online course.

More evidence of the differences between levels of participation can be found by looking at the nature of student postings using the tree branch metaphor. Figure 2 shows a screen capture of a discussion board thread for the Readings forum during the winter 2003 term. Comparing this figure with the Figure 1 shows how different the posting patterns were in the second course. Again using the tree metaphor, the branches of the discourse tree in the second term are deeper and more complex than those in the first term, with students responding to each other and building on issues raised in other postings. This pattern of deeper, multi-leveled threads in the discussion board emerged and is an indicator of the improved quality of the e-discourse in subsequent courses. Ahern, Peck & Laycock refer to these kinds of postings as complex interaction patterns.

In addition to the examination of the number of postings to the discussion board, the instructor looked more closely at the content of the postings, along with other comments made by students in their journal entries, e-mail messages, assignments, survey results, and final projects. Based on this analysis, the following themes emerged from the data.

### ***Emergent Themes***

#### *Instructor Playing Devil's Advocate*

One theme that appeared in the e-discourse was the role of the instructor providing contrary or oppositional perspectives on issues discussed. The example cited below occurred as part of a larger thread of postings related to what evaluation criteria should be used for instructional software. A student posted a question with regard to one aspect of the criteria in the assignment—installation:

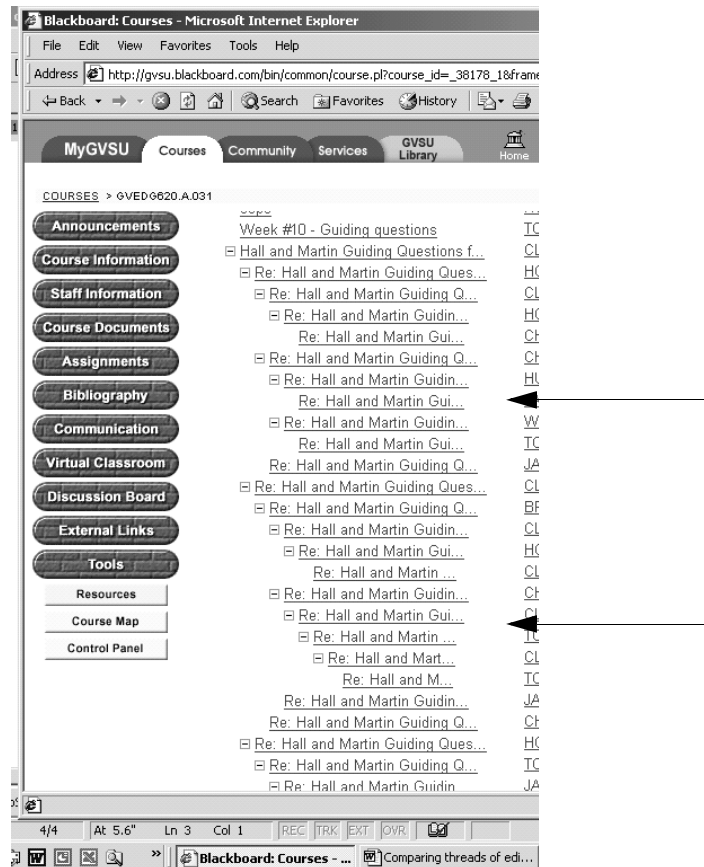


FIGURE 2

One question. Do we really need to evaluate how easy it is to load the software onto the server? Is this something that we as teachers are going to deal with? I guess I'm wondering how "techy" the evaluation needs to be.

Another student replied to this posting with an affirmative response:

I think that loading the software should be included as an evaluation [sic] criteria. In our district we have to go through the tech. department in order to load anything onto our computers (even just one computer). This takes time to get them to do it. That might be a consideration.

One student strongly supported the idea that teachers should be allowed to install their own software:

I believe that is ridiculous. We (staff) sign user agreements and are entrusted to follow them. The only big brother mechanism in place for us is a program running in our background looking for such programs. Even then, we are encouraged to have the copy near our computer. We should be able to load our own software.

The instructor posted a response to this message, providing a counter argument to the one made by the student:

I agree with you in principle, but my experience with the situation at many K-12 schools is that few teachers are allowed to load their own software on their computers. I worked with a 1st grade teacher a few years ago who bought software for her classroom with her own money and when

the district found out about it, they had her remove it. Obviously, this makes it hard for individual teachers to adopt and use software they locate and choose for their classrooms. To play devil's advocate, the districts often do this because they can not be responsible for software they do not purchase and install. For them, it's a question of maintenance and legality.

Notice the reference in the instructors' posting to "play(ing) devil's advocate." This was done on purpose, in order to offer a position contrary to the one proposed by the student, and to indicate that there might be legitimate legal reasons for not allowing individual teachers to install software on school computers. This rhetorical pattern occurred on several other occasions including instances where students took on this role of devil's advocate when considering an issue that arose in the readings or assignments. One student explicitly indicated taking on the role in her posting:

Now, though I like what she had to say, I will play devil's advocate and point out some shortcomings. First of all, I don't think any teacher teaches in a transmission mode all the time. Second, sometimes transmission mode is a perfectly acceptable mode of education, especially if you are discussing things the students are interested in. Interest is the key here, and she even starts her article stating that. The third thing is I would like to visit a constructivist classroom. I've seen them written about quite a bit, but nobody I know of has come close to fully implementing anything like that. And I know a lot of good teachers. Makes me wonder how realistic it is. Plus, you'd have to be pretty cavalier to disregard district and state standards mandates and follow the student's interests.

For the students in this online class, the experience of having someone play devil's advocate arose in the public discourse as another way to look at an issue or argument from more than one perspective. The fact that at least one student chose to adopt this perspective, calling it by the same name, suggests that the discourse provides a space for experiment-

ing with ways of thinking modeled by the instructor.

### ***Instructor Revoicing Student Comments to Ensure They Stay on the Floor***

Another way in which the instructor facilitated deep discussion of an issue was to ensure that it was picked up by students, even if it had been raised by another student. This is called revoicing, by which the instructor can call attention to a point or issue raised by a student and ask others to respond. In another discussion thread, a student responded to a reading (by Mellor) in which the author suggested teachers should lead adoption of technology in their schools. A student responded with a posting suggesting that students should be competent with technology to be successful in our society:

At the secondary level I feel like school systems reflect what is abounding in society. If an idea or innovation is adopted by society as a whole, it will then make its way into the classroom. I wish we were leading the technological revolution, but I think we are just following a couple steps behind when it comes to education. We now live in a world full of digital music, digital movies, digital video games, digital media, and other every day technologies. Whether wired or wireless much of what we experience as a society now is related to technology. To be able to operate in society there are certain basic technological skills that are required. Why should the educational process be any different? It seems to me that this is why the pendulum will never swing back to where it was or even get close.

The instructor wanted students to focus on this issue, to consider the implications for it, and what it might mean to teachers and students if implemented (i.e., how are students going to learn to use technology when they are already busy learning math, Science, etc? Whose responsibility is it to teach them this?). So, to stimulate discussion of these issues, the instructor replied:

To pick up on one of [student name]'s comments, I wonder if Mellor (or anyone else for that matter) would argue that technology needs to be taught in schools, not unlike Math or Science, because it is necessary for success later in life. Or if there is another reason for technology to be used: because it can help students learn the other subjects better, in more depth, etc.? Any thoughts on this issue?

Notice how the original author of the idea was given credit for raising the issue and the instructor supplemented the posting with another, related question, thus lending authority to the original posting. Even though the instructor posed a single question and asked for comments, most students picked up in the key issue—whether technology should be taught or simply learned when used to support other subjects—but did not seem to argue for one approach or the other. One student wrote:

I absolutely believe that technology should be directly taught. After all, if we are truly preparing our students to be productive citizens in a technologically advanced world, aren't we obligated to teach them how to use the technologies? I don't necessarily think this has to be separate [sic] from other core areas. As a math & science teacher, I often find myself teaching my students how to use certain [sic] equipment & software, so they can use and apply those to the content area. In fact, I think that teaching students to use the technology within the content areas and not as a separate [sic] course just underscores how integrated technology is and will be in the future.

The underlying question here is whether it is better to learn technology in the service of learning other subjects or if students should be taught technology as a separate subject, not unlike math or language arts. This is a difficult question, because on the one hand, students need to learn if they are to be successful using technology. But on the other, some would argue that learning technology as an isolated subject will result in inert knowledge that cannot be applied in the context of a real-world problem.

### ***Evidence of Dissent and Disagreement***

The discussion cited above also led to an instance in the e-discourse in which there was disagreement about an issue. Connected to the issue of whether technology should be taught explicitly isolated from the subject areas, is the issue of whether some non-technology skills and knowledge are required to successfully use technology for learning. Contrary to what others have reported, the instructor found clear evidence of disagreement in the following sequence of three student postings from a discussion thread:

In my opinion if the software is for math then a lot of reading is not necessary. If a student is a poor reader then they will struggle with the reading and not get the math help.

I would argue against the point that if the subject is math, reading is not necessary. Reading is essential. Math is all about following the right directions. To understand new concepts or to understand what a question is asking is about reading, what's [sic] more is that it is about making sense of what you just read. I have four classes of about 25 kids each that think that you don't have to read in math, but half of them are asking for help (I don't get it!) because they don't understand the question.

I agree with this comment made by [name]. We currently use the UCSMP books at the high school level (until next fall, thank goodness) and they require a lot of reading and comprehension to be able to do the problems. What happened to learning the basics? Yes, these high school kids still need practice with the basics and shouldn't always have to sift through all kinds of reading...especially if they are already struggling! Let the software be a good tutor. And in agreement with [name] ... the reading level should be at the level of the grade level the books are being used. A colleague of mine evaluated an Algebra I book and found that it was actually at an 11th-12th grade reading level. And yes, a student needs to be able to understand what a question is asking, but if they do not understand the concept, all the reading in

the world will help them make sense of it.  
JMTCW

### ***The E-Discourse May be More Expressive for Some Students***

For certain students, threaded online discussions may represent a more expressive and interactive medium than face-to-face discussions. Evidence for this claim can be found in a variety of sources, most notably in some of the journal entries of students who took the winter class:

The degree of interaction with, and awareness of, the thoughts of other students is unlike any other course I've encountered. Although the lack of physical presence was initially disconcerting, I realized that I was getting way more information about way more people than in a regular class. In all my previous classes, I generally only interacted with 1 or 2 other students, and only heard the spoken thoughts of a few, rather than all of them. In the online class, I had to read through the written thoughts of many more fellow students on assigned readings, every week, all semester long, and try to find someone's thoughts to connect to. The delay in response gave everyone time to think about what they wanted to say, rather than the old style of the most confident students "hogging the floor", and the less assertive ones being left with "I was going to say that". While quite laborious, it was the first time I'd ever had such ongoing interaction, and seems to come closer to the old ideal of what a college education was meant to be—an intense ongoing discussion of ideas.

Much of the time, the discussion was even more helpful than the reading selections, bringing to light new aspects of the problem or situation stated in the text... I have found myself putting more time into the online classes than a traditional face-to-face class, but because I am able to put the time in when I have a half-hour here and there rather than hiring a babysitter and being away from my children for 4-5 hours a night once a week, it doesn't seem like quite as much. I feel that I have gotten more out of this format than a face-to-face format, where much of the "grade" is based on showing up and putting in your two cents

on discussion. I know this format is not for everyone, but it suits me to a tee.

Since we are talking about time, I would also consider travel time to and from class. This method may make me do more work and take a more active role, but it will make me better in my profession for it. I love the fact that I don't have to pound the [highway] pavement and fight for a parking spot after a days work. Plus, I feel the discussions we have are more sincere and focused than maybe the ones we would have in class.

### ***DISCUSSION***

There are a number of important findings in the results observed. The kind of e-discourse found reflects more learner-learner interaction, which is desirable in an online course and especially important for providing students with access to ideas and issues they can learn from. The fact that there was little evidence of this kind of participation in the e-discourse in the first term indicates that a conscious effort may be required on the part of the instructor to help create the kind of learning environment in which participation is more rich and potentially rewarding for student learning.

The discursive moves employed by the instructor, including playing devil's advocate, revoicing issues raised by students for further examination, and promoting an environment in which ideas are questioned and challenged as a normal part of the discourse, probably contributed to the results observed. The fact that some students view the e-discourse as more expressive than face-to-face discussions is also promising, especially for those interested in promoting critical reflection through participation in e-discourse for adult learners.

In some instances, students adopted positions relative to ideas or issue taken previously by the instructor in threads of discussion, suggesting that they can engage in interactions taking on the role of an instructor, and showing reflective and critical thinking in the process. Seeing these kinds of discursive moves in the public discussion forum is promising, but more work needs to be done to explore how the

findings of this work can be replicated and enhanced in the future.

What is less clear is whether the discursive moves of the instructor resulted in more rich participation in the e-discourse or whether this was a direct result of the modified guidelines and clearer expectations for students remains to be seen. The instructor also scheduled more chat sessions during the winter term and this may have helped some students. These opportunities may provide times for students to clarify and understand assignments, projects, and other course-related issues than they might otherwise via asynchronous forms of communication. This might also be dependent on individual student preferences and could be identified in the characteristics of particular students.

It also seems likely that when students are exposed to critical and thoughtful consideration of complex issues and ideas associated with technology use in the K-12 classroom, modeled by the instructor, some will appropriate these critical ways of thinking themselves as they anticipate how technology might impact their own teaching. The extent to which this kind of learning occurs across the students in a course is unknown, but the results presented here are encouraging in this regard.

### **LIMITATIONS**

While the results reported here are promising, they are not without drawbacks and limitations. As we know, self-report is a questionable form of gathering accurate data and it's unclear whether the students in the two classes reported here actualized the comments shared in the course activities and assignments. Without following these teachers into the classroom, it would be impossible to judge the extent to which the findings reported contribute to actual changes in practice.

There are also questions about the limitations of the rhetorical space that constituted the course e-discourse and how this may have influenced students' participation and subse-

quent learning. Studies of e-mail list servers may provide some additional insight into the nature of participation and learning in similar rhetorical spaces.

The themes and patterns found in this work do not reflect everyone in the classes, so the results should not be taken as evidence that online courses are equally rich and rewarding for all students. One student wrote in their final journal entry that they discovered through this experience that online classes are not a good way for them to learn, and they do not plan to take any future classes online.

Descriptive research suffers from the problems of context and generalization, and given the small sample sizes, it is not possible to generalize the results to different populations or groups of students. But this work is not designed to be an experimental study or show cause and effect of Web-based instruction; it is designed to explore how students learn through participation in e-discourse and what role the instructor can play to help facilitate this learning so future online instruction can be more effective. Balancing the roles of participant and observer, where instructors conduct research on their own teaching and their students' learning, is not a new problem, but it is one that can be reduced with careful planning and data analysis that follows data collection, as exemplified in this study.

While there is much to be learned from the experiences of a single instructor, perhaps the greater benefit is realized when other instructors consider the issues and results found here and, using their own judgments, make informed choices about the structure of their online courses. There is no prescription for success in online instruction, as in face-to-face instruction. But this work is shared in hopes that others can see ideas and ways of structuring and assessing student interactions here and experiment with them in their own settings.

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