Underscoring the Social Nature of Classrooms by Examining the Amount of Virtual Talk across Online and Blended College Courses

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Abstract

Online communication forums allow students to collaborate and construct understandings of course material together, but little is known about students' discussion participation across online and blended (hybrid) classroom environments. This study begins to address this research gap by examining students' asynchronous discussions (number and length of "initial" and "subsequent" discussion posts) that took place in three online and two blended courses offered at two different universities. Students in each of the online and blended learning environments produced over two pages (>500 words) of posts for each of three topic discussions (called "conferences" for each course), and mean word counts were compared. In this exploratory study, "course format" as a variable did not influence the amount of students' asynchronous talk in any predictable way. Although more comparisons are needed to draw conclusive results, these preliminary findings reveal no pattern of participation across course types (i.e., online and blended) and thereby reinforce the constructive nature of classrooms as well as the importance of student place, group size, and subjectivities. We argue that students' experiences across course formats are infused with social dynamics and relational performances that may mitigate cross-format research endeavours and also that might challenge assumptions practitioners make about classroom environmental design.

Computer-mediated communication (CMC) among students as a part of formal classroom time has become familiar part of the contemporary educational experience. Whether a course is offered completely online, in a blended (sometimes called "hybrid") format, or in a face-to-face classroom, students interact with others via computers. Of interest for researchers and practitioners in areas such as education, sociology, and communication is how students use these online opportunities to engage with others in their classes. Indeed, scholars have emphasized the importance of student-student talk in online learning contexts (e.g., Ertmer et al., 2007), and previous studies have compared the online communicative experiences of students in different classroom formats (e.g., Rovai & Jordan, 2004; Sullivan & Pratt, 1996; Vess, 2005). However, few researchers have examined online participation across online and blended (or hybrid) environments. This study fills this gap by assessing students' asynchronous discussions (number and length of discussion posts) stemming from teacher-posed questions across multiple online and blended courses. Specifically, this study examines college students' discussions that took place in three online courses (one a face-to-face campus, two at a virtual institution) and two blended classes (both on a face-to-face campus). The instructor, course level (upper-division undergraduate college), and content were the same across all courses included in this analysis, but student-group size, assignment worth, and geographical location varied. Therefore, this research is preliminary in nature, but raises the possibility that a number of important factors (e.g., student group size, course location, and institutional mission) vary along with classroom format (i.e., online versus blended) and will likely influence student participation in online discussions with their peers.

The following section begins with a discussion of the role of student-student communication in the learning process and how the availability of online environments has altered the dynamics of instructional interactions. Next, we discuss how students experiencing different course formats have varying opportunities to engage themselves in with others in their classes. In doing so, we identify the broad range of literature that begets a need for comparison of students' discussions across online and hybrid courses. Third, we present the research question guiding this investigation and we delineate our methods by describing the course sections as well as the participants involved in this study. Ultimately, we offer our results and discuss the study limitations as well as ideas for future research. In our conclusion, we highlight the implications for teachers and administrators.

Student-Student Interaction

A long tradition of research on interaction has highlighted the importance of communication in social contexts such as classrooms (see for review Mehan, 1998). Knowledge, meanings, roles, and relationships

are constructed and maintained within classrooms through interaction (Mehan, 1979; Sperling, 1995). In fact, Vygotsky (1962; 1978) theorized the importance of communicating with others in learning contexts and proposed that "higher mental processes in the individual have their origin in social processes" (Wertsch, 1985, p. 14). Classroom interaction, then, is central to the learning process and is an important point of interest for researchers from a multitude of disciplines and methodological origins.

While Vygotsky and others (e.g., Wenger, 1998) assert the importance of a teacher, an expert, or a more knowledgeable peer in educational contexts, peer-peer communication has also been recognized as an influential factor in students' learning processes and personal development (Bielaczyc & Collins, 1999; Brooks & Brooks, 1999; Hiltz & Wellman, 1997; Johnson & Johnson, 1994; Wegegrif, 1998). Though research supports the importance of learner-learner interaction (Hiltz & Wellman, 1997; Wegegrif, 1998), teachers typically ask most of the questions in American classrooms and students often respond in ritualized ways (Cazden, 2001). Indeed, students tend to have few opportunities to interact with and question each other in most classrooms (Brooks & Brooks, 1999). Teachers can encourage students to discuss course material with one another by posing thoughtful questions and by guiding conversation in ways that can "help learners to internalize and reshape, or transform, new information" (Brooks & Brooks, 1999, p. 15).

The advent of online environments for formal use in classrooms provides new avenues for encouraging student-student interaction. These new instructional tools, however, raise questions about the day-to-day use of these technologies and about how students involve themselves in online discussions with their peers. While online collaborative learning has been the focus of an ongoing body of research (Alavi, 1994; Curtis & Lawson, 2001; Henri, 1991; Jonassen, Davidson, Collins, Campbell, & Haag, 1995), students across classroom formats (i.e., fully online or blended) are likely to use these learning opportunities differently.

The Potential Influence of Course Format

Online or distance education courses have become more common on college campuses in recent years. In addition, many institutions are "experimenting with 'hybrid' or 'blended' models of teaching that replaces some in-person meetings with virtual sessions" (Young, 2002, p. A33). While both blended and fully-online classroom designs have advantages and disadvantages for students (Mansour & Mupinga, 2007), few scholars have attempted to draw comparisons across the two formats. Because classroom communication is so critical to the learning process, students' participation in dialogue with their peers remains the focus of this research.

Several factors might bring about differences in how online conversations are carried out among students enrolled in blended or fully-online college courses. First, students may take on differing roles in the learning process, engaging themselves actively or passively, depending how different communicative environments are utilized. Some students may feel more comfortable taking on an active role online while others may feel more at ease communicating with others in physical classrooms. Students in online courses, for example, may engage in more student-student social interaction online than students in blended courses because they lack a face-to-face environment. Online courses, when compared to blended courses, might also function as more student-centred environments, requiring students to be more self-directed in their learning and eliciting more engagement in discussion with their classmates (Heckman & Annabi, 2005; Vess, 2005). Indeed, the ways in which students view and engage themselves as active or passive learners might shift with the course formats those students are experiencing. Second, research suggests there are differences in the way students connect and interact across course types. For example, students in blended learning contexts report a greater sense of community than in courses held completely online or in face-to-face classrooms (Rovai & Jordan, 2004). Also, prior comparisons of students in online and blended courses (Bippus & Brooks, 2006) found differences in length of initial posts in response to a teacher's questions and also that blended students significantly surpassed fully online students in the number and length of subsequent posts. Vess (2005) found that a mix of communication environments (online and face-to-face) impacted students' communicative practices, asserting that students in her hybrid courses reported that the face-to-face meetings enhanced their participation in the online portion in class, and though to a lesser degree, vice versa. Students' social engagement with peers, then, is influenced by the mix of communicative spaces afforded them in their class.

In addition to some of the research comparing social practices across class formats, one can assume that student characteristics will vary across campuses and classroom types. That is, there may be a self-selection factor occurring in which students' choices to enrol in certain courses stem from personal interests. For example, students enrolled in online courses might be motivated by a lower desire for the social experience of the face-to-face classroom, or a belief that the format is better suited to their skill set (Caplan, 2005). Mattes, Nanney, and Coussons-Read (2003) found that students who enrol in online courses tend to be more comfortable with computers and less socially bold than students enrolling in traditional classes. Students enrolled in online programs tend to be older (Allen & Seamn, 2006; Mattes, et al., 2003), with the greater family and work responsibilities; indeed, such programs are often designed to assist non-traditional or adult learners and those students constrained by work or family-related stressors (Lefor, Benke, and Ting, 2001; Lefor, Benke, and Ting, 2003). Online and blended courses may thus uniquely appeal to particular students which may elicit differential patterns of student interaction. That is, the very factors that

cause students to self-select into particular course formats may also affect their participation in those courses.

Perceived active or passive roles, opportunities for social connection, and student characteristics have the potential to impact communication among students enrolled in different types of courses. Of interest to teachers and others involved in the design of classroom of experiences is whether or how students might respond to computer-based forums for interaction. Practitioners can only benefit from an enhanced understanding of how peer-peer discussion participation might be predictably impacted by the inclusion of or reliance on online forums for discussion. To that end, this study seeks to offer teachers a strong sense of how instructional designs might influence communicative behavior in their classes. Because research has led us to assume that students' experiences are directly impacted by classroom format or environmental design, this study compares online discussion participation across online and blended courses.

The Present Study

Interaction with others in an educational context has long been noted to be critical to the learning experience (e.g., Vygotsky, 1962; Wegegrif, 1998). With the rise of computer-based modes of communication, scholars have turned their attention to the nature of interaction in these instructional contexts (e.g., Heckman & Annabi, 2005). However, researchers have yet to develop a sense of student participation patterns across online and blended learning environments – the focus of the current study.

Bippus and Brooks (2006) proposed that students' responses to online discussion prompts from the instructor can be conceptualized as teacher-centred, akin to a student simply answering a question posed by a teacher in a face-to-face classroom. Subsequent posts in which students respond to others' messages and elaborate on their own perspectives in a group forum go beyond the requisite response to the teacher and reflect students' engagement with their peers. This study, therefore, aims to ascertain significant patterns of students' communication with their teacher (initial student posts addressing the teacher prompt) and with their peers (subsequent posts addressing previous student messages). Specifically, this study traces students' discussion participation across course format types by answering the following question:

> R1: How do students in blended classrooms differ from those in fully online courses in terms of their discussion participation – number and length of discussion posts – when communicating via computers with others in their class?

Method

For this study, we employed a case-study research design involving "the study of an issue explored through one or more cases" (Creswell, 2007, p. 73), and we focused on the student-student asynchronous discussions across five college-level courses. Each posted message functioned as a unit of analysis because "messages are clearly demarcated in the transcript" (Garrison et al., 2001, p. 16). Though this study relied on quantifiable data for analyses, it was conceived as a case-study with our focus on students' posted messages organized within five different courses that functioned as cases for making comparisons.

Context: The Course and Participants

Five undergraduate/upper-division sections of the same course on conflict and communication provided the data for this analysis. The five course sections were offered on two different college campuses. Two courses were offered completely online from an entirely virtual university, and two others were blended courses offered on a face-to-face campus. The fifth course was offered completely online, but as part of the face-to-face campus offerings, not as part of the virtual university.

All five courses involved in this study were taught by the same female professor who was employed at both institutions. Student participants ($N = 103$) in this study reflect a range of age, gender, and ethnic backgrounds, though specific demographic data was not collected for this study. The virtual university overall had an average undergraduate age of approximately 32, with 89% of students employed full or part time. The traditional campus had a predominantly commuter student population, of whom 80% were working students (25% 30+ hours per week), and a mean undergraduate age of 25.

Data: Organization and Analysis

Students in all sections of this course were organized into groups by their teacher and were required to participate in online asynchronous discussions with their group members. The first two online sections (those conducted at a completely virtual university) had enrolments of 20 and 28 students. In each of these course sections, students were arranged into three groups of 7-10 members. A third online section was comprised of 11 students who formed three groups of 3-4 members. The students enrolled in the online courses engaged in approximately 10 conferences throughout the semesters, cumulatively worth 25% of

their grade. The blended classes had enrolments of 110 and 56 students who were assigned to groups of 8-11 members for seven conferences, worth 35% of their grade. Because the number of conferences differed slightly across sections, the data set for this study was comprised of the three conferences that were consistent across all five sections of the course. Also, because student enrolment in the two blended courses was much higher than enrolment in the online courses, three of the groups from each blended course were randomly chosen to compare to the three groups in each fully online course.

The grading criteria for participation in these asynchronous discussions or "conferences" were the same for all five classes, though student participation in the conferences was worth a slightly larger portion of the entire course grade for the students in the two blended courses. Students were given identical grading criteria for the conferences, which stipulated that "A" or "B" level participation required posting within 72 hours of the beginning of the conference, as well as responses to both the initial prompts and multiple peers' posts. Students in all courses received grades on their participation for each conference within 10 days of the end of each conference. All three conferences analyzed for this study lasted for one week, meaning the asynchronous discussion board was available for student access during that period of time. The three conference topics and teacher prompts across the five courses were identical. Three of these conferences referenced posted articles from magazines or newspapers and asked students to summarize the main points and then offer their own perspectives or experiences. The final conference simply asked students to relate their own experiences with a course concept. Beyond the initial discussion prompts, posts from the teacher were minimal.

For each student, word counts were first computed for their initial posts (the first time the student responded to each of the instructor's posted questions). Then, word counts were generated for all students' subsequent posts (messages in which students responded to each others' postings or elaborated on their own previous posts). Students' postings for all five courses and as part of each of the three conferences were analyzed as part of the data set.

Results

The research question asked whether course format (blended versus online) affected students' contributions to online discussions in terms of the number and length of their online discussion posts when communicating with one another. Online students enrolled in the virtual university were thus compared to blended and online students attending a traditional face-to-face campus. As far as the initial posts, a significant difference between groups emerged only for the second $F(2,95) = 16.85$, , $p < .001$, $h^2 = .26$, and third $F(2,92) = 7.15$, , $p = .001$, $h^2 = .13$ conferences. The post hoc Scheffe test indicated that the differences existed between the blended and online students attending the traditional face-to-face campus for both the second and third conferences. For both the second $p < .001$ and third conferences $p = .003$, the online students enrolled on the face-to-face campus made lengthier "initial" contributions (in response to their teacher's prompt) than the students in the blended courses.
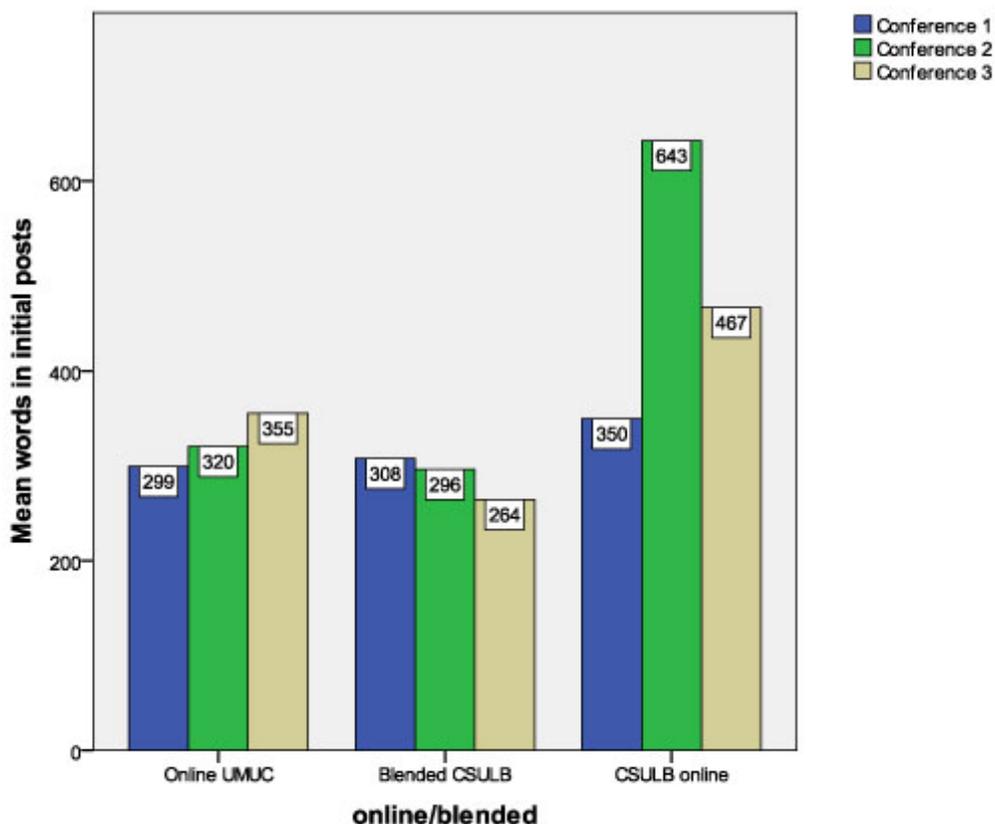
Figure 1. Mean Word Count on Initial Discussion Board Posts.

On subsequent posts, a significant difference between groups emerged for the first $F(2,76) = 8.69$, $p < .001$, $h^2 = .19$, the second $F(2,80) = 16.61$, , $p < .001$, $h^2 = .29$, and the third $F(2,74) = 8.62$, , $p < .001$, $h^2 = .19$ conferences. The post hoc Scheffe test indicated that the differences existed between the blended and online students attending the traditional face-to-face campus for both the first $p = .017$ and third $p = .01$ conferences. The Scheffe test also indicated differences between the online students at the two different universities (virtual and face-to-face) for the second $p = .001$ and third $p < .001$ conferences. In terms of students' ongoing posts (when elaborating on their own posts or responding to their peers), online students on the face-to-face campus posted significantly more than the online students attending the virtual university, but only for two of the three conferences. Significant but opposing findings revealed that among students on the face-to-face campus, the blended students posted more subsequent posts for the first conference, but the fully-online students posted more subsequent posts for the third conference.
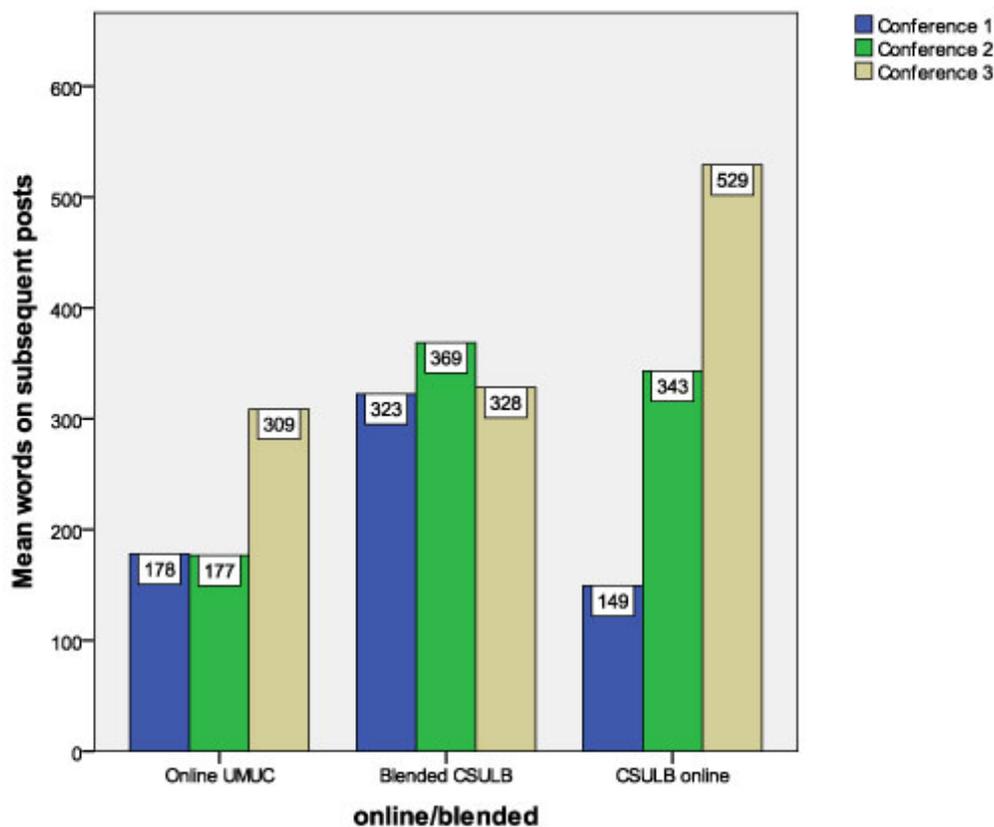

Figure 2. Mean Word Count on Subsequent Discussion Board Posts.

Discussion

These conflicting findings reveal no predictable pattern of participation across course types (i.e., online and blended) and thereby reinforce the constructive nature of classrooms as well as the importance of group size, student place, and subjectivities. Given that classroom format as the primary manipulated variable in this study did not make a significant difference in terms of students' discussion patterns with others in their class, these findings suggest that students' experiences across course formats are underpinned by social dynamics and relational performances that likely outweigh assumptions and decisions practitioners make about classroom environmental design. Indeed, characterizing variables rendering each student-group distinct (e.g., the potential for "self-selection" differences into each group, group size) seem to have complicated our efforts to draw comparisons, have likely impacted our findings, and "course format" as a variable did not influence students' asynchronous discussions in any predictable way. Indeed, comparing courses based on how they are administered (e.g., online, blended, face-to-face-to-face) to some degree negates the importance of relational interactions that are central to any classroom experience. Education is a cultural practice, teaching is a relational enterprise, and learning happens through our engagements with others around us. So, in contrast to Reasons, Valadares, and Slavkin (2005) who argue that "comparing formats is useful" (p. 92), and with the results of our current study in hand, we believe that questions of classroom administration and related outcomes would be better addressed by examining *for whom* and *to what end* each administrative format is desirable.

Primary Study Limitations

The first limitation relates to the pesky nature of course comparisons. Though the instructor, grading criteria, and discussion stimulus materials were the same across these five courses, the number and grade weighting of the discussions were slightly different across courses. In addition, the online course offered on the face-to-face campus was comprised of significantly fewer students than all of the other courses investigated. We argue, however, that absolutely "clean" comparisons are difficult given the distinctness of each student group, physical atmosphere, teacher performance, and other factors. Based on this initial examination of participation across classroom formats, we argue that the social dynamics of a classroom are difficult to "control" for the purposes of experimental study in natural settings.

A second limitation, and tied to the importance of engaging educational research in natural course settings, is that students may self-select into different learning environments based on a variety of factors (e.g., work or family schedule, social anxieties, learning styles). These student-related variables exert a strong influence on their participation behaviours. To that end, it is debatable whether random assignment of students to course format conditions would be a desirable methodical design, as it would negate the very real influence of these student characteristics and thus may not generalize to real students who enrol in each type of course. Indeed, scholars and teachers who are interested in how different instructional methods compare between traditional and online formats benefit most from the study of intact classes, for which moderating factors have not been artificially controlled.

Future Research Possibilities

In the context of previous studies comparing online and face-to-face instruction, our conflicting findings are not surprising. That the students enrolled in the online course offered on the face-to-face university campus exhibited heightened participation seems counter to prior research asserting online students to be less social (e.g., Caplan, 2005; Mattes, et al., 2003). However, this finding seems in line with Heckman and Annaibi's (2005) assertion that the online format de-emphasizes the teacher role and emphasizes active learning and involvement among students. So, while researchers have asserted that online forums for interaction are student centered, allowing students the talking "floor" more so than traditional face-to-face classrooms, and that those same online forums are also perceived to be a "safe" place for apprehensive students who feel discomfort when communicating, practitioners need more data on "what works" on the ground with real students in their classrooms.

Beyond this 'pilot' study of *amount* of student talk, subsequent research should examine interaction *quality*. Student participation is beneficial to an extent, but higher-level thinking and dialogue are often preferred in classrooms. Contradictory findings both within and beyond this study, then, highlight the need for future research into how different communication forums tend to elicit or reinforce participation patterns for teachers desiring a particular outcome in a course (e.g., general sociality, higher-level thinking, or interactional quality).

As mentioned previously, certain student behaviours will influence discussions among learners, so student variables should be the focus of future research meant to examine interaction and learning across course designs, environments, and formats. Broadly conceived, student characteristics may be tied particular kinds, amounts, or levels of involvement in their studies. For example, students paying for college themselves may be more intrinsically motivated and more involved in their own learning when compared to students taking courses as a result of external pressures. In addition, and related to motivation, is the issue of empowerment; some students may perceive themselves as empowered members of a classroom experience (i.e., sensing control in their learning) while others may view knowledge as a product that they do not control, as something that they can simply purchase as capital. Researchers (e.g., Brooks, and Young, 2011) have asserted the intersections of student motivation, empowerment, and perception in classrooms, and these factors should be examined alongside questions of course design. In addition to these broad feelings that can emerge within classrooms, student characteristics brought to the classroom are of interest. As noted previously, students' localities – their age, gender, ethnicity, sexuality, economic station, employment realities, identities, and personal circumstances – are also likely influences on participation attitudes and opportunities, and they likely impact which type of course (e.g., online, hybrid, or face-to-face-to-face) students enrol in. Student-related factors, then, ought to be continually emphasized in future analyses of communicative tools being utilized in contemporary classroom arrangements.

Like student characteristics, the influence of teacher traits or behaviours might be the focus of future research on classroom communication forums. Certainly the feedback that students receive after each discussion in the form of a grade, and the weight of that grade in the course, may influence their participation in subsequent discussions. In addition, the role of the teacher during the discussion may shape student responses too, as frequent teacher postings may cause students to revert to a traditional instructor-centred learning mode and squelch student-student postings (Zhu, 2006). Indeed, teacher-related variables such as personal characteristics (e.g., credibility, perceived trustworthiness, humour use in the classroom), their planned course design (e.g., the use of group modules, asynchronous or synchronous online communication tools, or fully online course activities either during or beyond formal class time), or status and experience (e.g., new versus seasoned teachers) may influence students' involvement in their asynchronous discussions with one another and should be the foci of future analyses.

Conclusion

As Moore (2005) noted, blending face-to-face meetings with some form of mediated instruction is certainly not a new concept in higher education; but as technology facilitates ever increasing channels through which learning communities can interact, the advantages that this classic model seems to offer in terms of student engagement warrant further consideration from instructors, administrators, and researchers. Certainly, integrating a face-to-face component is not feasible for students who enrol in fully online courses due to geographical or other constraints on physical attendance. Moreover, fully online students bring their own particular needs and strengths to learning environments that may be to some degree compensatory. Nonetheless, and based on this research, it is important to note that critical activities such as student-student discussion may not function the same way across classroom contexts and learning communities.

With this manuscript, we argue that students' experiences across course formats are influenced by social dynamics and relational performances that influence classroom experiences in powerful ways – these influences render simple comparisons across classroom formats untenable. For teachers, the issues raised by our research simply reinforce a core tenant of the instructional practice: the need to address each group of students as distinct entities. Certainly, what works for one group of students may not work for another, and this conclusion will not come as "news" for some readers. But for practitioners, the move toward computer-aided instruction is real; teachers are often encouraged to employ new modes of instruction (e.g., fully online courses or blended experiences) in their classrooms. In fact, administrators may see blended or online instructional opportunities as a way to address facility-related pressures (e.g., classroom constraints or parking issues) or financial concerns (with students meeting online, campuses can enrol nearly double the students, or can meet the needs of their current student population at a reduced price). In an era of technological innovation across educational settings, then, instructors and administrators – especially those who are working to adapt technological innovations for use in their classrooms – may benefit from this preliminary research that underscores the need to adapt classroom technologies and administrative arrangements to distinct student populations.

References

1. Alavi, M. (1994). Computer-mediated collaborative learning: An empirical evaluation. *MIS Quarterly, 18(2),* (pp. 159-174).
2. Allen, I.E. and Seaman, J. (2006). *Making the grade: Online education in the United States, 2006.* Needham, MA: Sloan Consortium. Retrieved September 29, 2007 from http://www.sloan-c.org/publications/survey/pdf/making_the_grade.pdf
3. Bielaczyc, K. and Collins, A. (1999). Learning communities in classrooms: A reconceptualization of educational practice. In C. Reigeluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory* (Vol. 2, pp. 269-292). Mahwah, NJ: Lawrence Erlbaum Associates.
4. Bippus, A.M. and Brooks, C.F. (2006). Student involvement in computer-mediated communication: Comparing discussion posts in online and blended learning contexts. *Proceedings of The 1st International Conference on Virtual Learning, ICVL,* (pp. 113-120).
5. Brooks, C.F. and Young, S.L. (2011). Are choice-making opportunities needed in the classroom? Using self-determination theory (SDT) to consider student motivation and learner empowerment. *International Journal of Teaching and Learning in Higher Education, 23 (1),* (pp. 48-59).
6. Brooks, J.G. and Brooks, M.G. (1999). *In search of understanding: The case for constructivist classrooms.* Alexandria, VA: Association for Supervision and Curriculum Development.
7. Caplan, S.E. (2005). A social skill account of problematic internet use. *Journal of Communication, 55(4),* (pp. 721-736).
8. Cazden, C.B. (2001). *Classroom discourse: The language of teaching and learning* (2nd ed.). Portsmouth, NH: Heinemann
9. Cohen, J.A. (1977). *Statistical power for the behavioral sciences.* New York: Academic Press.
10. Corno, L. and Mandinich, E.B. (1983). The role of cognitive engagement in classroom learning and motivation. *Educational Psychologist, 18,* (pp. 88-108).
11. Creswell, J.W. (2007). *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks, CA: Sage Publications, Inc.
12. Curtis, D.D. and Lawson, M.J. (2001). Exploring collaborative online learning. *Journal of Asynchronous Learning Networks, 5(1),* (pp. 21-34).
13. Ertmer, P.A.; Richardson, J.C.; Belland, B.; Camin, D.; Connolly, P.; Coulthard, G.; Lie, K. and Mong, C. (2007). Using peer feedback to enhance the quality of student online postings: An exploratory study. *Journal of Computer-Mediated Communication [On-line], 12*(2), article 4. http://jcmc.indiana.edu/vol12/issue2/ertmer.html.
14. Garrison, D.R.; Anderson, T. and Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2(2-3),* (pp. 87-105).
15. Garrison, D.R.; Anderson, T. and Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *The American Journal of Distance Education, 15(1),* (pp. 7-23).
16. Heckman, R. and Annabi, H. (2005). A content analytic comparison of learning processes in online and face-to-face case study discussions. *Journal of Computer-Mediated Communication [On-line], 10*(2), article 7. http://jcmc.indiana.edu/vol10/issue2/heckman.html.
17. Heckman, R. and Annabi, H. (2006). Asynchronous learning networks as a virtual classroom.

Communications of the ACM, 40(9), (pp. 44-50).

18. Henri, F. (1991). Computer conferencing and content analysis. In A. R. Kaye (Ed.), *Collaborative learning through computer conferencing: The Najaden papers* (pp. 115-136). New York: Springer-Verlag.

19. Hiltz, S.R. and Shea, P. (2005). The student in the online classroom. In S. R. Hiltz & R.Goldman (eds), *Learning together online: Research on asynchronous learning networks* (pp. 145-168). Mahwah, NJ, US: Lawrence Erlbaum.

20. Hiltz, S.R. and Wellman, B. (1997). Asynchronous learning networks as a virtual classroom. *Communications of the ACM, 40(9)*, (pp. 44-50).

21. Johnson, D.W. and Johnson, R.T. (1994). *Learning together and alone: Cooperative, competitive, and individualistic learning* (4th ed.). Boston: Allyn & Bacon.

22. Jonassen, D.; Davidson, M.; Collins, M.; Campbell, J. and Haag, B.B. (1995). Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education, 9(2)*, (pp. 7-26).

23. Kanuka, H.; Rourke, L. and Laflamme, E. (2007). The influence of instructional methods on the quality of online discussion. *British Journal of Educational Technology, 38(2)*, (pp. 260-271).

24. Lefor, P.J.; Benke, M. and Ting, E. (2003). Information technology and adult learners at Empire State College. *New Directions for Student Services, 102,* (pp. 35-42).

25. Lefor, P.J.; Benke, M. and Ting, E. (2001). Empire State College: The development of on-line learning. *International Review of Research in Open and Distance Learning [On-line], 1,* (2). http://www.irrodl.org/index.php/irrodl/article/view/22/363.

26. Mansour, B. and Mupinga, D. (2007). Students' positive and negative experiences in hybrid and online classes. *College Student Journal, 41(1)*, (pp. 242-248).

27. Mattes, C.; Nanney, R.J. and Coussons-Read, M. (2003). The online university: Who are its students and how are they unique? *Journal of Educational Computing Research, 28(2)*, (pp. 89-102).

28. Mehan, H. (1979). *Learning lessons*. Cambridge, MA: Harvard University Press.

29. Mehan, H. (1998). The study of social interaction in educational settings: Accomplishments and unresolved issues. *Human Development, 41(4)*, (pp. 245-269).

30. Moore, M. G. (2005). Editorial: Blended learning. *American Journal of Distance Education, 19(3)*, (pp. 129-132).

31. Oriogun, P.K.; Ravenscroft, A. and Cook, J. (2005). Validating an approach to examining cognitive engagement with online groups. *American Journal of Distance Education, 19(4)*, (pp. 197-214).

32. Reasons, S.G.; Valadares, K. and Slavkin, M. (2005). Questioning the hybrid model: Student outcomes in different course formats. *The Journal of Asynchronous Learning Networks (JALN), 9(1)*, (pp. 83-94).

33. Richardson, J.C. and Newby, T. (2006). The role of students' cognitive engagement in online learning. *American Journal of Distance Education, 20(1)*, (pp. 23-37).

34. Rovai, A.P. and Jordan, H.M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning [Online], 5*(2), http://www.irrodl.org/index.php/irrodl/article/view/192/274.

35. Schrire, S. (2004). Interaction and cognition in asynchronous computer conferencing. *Instructional Science, 32(6)*, (pp. 475-502).

36. Sperling, M. (1995). Uncovering the role of role in writing and learning to write: One day in an inner-city classroom. *Written Communication, 12(1)*, (pp. 93-133).

37. Sullivan, N. and Pratt, E. (1996). A comparative study of two ESL writing environments: A computer-assisted classroom and a traditional oral classroom. *System, 29(4)*, (pp. 491-501).

38. van Aalst, J. (2006). Rethinking the nature of online work in asynchronous learning networks. *British Journal of Educational Technology, 37(2)*, (pp. 279-288).

39. Vess, D. L. (2005). Asynchronous discussion and communication patterns in online and hybrid history courses. *Communication Education, 54(4)*, (pp. 355-364).

40. Vygotsky, L. (1962). *Thought and language* (A. Kozulin, Trans.). Cambridge, MA: MIT Press.

41. Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

42. Wegegrif, R. (1998). The social dimension of asynchronous learning networks. *Journal of Asynchronous Learning Networks, 2(1)*, (pp. 1-17).

43. Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.

44. Wertsch, J.V. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA: Harvard University Press.

45. Young, J.R. (2002, March 22). 'Hybrid' teaching seeks to end the divide between traditional and online instruction. *The Chronicle of Higher Education,* p. A33.

46. Zhu, E. (2006). Interaction and cognitive engagement: An analysis of four asynchronous online discussions. *Instructional Science, 34*, (pp. 451-480).