

## Students' Experiences of Technology-Enhanced Learning in Two Traditional Teacher-Preparation Classrooms

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### Abstract

The purpose of this study was to explore the perceived differences in students' learning experiences and their learning role adjustments by integrating online discussions into the instructional design of two teacher-preparation courses. Forty-eight students participated in this study in a northwestern public university in the spring 2009 semester. The results showed: 1) students indeed appreciated the educational value in the combination of online discussions with F2F discussions; and 2) students found that as learners they changed their normal classroom roles from being passive to more active. Additionally, the majority of the participants recognized the process of reading and writing appeared to translate to more thoughtful and meaningful oral discussions while meeting in the traditional F2F classroom. This activity was shown to fully explore the topic in question after having interactions with peers in online discussions for the assigned reading text. Finally, implications for designing online and F2F discussions are discussed.

**Keywords:** online discussion, F2F discussion, blended learning, hybrid learning, role adjustment, technology-enhanced learning, course design

### Introduction

For a variety of reasons, the demand for online courses in higher education is steadily increasing. One of the primary incentives for students to enroll in online higher education courses is a general reduction of time and place constraints. A growing number of students in higher education are beginning to enjoy the flexibility of time and place as they adapt to online learning environments. Along with the growing demand for pure online learning environments, the acceptance of a combination of online learning and face-to-face (F2F) learning (also known as blended learning or hybrid learning) is growing as well, and the combination of the two instructional approaches may represent the best of both learning environments. Several researchers have investigated hybrid or blended courses in higher education and reported the positive effects on students' learning (An & Kim, 2006; Ellis & Calvo, 2004; Garrison & Kanuka, 2004; Ginns & Ellis, 2007; Mikulecky, 1998; Walker & Arnold, 2004; Yudko, Hirokawa, & Chi, 2006). While computer-mediated communication (CMC) offers higher education a new use of technology-enhanced learning environments, some researchers are concerned about the impact of this new approach to the over-all quality of campus-based learning experiences (Ellis, Goodyear, Prosser, & O'Hara, 2006).

Generally, CMC is widely applied in online settings to provide a convenient platform through which online faculty and students can communicate and, hopefully, learn together. By integrating CMC into the

learning environment, tech-savvy students can easily engage in interactive discussions about course readings in an asynchronous environment, even though CMC engagement often requires a shift from the oral environment most often seen in traditional higher-education classrooms to a more informal written communication environment seldom seen in higher-education. Such a teaching and learning environment offers college students the opportunity to participate in meaningful learning activities even though members of the learning community are not necessarily bound together by place and/or time. The appropriate use of online discussion platforms can also contribute to the creation of a learning-centered environment firmly grounded in social constructivist theory (Vygotsky, 1978), which has become a significant influence on the philosophical framework of most teacher-preparation programs. However, Zhang, Gao, Ring, and Zhang (2007) argued that, "Online discussion forums face many challenges and more research is needed to understand whether online discussion forums can be used effectively in traditional instruction and how teachers can efficiently blend it with their face-to-face instruction" (p.627). Therefore, appropriately designed and thoughtfully implemented online discussions may not only become a powerful pedagogical tool to support and guide students in F2F classrooms as they encourage deeper and more meaningful learning, but such online discussions may also offer researchers a rich opportunity to add to the growing body of research in this field.

### Related Work

A somewhat extensive body of research has reported that online discussions can lead to a positive learning experience for students, can enhance both cognitive development and higher-order thinking (Garrison, Anderson, & Archer, 2000; Garrison & Kanuka, 2004; Meyer, 2003; Taradi & Taradi, 2004), and can improve social development in some applications, such as EFL classrooms (Huang, McConnell & McConnell, 2009). However, research that addresses the implementation of online discussion as a supplemental instructional tool in a traditional F2F classroom appears to be relatively rare. Other than articles by Althaus (1997), Ellis, Goodyear, Calvo, & Prosser (2008), Ellis, Goodyear, Prosser, & O'Hara (2006), Taradi & Taradi (2004) and Wu & Hiltz (2003), little seems to have been written about the application of online discussion as technology-enhanced instructional support for F2F instruction in higher education. Given the nature of today's learning environments, the technological proclivities of today's learners, and the increasingly sophisticated communication technology available to educators, it seems only logical to investigate instructional strategies that maximize technology integration into traditional face-to-face classrooms, especially for teacher-preparation programs.

According to Althaus (1997), "In theory, online discussions help more students learn better by placing them in an intellectual environment that encourages active, thoughtful, and equal participation from all comers" (p. 158). He argued that a combination of face-to-face and computer-mediated discussion (CMD) provided a better learning environment than that of the traditional classroom. From 142 participants' responses, he found that students who actively engaged in CMD earned higher grades than students who did not engage in CMD. In addition to apparently learning more than students who did not engage in CMD, students who were engaged in CMD also reported that they enjoyed this mode of interaction more than they enjoyed the traditional approaches to classroom discussion.

In reporting the successful use of CMD as an instructional strategy, Mikulecky (1998) explored the characteristics of three different discussion mediums—online discussion, onsite group discussion, and onsite full-class discussion—in three different classroom settings. He summarized that through online discussions students and professors could develop and continuously engage in meaningful communications and establish better personal and cognitive connections through the sharing of personal examples which promoted deeper understanding of course concepts among class participants.

Ellis, Goodyear, Prosser, and O'Hara (2006) investigated students' experiences of learning through online and F2F discussions. The researchers in that study asked students to engage in F2F discussion first and to engage in online discussion following the F2F discussion. They found that students are likely to reach higher-order thinking and make stronger connections through active engagement in a blended discussion format.

Garrison, Cleveland-Innes, and Fung (2004) explored students' role adjustment in online environments by comparing their online learning experiences to their previous F2F learning experiences. Following factor analysis in the questionnaire based on the community of inquiry model from a total of sixty-five responses, they asserted that "students do see a difference in the learning process and a need for role

adjustment” (p. 70). Meanwhile, according to the findings of their study, students’ transition from traditional classroom learners to online learners and back again as they move between the two environments can become a significant factor in overall student motivation and learning.

The purpose of the present study was to explore the differences in students’ learning experiences and their learning role adjustments by integrating online discussions into the instructional design of two teacher-preparation courses. The study employed free wiki sites as instructional support tools at different times during the semester in two campus-based courses. The study was primarily designed to investigate the differences in student perceptions between a traditional F2F classroom and a classroom that integrated online discussions prior to F2F discussion. The research questions driving this study were:

1. With regards to student perceptions of effectiveness and/or usefulness of online discussion, does integration of online discussions at the beginning of the semester differ significantly from integration of online discussions in the middle of the semester?
2. What role adjustments, if any, did students make to accommodate the online discussions integration into traditional campus-based classrooms?

## Research Method

To gain a better understanding of students’ perceptions of the combination of online and F2F discussions in two traditional teacher-preparation classrooms, the researchers posted an end of semester online survey that included ten open-ended questions in an attempt to collect students’ thoughts and perceptions regarding the instructional approaches used in the two courses. Two of the ten questions were discussed as research questions in this paper.

### *Participants*

A total of forty-eight participants were enrolled in two different sections of the same course titled *Literacy Methods for Content Learning* in the spring 2009 semester at a land grant university in the United States. Class A, which integrated online discussions at the beginning of the second week of the semester included fifteen students (thirteen undergraduates and two graduate students). Class B, which integrated online discussions at the beginning of the ninth week of the semester was comprised of thirty-three undergraduate students. On average, Class B was younger (97% were 20-29 years old) than class A (87% were 20-29 years old). All of the participants in the study were either education majors or students seeking state certification as public school teachers.

### *Data Sources*

The data used in this study were collected from written responses to open-ended questions regarding student perceptions of the use of online discussions integrated into a traditional campus-based course. The questions were posted to an online site available only to the participants in the study and the researchers. The online discussion opportunity—which was offered through a wiki platform—was intended to deepen student understanding of course concepts and to enhance student motivation to engage in F2F discussion of the assigned course reading. Student responses to two open-ended questions were collected by the researchers at the end of week nine and week fifteen of the sixteen-week courses, respectively. To encourage honest responses from survey participants, students were asked to submit written responses to the questions anonymously through an online format. The two questions driving the present study were posted online for a total of two weeks and participants could respond at any time during that two week picture. Even though participation was voluntary, one hundred percent of students in both classes—a total of forty-eight— posted responses to the ten open-ended questions in the online survey.

### *Instructional Procedures*

Both Class A and Class B were taught by the same instructor and both classes used the same course text. Students in the two classes were required to read the assigned readings before writing and posting a response to the reading and both classes met weekly in traditional F2F campus-based classrooms to further discuss the assigned readings and their peers’ written reflections that had been posted to the class wiki prior to the F2F meeting.

Class A was scheduled to meet for two hours and fifty minutes one evening each week during the spring 2009 semester. For the purposes of this study, the instructor divided the normal class meeting time into two parts. For the first part, the students and the instructor met in a traditional F2F classroom for approximately two hours and twenty minutes each week. For the second part of each weeks meeting, the instructor allowed students thirty minutes of class time to participate in the online discussion. Beginning with week two, students in Class A not only read the assigned readings and posted a personal reflection/response to the readings prior to coming to the F2F class meeting, they also responded to at least three personal reflections/responses from their Class A peers before the weekly F2F meeting. The class online discussion forum was created at a free wiki site (see <http://edci463edci563-01.wikispaces.com/>).

Students enrolled in Class B met in a traditional university F2F format twice each week (on Tuesdays and Thursdays for a total of three hours each week). Prior to week nine, students Class B were required to write a personal reflection/response to the assigned reading and to bring the written reflection/response to class for sharing with other students. Beginning with week nine and continuing until the end of the spring semester, students in Class B posted their personal reflections/responses to the assigned readings to online discussion platform. Like students in Class A, students in Class B were asked to first read the assigned text and then post a personal reflection/response to the reading to a password-protected class wiki site (see <http://edci463-02.pbwiki.com>). Additionally, similar to students in Class A, students in Class B were required to respond to at least two of their peers' personal reflections/responses before the weekly F2F class meeting.

The researchers' chose to use a free wiki site for the present study for the following reasons: 1) a wiki site offers a collaborative online environment which is relatively user-friendly; 2) students can meet asynchronously to post initial reflections on required readings and also post responses or reactions to peers' initial postings to the same readings; and, 3) the use of a wiki site is free to anyone with a computer and an internet connection, which might be an important consideration for future public school teachers who might want to incorporate online discussions into their own instructional approach.

## Results and Discussion

The findings of the present study allowed the researchers to draw some preliminary conclusions about students' perceptions of an online discussion/learning environment and the role adjustments they had to make as learners as they transitioned from a traditional F2F classroom to an online environment and back again each week.

### Research Question One

In an attempt to answer the question, "With regards to student perceptions of effectiveness and/or usefulness of online discussion, does integration of online discussions at the beginning of the semester differ significantly from integration of online discussions in the middle of the semester?" The researchers asked students to respond to the following:

Please describe your thoughts about class discussions in this course where you have experienced both online and face-to-face discussion. Do you see value in the combination of online and face-to-face? If so, what is the value? If not, what, if anything, should be done to make the combination of online and face-to-face discussion valuable to you?

Two responses from students from Class A seemed to encapsulate the general thinking of the class in response to this question:

*I think the biggest value in combining the two teaching methods, is the accountability for your words posted online in the face-to-face discussion. One of the biggest challenges for me in the online portion is reading what others have said in response to my posting and remembering what topic has been discussed week to week. When I do review prior to class, I feel more prepared, apt to talk, eager to ask additional feedback about postings. If I neglect to do this part, I typically have to pull my computer out at the start of class and give myself a quick review at the beginning of class to catch up. I realize I should be doing this prior to class time because it does make the sessions more meaningful for me overall, but my schedule does not always allow it and its off my radar once I have posted my replies [Student Two].*

*Having to experience both online and face-to-face discussion has been interesting and helpful in being more out-spoken in my ideas. I think having both helps people talk about their opinions/thoughts and write them as well. As the textbook once stated, writing is thinking. People who are afraid to talk in front of people face-to-face are able to put down their thoughts first online and as time progresses they will feel more comfortable speaking in class. What might help our in class discussion is to have us pick out two things from the online discussion to discuss in the upcoming class. This will help us in class discussion [Student Six].*

Responses from the students in Class B, who were engaged for the first half of the semester in only a traditional F2F campus-based classroom and were later engaged for the second half of the semester in a blended—online and F2F—environment are generally represented by the following:

*I think if there was a mix of online discussion and face to face class time included from the beginning it would be more effective. The online discussion gives us an avenue to get peer input, and the face to face discussion is always a little more unpredictable which can provide great learning opportunities (as well as distractions at times) I think, to make the online discussion more beneficial as a whole, and enrich the class time is to make it more of a forum format [Student Three].*

*I think it is valuable because the online portion allows you to more fully give ideas in response to what you have read from someone's reflection, and with the face-to-face portion of the class we are able to discuss reactions and have a debate, which is hard to have online [Student Eight].*

*I do see the value in combining the two but I obviously feel that in the class discussion is more valuable because it is happening right away you do not have to wait for another person to come and reply there is already someone ready to reply in the classroom [Student Fifteen].*

*Online is easier and saves time, so that's its benefit. It also allows people who are too shy to speak up to have input, but that's also bad, because it just enables them to continue being shy, and they never learn to speak up [Student Eighteen].*

*I see value in both the on-line discussions and face to face discussions. I think it's better to interact with your peers, since as a teacher, you're going to have to know how to interact with your students; however, technology is becoming ever so important in society today, and it is a good idea to help integrate our generation into the world of on-line interaction/discussions [Student Twenty-one].*

*As I described in question one, I feel that using the internet to supplement what is happening in the classroom is a completely natural and fitting step towards connecting student's class time with their real-world interests, and is already a communication tool that most students use on a day to day basis. I talk to my friends face-to-face, but I still find it helpful and enjoyable to communicate with them on Facebook as well. I think the same idea could be applied to in-class versus on-line communication in school settings [Student Thirty-two].*

By responding that “I feel more prepared, apt to talk, eager to ask questions for additional feedback about postings (Class A, Student Two) and “People who are afraid to talk in front of people face-to-face are able to put down their thoughts first online and as time progresses they will feel more comfortable speaking in class” (Class A, Student Six) the students in Class A seemed to value the online discussion and to support the idea that online discussion enhances students’ preparation for participation in the F2F discussion which may translate to enhanced student learning.

Responses from Class B also seemed to indicate that both online and F2F discussion have value to students. In responding to the question, “Do you see value in the combination of online and face-to-face,” Student Three (Class B) said, “I think if there was a mix of online discussion and face-to-face class time included from the beginning it would be more effective.” And Student Twenty-One (Class B) wrote, “I see value in both the online discussions and face-to-face discussions . . . [because] . . . technology is becoming ever so important in society today . . . .” Student Thirty-two (Class B) also indicated that, “. . . using the internet to supplement what is happening in the classroom is a completely natural and fitting step towards connecting students class time with their real-world interests.” Overall, responses from

Class B, like the overall responses from Class A, seemed to indicate that even the students who had mild preferences for one environment over the other still found the educational value in the combination of online discussion with F2F discussion. The findings from this study seem to echo the assertions of Althaus (1997), Mikulecky (1998) and Ellis et al. (2006).

#### *Research Question Two*

Attempting to answer the question, "What role adjustments, if any, did students make to accommodate the online discussions integration into traditional campus-based classrooms?" Participants were asked to respond to the following question:

When you think about your participation in a combination online/face-to-face course, how has your role as a student changed in terms of behaviors, expectations and requirements?

The following responses were indicative of responses from students in Class A:

*In most cases I do not like to talk in a class. I prefer to just listen to the ideas that other people have, but I find myself talking in the class more that I do in other classes and I think it's because of the combination that we have in this course [Student Four].*

*Because a combination class requires more of you than just participating in class and doing whatever work is due that week, it really makes you pay attention to the material in that class. I don't just shut down after the class period is over because I know that I have a response due in the next couple days, so I am constantly thinking about which topics really interested me in whichever chapter we are talking about. A few days after that I know that I need to respond to three other people's posts which keep me involved in the class as well. I tend to pay much more attention in a class where online instruction is used because it requires more of me than a regular, 2 or 3 day a week class does [Student Eight].*

*I am normally a very quiet student in the classroom. I like to take in conversations and compare and contrast those ideas with my own privately. I don't know why this is, but it is just a behavior I have always done in classrooms. You would never guess it if you knew me outside the classroom, because I am usually pretty vocal and outgoing. I have seen a difference in my verbal participation since Wiki. I have noticed that I speak up a lot more in class and am more confident when I voice my opinions. I enjoy discussion in this class and expect to only become a more active student [Student Ten].*

In response to the same question, students in Class B said:

*I feel like i am less involved with online stuff [Student Five].*

*I feel like I can slack a little in online classrooms which is [are] why I don't always like them [Student Nine].*

*In the combination course I am almost more comfortable commenting and participating. I am somewhat shy and nervous to consistently speak up in class but the feeling of anonymity that comes with the online setting makes me much more comfortable sharing what I think or feel about things [Student Thirteen].*

*As a student, I realized that I enjoy face-to-face interaction for most of my learning, but that I am more open about what I think about things when I'm posting online. I also realized that online discussions made it a lot easier for me to procrastinate, which is a problem I have had trouble correcting [Student Nineteen].*

*In class I am not likely to voice my opinion very often, online I will though. I think it changed what was expected in that students were highly encouraged to participate in class but it was made easier online. The requirements stayed the same i think, just a different venue [Student Twenty-nine].*

*When I don't know my peers I don't speak up as much in class. It seems to be easier to respond to people's responses online. I still worked hard in both the classroom activities and with the*

*online discussions. I knew that I was required to respond to two reflections for each chapter online and I always did as I was supposed to do. My expectations and behaviors didn't change. I knew that I still had to be kind to my classmates when I respond to their reflections and treat them with respect in the classroom [Student Thirty].*

The learning role identity adjustment proposed in Garrison et al. (2004) was found in the participants' responses to the question regarding their learning role. Students expressed that, as learners, they changed their normal classroom roles from being passive to becoming more active. The transitional processes made students more willing to engage in the new learning environment than they were in the traditional F2F classroom. For example, student Eight from Class A reported that he or she needed to "constantly [think] about which topics really interested me in whichever chapter we are talking about" and Student Ten from the same class reported that she or he had "noticed that I speak up a lot more in class and am more confident when I voice my opinions. I enjoy discussion in this class and expect to only become a more active student." Participating in online discussions allows students to have more time to think about what they intend to say before "publishing." As Garrison et al. asserted, "The cognitive demands may well also increase as learners are expected to contribute ideas and share their thoughts" (p.65).

Although some students in class B expressed no big influence in their learning roles by integrating online discussions into learning, it seems reasonable to suggest that the opportunity to implement the new learning and teaching strategy in teacher-education programs may yield somewhat contributions in increasing the awareness of learning process and knowledge construction. Through interactive online discussions with peers, students not only respond to peers' postings but also bridge the gaps in their understanding from reading the assigned texts. Moreover, students demonstrated their understanding through posting personal reflection online toward reading text and gave at least two peer responses prior to entering traditional classrooms. These active and independent learning strategies coincided with the nature of social constructivist approach to learning (Vogotsky, 1978).

In terms of cognitive development, the findings of the present study indicated that students' learning satisfaction was highly enhanced and more meaningful when the instructor combined significant opportunities for online written discussion with similar opportunities for oral discussion in the traditional face-to-face classroom. From the results, eighty percent (80%) of the participants from two classes indicated that they "felt" a trust and supportive learning community in this class through reading peers' reflections and receiving peers' feedback toward their own reflections in the online environment offered by the class wiki. This finding is aligned with An & Kim's (2006) study in which the authors' reported finding evidence that online discussion can create a sense of participation in a positive learning community.

Some students pointed out that F2F and online discussions have their own advantages and disadvantages respectively. As Meyer (2007) stated that the two discussion formats demonstrates positive and negative characteristics. Thus, as educators, how to design effective teaching strategies to enhance students' desirable learning outcomes is vital in educational contexts so as to meet different students' learning styles.

## **Conclusions**

While additional analysis is clearly called for, the data collected for the present study appeared to indicate that well designed and appropriately managed online discussions seem to allow and invite each class member not only to take more time to read and consider his or her peers' initial online postings about shared readings, but also more time to craft a thoughtful written response to peers. This reading and writing appear to translate to more thoughtful and meaningful oral discussions when students and professors finally meet in the traditional F2F classroom to more fully explore the topic in question. Additionally, the presence of an online discussion opportunity seems to enhance the overall quality of student discussion, and an enhanced student discussion inevitably leads to improved student understanding of course concepts, which may lead to greater student achievement of course objectives. Also, based on the data collected for this study, online discussions appear to be very useful to students who are less confident about speaking out in front of peers, since the opportunity to express their thinking through the online discussion allows them to share their thoughts in a medium that might better suit their comfort zone.

Online discussions conducted prior to F2F discussions appear to help meaningful learning occur since students are expected to manipulate the ideas and issues at hand for a longer period of time and through different mediums, reading, writing, speaking, and listening. This finding is consistent with Vygotsky's social constructivist theory in which cognitive developments are stimulated in social contexts. In other words, students' zones of proximal development can be fostered not only through writing responses to peers' personal reflections on the assigned texts, but also through a more focused oral discussion that follows the online written discussion. From reading and responding to peers' reflections on the same text, students are invited to read and consider perceptions and conclusions different than their own and, if necessary, ask follow-up questions about those perceptions and conclusions in the F2F discussions, which may provide a scaffold to higher-order thinking and increased cognitive development.

Developing students' ability to question and reason, through the integration of technology as an instructional tool seems particularly important in a teacher education program. Additionally, instructors in teacher preparation programs seem to have a critically important role in modeling for future teachers how technology can be used to create a learning environment that takes advantage of students' propensity to communicate through technology. Also, the present study suggests that utilizing an online discussion as a supplement to the traditional face-to-face classroom discussion will require classroom instructors to make a shift from the traditional role of disseminator of content knowledge to discussion manager and facilitator of meaning-making.

### Implications

The integration of appropriate instructional technology into the higher-education classroom is inevitable. With that inevitability in mind, teacher educators should keep two things in mind: 1) when possible, the technology they use in their teacher education classes should be available to K-12 classrooms at a reasonable price and require a minimum of upkeep (the wiki used in the present study was free); and 2) the technology used should offer a learning environment that encourages students to engage not only with the technology but also with each other, much like the social networking sites now so popular among younger generations. Most students, whether K-12 or post-secondary, expect to see and experience some technology integration into classroom instruction and the blend of online and face-to-face discussion seemed to enhance learning for most of the students who participated in the present study. Future research in this area will include the application of this blended online/face-to-face approach in other content areas.

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