# Moodle vs. Facebook: Does using Facebook for Discussions in an Online Course Enhance Perceived Social Presence and Student Interaction?

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**Abstract:** In this study, we investigated the effect of using the social network site Facebook for discussions in an online course. Data were collected from concurrent offerings of an introductory educational psychology course, one using Facebook discussion boards and the other Moodle forums. We measured student perceptions of social presence and the frequency and length of their discussion interactions. Evaluation of this data indicated that there were no differences in our measures. We discuss why the potential benefits of Facebook for online teaching may not have emerged in this study and provide suggestions for further research in this area.

## Introduction

Millions of college students have taken higher education courses online, and enrollments continue on a steep upward trajectory (Allen & Seaman, 2007). A variety of factors are attributed to the success of these courses, among them is active learner-learner discussion among course participants (Swan, 2001). At the same time, the growth in social network site membership and use, especially among college students, is rampant (Ellison, Steinfield & Lampe, 2006; Stutzman, 2006). Though the goals of participation in an online course and a social network site are often dissimilar, several of the affordances inherent to social network sites may prove useful to promoting the goals of online learning.

With this in mind, we examined the effects of using Facebook for the discussion elements of an online undergraduate educational psychology course. Facebook was chosen for two reasons. At the commencement of our study, it was the fastest growing social network site on the Web, reflected by the fact that 94% of the students surveyed at our institution in 2006 had Facebook accounts (Ellison, Steinfield, & Lampe, 2006). We also selected Facebook for its potential as a fully functioning Learning Management System (LMS).

# Background

Several conceptual frameworks informed the design of our study.  The literature demonstrated that online courses are more often successful when they appear to be *communities of learning,* with high levels of *social presence*, which together lead to high levels of *discussion and interaction* among the students.  We also examined the various *affordances of social network sites* that indicated the potential for these sites to be amplifiers of the key variables for successful online learning.

## Communities of Learning

When considering communities of learning, Lave and Wenger's concept of a *Communities of Practice* (CoP) (Lave, 1991; Lave & Wenger, 1991; Wenger, 1998; Wenger, 1999) provided an excellent framework from which to begin.  CoPs are defined as "groups of people who share a concern or passion for something they do and learn how to do it better as they interact regularly" (Wenger, para 4). They also take place within a shared domain of interest; represent a community of joint activities, discussions, and information sharing; and, demonstrate practice by a shared repertoire of resources (experiences, sensibilities, artifacts, vocabulary, stories, tools, ways of addressing recurring problems) that require sustained interaction (Wenger, 1999).  CoPs are often informal in nature (Wenger, 1998); their members usually volunteer or want to join the group (Niesz, 2007); and, they facilitate a high level of interpersonal connections leading to comfort and trust (MacDonald, 2008).  Though originally conceived to be in the same location, they are often now Web mediated and virtual (Kirshner & Kwok-Wing, 2007).   The power of learning in a CoP stems from the social process of learning, by which "discourse and dialog enables enquiry, encourages construction of personal meaning, and shapes and confirms mutual understanding" (Kirshner & Kwok-Wing, p. 128). This social learning process is often manifested through a form of legitimate peripheral participation, whereby newcomers participate at a more superficial level until better acquainted with the community.  However, within the constraints of a one-semester course, it is difficult to embody the full specifications of a CoP in an online course. For instance, CoPs typically span an extended time frame, establish a cultural history, are based on shared memories, demonstrate an overlap of histories among members, and have built-in mechanisms for reproduction (Lave and Wenger, 1991, Wenger, 1998).

Therefore, the notion of "practice fields" (Barab & Duffy, 2000) further informed the sense of community endeavored in online semester long university courses.  Practice fields represent learning communities, and are more typical of the structural requirements of educational institutions.  They demonstrate collaborative and social negotiations of understanding; teachers as coaches and models; opportunity for reflection; a motivating learning context; ownership over inquiry that leads to responsibility for learning; and less focus on grades.  Student contributions in practice fields are contextualized, and are thus not as societal in nature as they would be in a CoP. At the same time, members are all expected to be "core members" from the start, and it is not expected that they will take time at a superficial level of contribution to acclimate.

Consistent with Vygotsky's (1978) socio-cultural perspective, whereby cognitive functions are largely facilitated by social interactions, learning communities based on these ideas facilitate interactions such that individuals can learn to do things with others that they themselves cannot learn on their own.  This is done through sharing among the interactions within social networks by "reinforc[ing] cognitive development (knowledge construction) in the context of social connection and facilitation" (Woods & Ebersole, 2003, para 8).  Learning communities may also increase the flow of information, the availability of support, cooperation, and group satisfaction among their members (Rovai, 2002) while reducing students' sense of isolation (Tinto, 1993).  Finally, a sense of community in an online course may contribute to students' perceptions of learning (Ertmer & Steptich, 2004) and increase critical thinking skills (Fink, 2003).

The development of community is often difficult, especially online.  Limited (or no) face-to-face interaction may inhibit students' ability to form social networks that lead to community (Dawson, 2006).  Various information and communication technologies may help overcome this limitation for interaction by mediating spatial and temporal differences (Haythornthwaite, Kazmer, & Robins, 2000).  However, simply using computer-mediated communication does not necessarily facilitate interaction and community (Brook & Oliver, 2003).  It is therefore useful to investigate technological tools that are largely successful at building community, such as social network sites like Facebook.

## Social Presence

Several factors promote a sense of community in online courses.  Among them is social presence (Gunawardena & Zittle, 1997; Rovai, 2002).  Social presence is defined as the degree to which people perceive each

other as real in mediated communication (Gunawardena & Zittle).  Specific to an online course, it has been further defined as the learner's ability to project themselves socially and affectively into a community (Rourke, Anderson, Garrison, & Archer, 1999).  It may be a factor of both the medium and the person communicating. That is, the choice of mediator (e.g., Moodle vs. Facebook), may change the extent to which social presence is perceived.

Garrison, Anderson & Archer (2000), indicated that social presence is essential to any educational experience.  It has been shown to be a significant predictor for students' perceived learning (Richardson & Swan, 2003). But, both students and teachers have indicated that establishing social presence in online classes is difficult (Stacey & Wiesenberg, 2007).  Nippard & Murphy (2007) also provided evidence that expressions of social presence by students may draw attention away from content (though their study examined synchronous learning among secondary students, where distractive behavior may be more likely that with post-secondary students).

There is also evidence of a mutually beneficial relationship between social presence and the discussion portions of online courses.  Students with perceptions of higher social presence tend to be more involved in online discussions (Swan & Shih, 2005).  At the same time, reading more postings also leads to a greater sense of social presence (Moisey, Neu, Cleveland-Innes, 2008). Peolluber, Chomienne and Karsenti (2008) indicated that insufficient attention to developing social presence among their students might have lead to a lack of student-student interaction.

Media choice may also facilitate social presence and community, which together have been shown to impact the quantity of writing in an online course (Lomicka & Lord, 2007).  As such, Anderson (2005) outlined the expected deployment of a socially based software application for use in teaching online courses, indicating that social software may indeed be the "killer app" for online courses, given its ability to enhance social presence.

Finally, Bai's (2003) review of social presence theory and online learning indicated that social presence leads to reduced isolation and detachment while encouraging interaction and participation in online courses.

## Interaction

Student-student interaction in course discussions is one of the most influential factors for successful online courses (Fulford & Zhang, 1993; Kearsley, 1995; Sherry, 1996; Swan, Shea, Fredericksen, Pickett, Pelz & Maher, 2000; Picciano, 2001). Beaudoin (2001) found that high interaction students achieved the highest performance. Students and faculty report increased satisfaction for online courses depending on the quality and quantity of these interactions (Dziuban & Moskal, 2001; Hartman & Truman-Davis, 2001; Picciano, 2002).  Picciano (1998) found that student perceptions of learning in online courses are related to the amount of discussion.  A sense of community in online courses can also be enhanced by the frequency of interaction (Dawson, 2006; Wood & Smith, 2005), especially in learner-learner discussion (Palloff & Pratt, 1999).  And, Swan et al. (2000) indicated that successful online courses provide equitable and democratic discussion. However, Jin (2005) noted the general lack of student participation in online discussions and the need for solutions to ameliorate this problem.

## Social Network Site Affordances

Social network Web sites are defined by the users' ability to make an online profile of themselves within a bounded system, indicate with whom they would like to share connections (i.e., identify their "friends"), and view their connections and the connections made by their friends (Boyd & Ellison, 2007). Wheeler, Yomens, and Wheeler (2008) claimed that such sites "afford students unprecedented opportunities to share their ideas, celebrate their creativity and receive immediate feedback from fellow networkers" (p. 988) and that they "[compel] learners to participate in the digital milieu and brings them back regularly to repeat productive and enjoyable experiences" (p. 988-989). The *Horizon Report* (Johnson, Levine & Smith, 2007) agreed, noting that these sites "not only attract people but also hold their attention, impel them to contribute, and bring them back time and again – all desirable qualities for educational materials" (p. 12).

For this study, we chose Facebook as the social network site to examine given its recent surge in popularity (especially among college students) (Ellison, Steinfield & Lampe, 2006; Stutzman, 2006) and its open platform that allows for third-party application development.  The latter capability gives Facebook the most potential for implementation as a full-featured LMS. Typical features of a social network site include the ability to accept and leave comments, private messaging, photo sharing, video sharing, blogging, and instant messenger capability (Boyd & Ellison, 2007). Facebook has myriad add-in applications that can be employed, most of which bring users together based on their interests, and are designed to help users get to know their friends better and to encourage more frequent communication and interaction. These applications are highly engaging, capturing more time per session that other features on the site (Freiert, 2007).  In this way, we attribute much of Facebook's popularity to its ability to establish community, facilitate social presence, and encourage frequent interaction.

We argue that Learning Management Systems such as Blackboard and Moodle do not inherently promote a sense of community, social presence, and frequent interaction in the way that Facebook does. As such, we endeavored to test these affordances and their potential ability to enhance social presence and interaction in an online class.

## Research Questions

In an online undergraduate course, does use of a Facebook Discussion Group in lieu of Moodle Forums: (1) increase the frequency of discussion interactions among students? (2) increase the length of discussion postings among students? (3) increase the perception of social presence among students?

## Method

### Study Design
This study implemented designed-based research with the strength of randomized experimental design.

### Setting
Two concurrent online sections of introductory educational psychology at a large public university in the Midwest served as the basis for this study in the spring 2008 semester. This course is an introductory educational psychology class, required for pre-service teachers, and available to the entire university. Topically, it is divided into eight two-week modules.

The courses were hosted in Moodle, a common LMS for teaching online courses. In one section, the students used the built-in Moodle forums for online discussions. In the other, links to a Facebook group Discussion Board were embedded into the Moodle interface. This provided two points of entry for discussion in the Facebook group, one through Moodle, and the other through Facebook. We decided to use only the Facebook discussion feature given the limitations of hosting the entire course in Facebook and the desire to keep all other elements of the course constant.

The content of these two sections was identical. Furthermore, the quantity of feedback provided by the instructors and course TA's was consistent. That is, if TA comments were made in the discussion about topic A in Module 3 for the Facebook group, a comment was also provided to the Moodle group.

### Participants
Students enrolled in these courses were randomly assigned to either a Facebook or Moodle section. Sixteen students finished the semester in good standing the Moodle section and fifteen in the Facebook section. Each section had two males and the remainder females. A majority of the students in these classes were not pre-service teachers, and represented various subjects.

### Data
We collected data from student discussion postings and from online surveys. A discussion comprised both student responses to a question or set of questions posted from the course teaching assistants and students' required responses to each other, based a rubric designed to encourage multiple interactions, constructive criticism, and elaboration of key ideas. Upon completion of the course, Module four was randomly selected for discussion data analysis. The surveys, adapted from Richardson and Swan (2003), were intended to measure student perceptions of social presence based on 5-point Likert scales. Comparative statistical analysis of the frequency and length of messages in postings and the Likert survey averages was performed.

## Results

### Discussion Length and Frequency
Module four required student discussion of three separate topics. In Table 1, we present data for the average number of words per posting and the average number of entries per student for their entries across all three topics. We also provide the average number of words per posting and the average number of entries when considering only those entries provided after each student answered the original question from the TA; these

averages therefore represent only the student-student interactions.  When these averages were compared, no statistical significance was determined between the Facebook and Moodle group, $t(269)=1.14$, $p=.26$ for all postings, $t(184)=1.19$, $p=.23$ for student-student postings.

Table 1. Means and Standard Deviations for All Module 4 Discussions

|  | All Postings | | Student-Student Postings | |
| --- | --- | --- | --- | --- |
|  | M | SD | M | SD |
| # of words per entry |  |  |  |  |
| Facebook sections | 201.32 | 163.73 | 116.58 | 78.49 |
| Moodle section | 188.64 | 154.40 | 107.79 | 83.62 |
| # of entries per student |  |  |  |  |
| Facebook sections | 2.84 | 1.09 |  |  |
| Moodle section | 2.98 | 1.36 |  |  |

**Social Presence Surveys**
        Students were given an online survey to examine their perceptions of social presence in the course.  The survey was adapted from Richardson and Swan (2003).  It presented 15 questions, 10 of which examined perceived social presence as facilitated by other students, and five of which examined perceived social presence as facilitated by the instructor. MANOVA analysis indicated that the course section (Facebook vs. Moodle) did not have a significant effect on perceived social presence.  Individual follow-up analysis of the questions did, however, demonstrate significant differences for two of the survey questions. These questions demonstrated characteristics of social presence that were stronger in the Moodle section.  When presented with the statement "Online or web-based education is an excellent environment for social interaction," Moodle section students agreed more strongly than Facebook section students $t(23)=2.19$, $p<.05$.  When presented with the statement "The 'Getting to Know Each Other' section and random participant pictures on our class site enabled me to form a sense of online community," Moodle section students agreed more strongly that Facebook section students $t(23)=2.91$, $p<.001$.


# Discussion

        The purpose of this study was to investigate the effect of using the Facebook social network site for course discussions when compared to using built-in Moodle forums for an online introductory educational psychology course.  We measured discussion length and frequency and also measured the students' perceived levels of social presence when randomly assigned to concurrent classes with the same content, faculty members, and teaching assistants.
        Results indicated that students assigned to the Facebook section did not write longer or more frequent discussion postings than students assigned to the Moodle section. Results also indicated that students assigned to the Facebook section did not perceive a higher level of social presence than students assigned to the Moodle section.  Several factors may help explain the lack of difference we expected in theses measures.
        First, in our original discussions about how to run this study we considered running one entire course from the Facebook site, not using Moodle at all.  However, given that several of the tools used in the Moodle section were not as easily replicated in Facebook, (e.g., grading, calendars, embedding pictures and videos in text), we decided to use Facebook for only the discussion element of the course.  In so doing, we may have diminished the learning affordances that social network sites may offer when used in a wholesale manner.  Related to this, in course surveys, several students in the Facebook section noted that they did not like having two separate places to go, even though the Facebook page was available in the Moodle structure.  In this way, we may have also divided the students' online attention too much.
        Second, when we gathered students' Facebook accounts for use in the course, we did not encourage or require that they become Facebook "friends" with each other.  As noted above, the Facebook friend relationship is foundational to its affordances as a social network.  We did not require that students become friends with each other knowing well that it might affect the outcome of the study.  We based this decision on findings from Hewitt and Forte (2006), which determined that one-third of college students (and 65% of the females) surveyed indicated they did not think professors should be on Facebook at all. Students cited identify management and privacy issues in this

context of this question.  Given the potential that our students might feel that we were unduly forcing Facebook on them, we decided that requiring them to become friends with each other might create equally disconcerted feelings that would impact the learning environment.

Therefore, the differences we expected between the Facebook and Moodle sections may have been minimized since many of the Facebook "cues" that might have otherwise driven students back to the discussion, or made them feel more of a sense of social presence, were not available.  For instance, if one student replied to another's posting, the latter student would not necessarily get a note from Facebook that this had happened.  Nor would students see each other's status updates.  Survey data from the end of course survey provided evidence that very few of these cues were available.  When prompted "When seeing activity from this course in the Facebook News Feed, I would go to the class group and add to the ongoing discussion" the average student answer was 2.79.  When prompted "When seeing status updates from my classmates or teachers, I would go to the class group to and add to the ongoing discussion" it was 2.57.  These approximate to either disagree (2) or uncertain (3) on our Likert scale.

However, at the completion of our course, surveys indicated that we might not have needed to be so careful with our implementation of Facebook.  Students generally were comfortable with using Facebook for classes, and several commented that they enjoyed it.  We also used Facebook successfully with summer 2008 masters students, and asked them directly of their concerns.  None were noted.  They found it to be a very useful and productive educational tool. Given this evidence, we have commenced a follow-up to the current study in the Fall 2008 online educational psychology courses.  These courses have the same content, the same professors, and one of the same TA's from Spring 2008.  In the Facebook section of this study, we required that students all become friends with each other.  We are collecting the same data from these fall sections, and will be able to conduct comparative analysis from Spring 2008 to Fall 2008.

Third, it is also possible that the presentation form of discussion entries mitigated any effect that Facebook affordances may have provided.  Moodle discussions are threaded, such that responses appear right under the post for which the response is intended.  Facebook discussion groups (and all of the other Facebook discussion applications we were able to find when preparing for this study) provide postings in chronological order.  The feel of the conversation and interaction is very different.  We expect that as Facebook evolves, threaded discussions will become more commonplace therein, and may help maximize its affordances for interaction.

In general, the lack of a significant difference in discussion frequency, discussion length, and perceived social presence may make its most telling statement when considered in light of the pedagogical decisions implemented in this course.  As an online course in educational psychology for both pre-service teacher and non-teaching majors, our intentions were to be sure that all of the learning principles presented would connect with the students in a sound and meaningful way.  We wanted the students the see the world "through learning colored glasses." That is, we wanted them to develop theoretical and conceptual perspectives on learning that connected with their personal and emerging professional lives.  As such, all of the activities in the course were designed to engage and challenge students to apply the ideas of the course in multiple contexts.  In so doing, we attempted to make a more memorable learning experience for students and encouraged them to apply their experience and knowledge when learning new concepts.

At the same time, the course was very non-traditional in its presentation.  Grades were de-emphasized and discussion was highly encouraged and scaffolded.  A chapterized, linear curriculum was replace with a spiral curriculum.  Together these characteristics of the course served to make it a very different experience for most of the students in the course.  We submit that the absence of significant differences in our measures between the different delivery media may demonstrate the power of good pedagogy to override any media differences that may exist.

Taking all of this into account, we offer that the affordances of Facebook and similar social network sites may still hold much promise for online learning, and are worthy of continued research.  For instance, in summer Masters courses, we recently used Facebook for group work in the face-to-face portion (two weeks) of a hybrid course, and then as the LMS over the remaining online portion of four weeks.  It served highly useful in both situations.  Since then, we have witnessed months of anecdotal evidence that the learning that occurred during summer continued beyond the semester.  The interactions observed are both personal and professional, which we believe is further evidence that the affordances of this medium can be harnessed for learning, and that learning may not need to be compartmentalized from the social interactions thereon.

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