CSCanada
International Business and Management
Vol. 6, No. 1, 2013, pp. 1-11
DOI:10.3968/j.ibm.1923842820130601.1165

ISSN 1923-841X [Print]
ISSN 1923-8428 [Online]
www.cscanada.net
www.cscanada.org

Facebook in Higher Education Courses: An Analysis of Students' Attitudes, Community of Practice, and Classroom Community

Casimir C. Barczyk[a]; Doris G. Duncan[b],*

[a] Professor of Management, Department of Marketing, Human Resources and Management, Purdue University Calumet, 2200 169th Street, Hammond, IN 46323, USA.
[b] Professor of Accounting and CIS, California State University, East Bay, 25800 Carlos Bee Blvd, Hayward, CA 94542, USA.
*Corresponding author.

Received 30 November 2012; accepted 28 January 2013

Abstract

Educators wanting to enhance their classroom learning environment are finding Facebook to be a beneficial supplement. This study aims to determine students' attitudes and perceptions of courses into which Facebook has been incorporated. In a posttest only research design involving 106 students at two large public universities, it was found that students were favorably disposed toward the classroom use of Facebook. They perceived that it enhanced their senses of social learning and connectedness, with older students experiencing a stronger effect. Implications for how Facebook can enhance higher education courses and for the management of social media in the classroom are discussed.

Key words: Facebook in higher education; Communities of practice; Classroom community; Social learning and effectiveness; Learner-centered activities

Casimir C. Barczyk, Doris G. Duncan (2013). Facebook in Higher Education Courses: An Analysis of Students' Attitudes, Community of Practice, and Classroom Community. *International Business and Management, 6*(1), 1-11. Available from: http://www.cscanada.net/index.php/ibm/article/view/j.ibm.1923842820130601.1165
DOI: http://dx.doi.org/10.3968/j.ibm.1923842820130601.1165

INTRODUCTION

Many educational researchers and practitioners believe that Web 2.0 technology has enormous potential to shape the way humans learn (Bosch, 2009; Ractham, Kaewkitipong, & Firpo, 2012). Capitalizing on the social nature of Web 2.0 technology can create an optimal environment for learning to occur (Hung and Yuen 2010), given that today's student learns about computers, software and network technologies at an early age. Most students today are "digital natives" (Prensky, 2001) who are very comfortable with technology long before they enroll in university level courses. The higher education community has made great strides in utilizing technology infrastructure yet the pedagogical implications remain vastly unexplored (Hemmi, Bayne, & Land, 2009).

Facebook and other forms of social networking media are gradually and steadily transforming education and the way most subjects are taught. Because of the interactive nature of social media, those participating in it can create, edit or share information. In contrast to traditional one-way media (e.g. television), social media are two-way conversations in which control is decentralized and open to masses of users (Barczyk & Duncan, 2012). As a result, faculty members are becoming less the authoritative deliverers of knowledge and more the facilitators of exploration and collaboration in pursuit of answers, opportunities and solutions to problems. Faculty, particularly those in higher education, view Facebook and other social media as a way to motivate and engage students to be actively involved in their learning (Junco, Heiberger, & Loken, 2011).

This study examines the use of Facebook as a supplement to face-to-face courses taught in higher education. It focuses on the impact of Facebook on student attitudes, community of practice (CoP), and sense of classroom community. Hung and Yuen (2010) describe a community of practice (CoP) as a framework of social participation involving people in a variety of social settings, including the home, workplace, or school. Individuals may be members of a variety of CoPs which share one common assumption, which is that "engagement in social practice is the fundamental principle by which we

learn and so become who we are" (Wenger, 1998, p. 45).

According to Rovai (2002b), a classroom community is a "feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals" (p. 322). Rovai (2002b) contends that classroom community consists of two factors. The first is connectedness, which is "the feeling of belonging and acceptance and the creation of bonding relationships" (p. 322). The second is learning, which is "the feeling that knowledge and meaning are actively constructed within the community, that the community enhances the acquisition of knowledge and understanding, and that the learning needs of its members are being satisfied" (p. 322). A strong classroom community demonstrates characteristics such as shared common interests, active engagement in two-way communications, and trusting and helping other members (Rovai, 2002b).

Facebook, as a form of social media, has the potential to become an exciting instructional tool given its popularity and students' familiarity with its site. That potential can influence students not only in the United States, but also globally. Because 80% of Facebook's one billion users live outside the United States (Facebook, 2013), it represents a global, engaging information-sharing mechanism that can facilitate intercultural dialogue and critical thinking (Maher & Hoon, 2008). In fact, Facebook's focus on peer-to-peer interactions enhances learning experiences in an informal setting (Goodwin, Kennedy, & Vetere, 2010; Madge *et al.*, 2009; Selwyn, 2009). In addition, research has shown that students have effectively used Facebook for activism and other extra-curricular learning (Bosch, 2009; Grosseck, Bran, & Tiru, 2011).

Following this introduction, the paper is organized into five main sections. The first presents three research questions that are developed in the context of a review of the literature. The second describes the methodology used to examine the research questions. The third summarizes the results. The fourth section discusses the survey findings and the fifth presents implications and limitations.

1. REVIEW OF THE LITERATURE AND STATEMENT OF RESEARCH QUESTIONS

1.1 Attitudes Toward the Classroom Use of Facebook

Few studies have researched the potential of web-based technologies to engage students in higher education (Hurt, Moss, Bradley, *et al.*, 2012). Previous research has suggested that investigators should examine how the features of Facebook help build classroom community. An analysis of students' attitudes toward the classroom use of Facebook could serve as the building block. On that foundation research questions could be designed to determine whether Facebook is (1) perceived as a convenient medium for interaction, (2) a contributor to course quality, (3) a facilitator for connecting individuals, and (4) a mechanism to foster professional growth.

A recent study of the attitudes of 107 students toward Facebook provides some insights. In a survey designed to compare the attitudes and perceived learning between Facebook and eLearning Commons (a Blackboard Learning Management System tool), Hurt, Moss, Bradley, *et al.* (2012) found that:

(1) Facebook was preferred over eLearning Commons as a classroom supplement. Many of the students were already familiar with Facebook, used it frequently and found it easy to navigate.

(2) Facebook users reported that they became more acquainted with their classmates.

(3) Facebook users felt like valued participants and learned more course material.

(4) If used appropriately, Facebook may help to increase student engagement by cultivating classroom community and stimulating intellectual discourse.

In sum, Facebook can be used effectively for academic discussions.

Ractham, Kaewkitipong and Firpo (2012) used Facebook as a learning tool in an introductory management information systems course to build and foster an enhanced learning environment. They used the social interactions among Facebook-connected students to develop a constructivist learning atmosphere. A variety of pedagogic strategies were used to integrate activities both inside and outside of the classroom to achieve social learning. The authors sought to implement and evaluate several features of a social networking technology, i.e. Facebook, in attempt to enhance communication and collaboration and other innovative uses in future classes. The four features they activated were (1) Social playground through Facebook Wall, (2) Social discussion through Facebook Discussion, (3) Social roll call through Facebook Photos, and (4) Social tube through Facebook Videos.

Seventy five students participated in the Ractham, Kaewkitipong and Firpo (2012) study, which resulted in 55 completed, usable questionnaires. It was found that 55% of the students felt that Facebook helped them in learning. Even more, 78% felt that Facebook was a useful supplemental learning tool. The high volume of communication between students and the overall positive responses to the survey led to the conclusion that there was great potential for informal learning environments with Facebook as the primary space to communicate and collaborate. The authors observed that some students participated in a casual manner in the same way they would casually interact with friends on their personal Facebook accounts.

Among the lessons learned by Ractham, Kaewkitipong and Firpo (2012) were that Facebook usage in the classroom is time consuming for instructors, yet it is important to communicate frequently with students in order to maintain a high level of interest and activity in the overall learning environment. They also learned that the Facebook effect was somewhat dependent on the instructor's skills, personal characteristics and willingness to commit the time needed. Faculty need to provide structure in spite of more focus on learner centeredness.

de Villiers (2010) studied the potential of Facebook group and discussion facilities for focused academic use. In a study of 35 postgraduate distance-learning students who joined an optional Facebook group to discuss academic content, it was found that learning and perceptions were enhanced by participating in the discussions. The students benefitted from contact with fellow online students; they especially benefitted by researching beyond the assigned study materials and by making personal contributions.

Based on these studies indicating that students had favorable attitudes toward social media-enhanced courses, we advance the first research question:

RQ1. What are students' attitudes related to convenience, quality, connectedness, and professional growth in courses that integrate Facebook into their instructional design?

1.2 Community of Practice

Researchers have found that one of Facebook's strengths may be its ability to enhance classroom community and help students to get to know one another and share information in a supportive environment (Hurt, Moss, Bradley, *et al.*, 2012). They suggest that future research investigate how specific features of Facebook facilitate community building.

A study at the University of Cape Town analyzed the content of 150 randomly selected Facebook profiles of students (Bosch, 2009). Qualitative interviews were also conducted with 50 students and 5 lecturers. It was found that college students preferred holding discussions using Facebook rather than by using the university's course management system. Facebook made it easier to combine teaching and learning with social interaction. In addition, students indicated that Facebook provided instant access to lecturers and tutors in an informal environment. The lecturers interviewed also mentioned this Facebook benefit. Bosch concluded that his most important finding was that Facebook provided students with the potential to engage with one another. This is especially significant given that many of today's students are accustomed to searching for and retrieving information on the Internet and thus have a need for a more interactive learning environment. According to Tapscott (1998) this may have led to a shift in learning styles among digital natives.

A number of studies have established the importance of classroom CoPs to facilitate effective learning. For example, Summers and Svinicki (2007) examined the relationship between students' perceptions of motivation and classroom community. They found that students in cooperative learning classrooms had a greater motivation to achieve goals and a higher sense of community than those in non-cooperative learning classrooms. As such, a classroom CoP affected students' sense of community. Other studies showed that teaching, cognitive, and social factors are related to the nurturing of students' sense of classroom community (Garrison, Anderson, & Archer, 2000; Shea, 2006; Shea & Bidjerano, 2008). These findings confirm Rovai's (2002b) belief that when learners "feel a sense of community, it is possible that this emotional connectedness may provide the support needed for them not only to complete successfully a class or a program, but also to learn more" (p. 321).

Based on these studies about the impact of social media on learning communities, we seek to further explore this issue and advance the second research question:

RQ2. What are students' perceptions of the community of practice that evolve when Facebook is integrated into a course's instructional design?

1.3 Demographic Differences – Age, Gender, and Prior Online Experience

For a number of reasons, we speculate that there may be differences in students' perceptions of their CoP and sense of classroom community when Facebook is used to supplement their university courses. It may be students' perceptions are colored by their age or gender. Because younger individuals and students are generally more familiar with the Internet and Web 2.0 technologies (Zickuhr and Madden, 2012; Greenhow, Robelia, & Hughes, 2009), they may be more predisposed to accepting and benefiting from the use of Facebook in their classroom communities. Similarly, females more so than males, may be more self disclosing or socially oriented (Dindia & Allen, 1992) and find that Facebook gives them greater opportunities for engagement, i.e., opportunities to make connections and share information (Goudreau, 2010). It may also be that age and gender affect students' sense of community, which impacts perceptions of learning and connectedness. This study is exploratory, but the basis for an age and gender effect is rooted in the management literature, which shows that these factors affect organizational outcomes.

In a study on sense of classroom community and learning style preference involving 616 rural community college students in the United States, Smith (2008) found limited gender and age effects. He noted that females had a higher perception of their sense of learning using the Classroom Sense of Community scale, an instrument validated by Rovai (2002a and 2003). But he noted a lack of female proclivity for sense of connectedness, and no differences in learning or connectedness based on prior

experience with online education or ethnicity. Smith (2008) also found that non-traditional age students (age 26 or more) had a higher sense of learning than traditional age students (age 18-25).

Smith's (2008) findings appear to be somewhat contrary to an earlier study by Rovai (2001) that surveyed students in a community cohort of 20 adult learners. He found that female students manifested a stronger sense of classroom community than male students. Compared to males, females had a higher proclivity for high levels of community, which was reflected in the nature of female communication patterns in online forums and email messages. In general, the dialogue of female students was more supportive and helpful in tone, while the dialogue of male students was more impersonal and assertive.

In terms of connectedness, Rovai (2002b) found a gender difference in the sense of community of 316 computer mediated learners. Females had higher scores on connectedness with instructors and fellow students. In terms of learning, Rovai and Baker (2005) demonstrated a gender effect. Female students scored higher than males on the learning subscale of the sense of community instrument, underscoring the feeling that their learning experiences were more aligned to their educational values and goals. Female students also scored higher on a single question scale of perceived learning.

In addition to age and gender as demographic variables that might affect perceptions of their courses and sense of community, a third variable to consider is prior online course experience. Arbaugh and Hornik (2006) suggest that students have to deal with content differences in every course for which they enroll. Therefore, the primary transferable knowledge students bring to subsequent courses "is their knowledge of the technology and interaction with others" (p. 13). Even more to the point is a study by Hachey, Wladis and Conway (2012) involving 962 students in 258 course sections offered by an east coast community college. These researchers found a strongly significant correlation between prior online course experience and future online course success. They argue that when students have at least one successful online course experience, learning barriers decrease. This substantiates the research findings of Muilenburg and Berge (2005). Students who have had success with all of their prior online courses have fairly high success in future online courses, while students who have had mixed successes and non-successes in the past have distinctly lower future success rates.

Based on these studies, we advance the third research question:

RQ 3. What demographic factors influence students' sense of classroom community, i.e., their sense of social learning and sense of connectedness, in courses that incorporate Facebook into their instructional design?

2. METHODOLOGY

2.1 Description of the Course Integrating Facebook into its Instructional Design

Over two semesters students at two universities were encouraged to voluntarily participate in the Facebook component of their business courses. Four different business courses (accounting, business law, human resource management, and organizational staffing) incorporated Facebook as a classroom supplement, access to which was restricted to registered students. This protected privacy and gave students a sense of security for their postings. The following is an account of how Facebook was integrated in the instructional design of one instructor's course which facilitated the creation of a community of practice (CoP).

Initially the instructor posted messages concerning university announcements and course-related quizzes, examinations, and written assignments. He also posted YouTube videos relevant to topical course content and invited students to engage in discussions about those posts. Course instructors encouraged students to use Facebook to collaborate with members of their group to complete written assignments.

Some students were relatively new to social networking technology. Eventually they took an interest in learning about and using Facebook effectively. Three weeks into the semester students began contributing to Facebook. Initially they would simply say they "liked" a post or a video, offering no further commentary. Posting comments was completely voluntary and no extra credit points were given. Students were encouraged to watch the videos posted and write comments at their leisure.

Approximately four weeks after the introduction of the Facebook group into the course, there were posts by students and the instructor about examinations, important schedule reminders, homework assignments, announcements, and many other course-related matters. It was noted that Facebook facilitated interactive communication among students in the course and between the instructor and students. The response time for answers to questions posted by members of the group was noticeably shorter when compared to the response time associated with questions posted in Blackboard, the university's official course management system. While Blackboard is highly secure and used by many universities, students do not feel that it is user-friendly. To check announcements and respond to email messages requires that students go through many steps and logins to access the required pages. Further, only instructors can post items in Blackboard, whereas both students as well as instructors can post on group Facebook pages.

After about six weeks, the semblance of a CoP became apparent when students started asking questions on Facebook about the upcoming examination, quizzes, holiday break, and deadlines for the submission of their

assignments. Fellow students who knew the answers to many questions felt comfortable posting a response, which created open dialogue. This was advantageous because sometimes students posted a response before the question was seen by the professor. There was one situation where the professor posted an announcement on Blackboard, but because of a system failure, a majority of the students in the course were unable to see it. One student who saw the Blackboard announcement posted it to Facebook and the information was immediately disseminated to all the students in the Facebook group.

The CoP continued to evolve as both students and the instructor became increasingly comfortable posting YouTube videos, comments about course-related events on campus, and summaries of current events that focused on course topics. Class participation grew in terms of volume and quality. Since most of the students' posts and comments occurred outside of their classrooms and regularly scheduled class periods, it was evident that students' interactions and engagement went beyond their classrooms. Overall, the pedagogical use of Facebook in this business course evolved into what seemed like an effective CoP that had a positive impact on students' senses of learning and connectedness.

2.2 Survey Instrument

The questionnaire consisted of 52 closed and open-ended items, which related to students' use of technology, perceptions of their classrooms, sense of community associated with the pedagogical use of Facebook in their courses, and demographics. To assess sense of community, ten items from Rovai's (2002a) Classroom Community Scale (CCS) were adopted. Those ten items, validated and employed in other studies (Hung and Yuen, 2010; Black, Dawson, & Priem, 2008; Rovai, 2002a, 2003), were used to measure students' feelings of learning-oriented behaviors and their feelings of connectedness. Students responded to these items using a five-point Likert scale where 1 represented strong disagreement and 5 represented strong agreement. Some items were reverse scored using a five-point Likert scale where 1 represented strong agreement and 5 represented strong disagreement. The analysis was designed so that higher scores on the 10 sense of community items reflected stronger senses of learning and connectedness.

To assess students' perceptions of the CoP created by the integration of Facebook into the instructional design of the courses studied, a question containing eight sub-items was adapted from a study by Hung and Yuen (2010). The questions assessed the extent to which the Facebook-enhanced course facilitated (1) knowledge sharing, (2) collaboration and interaction, and (3) learner centered activities. Students responded to these items with a Likert scale where 1 represented strong disagreement and 5 represented strong agreement.

In terms of demographics, the student-respondents were asked to provide their age. These data were categorized into two groups based on Smith's (2008) research – 25 years of age or less and over age 25. Students were also asked to provide data as to their gender and prior online course experience. The questionnaire was administered in a paper-and-pencil format.

2.3 Respondents

Respondents to the survey included 106 students from four face-to-face business courses at two public universities situated in California and Indiana, USA. There were a total of 158 registrants in the courses taught by the authors of this paper, of which 38 were in the accounting course, 69 in business law, 23 in human resource management, and 28 in organizational staffing. Students in the Facebook-enhanced courses voluntarily participated in the survey, which was approved by the universities' Institutional Review Board. They completed the questionnaire anonymously and were assured that participation in the survey would not affect their course grade.

2.4 Procedure

During the last week of classes, students in the four courses that integrated Facebook into their instructional design were surveyed. Each received a paper questionnaire, was informed that participation in the survey was voluntary, and that all data collected would be maintained anonymously. The questionnaire assessed students' perception of their Facebook experience in terms of the social media's ability to create a CoP and facilitate a sense of classroom community, which would measure social learning and feelings of connectedness. Students completed the questionnaire in approximately 12 minutes. Of the 158 total students, 52 were either absent from class or chose not to participate in the survey because they elected not to join Facebook.

3. RESULTS

3.1 Characteristics of the Survey Respondents

There were 158 students enrolled in the four courses analyzed in this study, of which 106 completed the survey questionnaire. This represents a 67% response rate. A total of 49 (48.2%) females and 56 (52.8%) males completed the survey. One respondent failed to indicate gender. The data on age were aggregated into two groups: respondents that were 25 years of age or less and those over age 25. Fifty five respondents (51.8%) were 18-25 years old and 51 (48.1%) were 26 or more years old. The majority of respondents (N=82) had previous online education experience (77.4%). Also, a majority (N=88) were full-time students (83.0%). In terms of class level, 9 respondents (8.5%) were freshmen or sophomores, and 72 were juniors or seniors (68.0%). Twenty five individuals indicated that they were graduate students (23.6%).

3.2 Analysis of Three Research Questions

3.2.1 Research Question 1

This question aimed to determine the attitude of students toward courses that incorporated Facebook into their instructional design. In general, students had favorable attitudes, as summarized in Table 1. Of the respondents, 74% agreed or strongly agreed that Facebook enhanced their experience of participation in their course and 76% indicated that it fostered personal or professional growth. Among the respondents, 65% agreed or strongly agreed that Facebook was very convenient for classroom discussion.

Table 1
Frequency Distribution of Student Attitudes in Facebook-Enhanced Courses

Item	Percentages on a 5-point Likert scale						
	SD	D	N	A	SA	*M**	*SD*
Facebook for classroom discussions is very convenient	4	9	23	52	13	3.61	0.95
Facebook improved the quality of my course	6	22	35	31	6	3.10	1.00
Facebook should be introduced in more courses	6	13	39	36	7	3.25	0.96
Facebook changed my overall view of the course	2	18	49	28	3	3.13	0.81
Facebook was well integrated into the course	1	17	31	42	9	3.40	0.91
Facebook was more effective than Blackboard	14	27	29	24	7	2.84	1.14
I preferred using Facebook over Blackboard	12	33	19	27	10	2.90	1.20
Overall experience using Facebook was very positive	1	3	43	43	11	3.59	0.76
I felt more connected to fellow students using Facebook	6	14	26	47	7	3.35	1.00
I acquired personal or professional growth using Facebook	2	7	16	57	19	3.84	0.87
Facebook enabled me to contact my instructor more often	6	24	26	31	13	3.23	1.13
Facebook enhanced my experience of participation in this course	1	2	24	57	17	3.87	0.74

S= strongly disagree; D= disagree; N= neither agree nor disagree; A= agree; SA= strongly agree
* $N = 106$

Another aspect of students' attitudes toward their Facebook-enhanced courses is their usage of social media, as summarized in Table 2. These data indicate that the respondents were moderate users of Facebook, with 50.5% accessing their group page more than once daily. Nearly 80% felt more connected to fellow students by using Facebook.

Table 2
Frequency Distribution of Students' Facebook Usage

Item	*P*	*f**	*N*
How frequently do you access Facebook?			
Once a day or less	59.8%	61	102
More than once daily	39.1%	41	
Do you feel more connected to fellow students using Facebook?			
Disagree	20.2%	21	104
Agree	79.8%	83	
How frequently do you access your Group Facebook page?			
Less than once daily	49.5%	49	99
More than once daily	50.5%	50	

* *N*s are less than 106 because of missing data

The final aspect of this analysis of Facebook-enhanced courses is the extent to which students perceived that certain social media functions were useful. These data are summarized in descending order of usefulness in Table 3.

Table 3
Students' Perception of Most Useful Facebook Functions

Function	*P*	*f*	*N* *
Comments	87.4	83	95
Members' page	55.8	53	95
My page	53.7	51	95
Videos	41.1	39	95
Photos	32.6	31	95
Like/dislike features	29.5	28	95
Blogs	29.5	28	95
Music/audio	12.6	12	95

***** *Ns* are less than 106 because of missing data

The data in Table 3 indicate that students found the "comments" function in Facebook as the most useful (87.4%). The next most useful functions were "members' page" (55.8%) and "my page" (53.7%). Students indicated that music and audio were the least useful functions, preferred by only 12.6% of the respondents.

3.2.2 Research Question 2

This question aimed to determine students' perceptions of the CoP that evolved in a Facebook-enhanced course. It focused on students' perceptions of knowledge sharing, collaboration, and learner-centered activities. In responding to the eight questions designed to measure CoP, students were directed to think specifically about their Facebook group networking site. The data on students' perceptions of their Facebook-enhanced CoP are summarized in Table 4.

Table 4
Frequency Distribution of Student Perceptions on Items Measuring Community of Practice

Item	Percentages on a 5-point Likert scale						
	SD	D	N	A	SA	*M**	*SD*
Knowledge Sharing							
1. Social networking site allows me to share my personal interests	5	15	33	42	5	3.27	0.95
2. Social networking site allows me to find and share educational resources	2	6	26	52	14	3.70	0.86
3. Social networking site promotes knowledge sharing	1	6	19	58	16	3.82	0.81
Collaboration and Interaction							
4. Social networking site allows me to hold forums to discuss topics of interest	1	6	27	54	13	3.71	0.80
5. Social networking site allows me to communicate with classmates	0	6	16	54	24	3.96	0.81
6. Social networking site provides collaborative learning opportunities	2	5	27	53	13	3.70	0.84
Learner-Centered Activities							
7. Social networking site allows me to personalize pages to express individuality	3	18	35	39	5	3.25	0.91
8. Social networking site encourages learner-centered activities	1	6	37	48	8	3.56	0.77

S= strongly disagree; D= disagree; N= neither agree nor disagree; A= agree; SA= strongly agree
* $N = 106$

The data in Table 4 indicate that 78% of the respondents agreed/strongly agreed with the statement that Facebook allowed students to communicate with classmates and 74% agreed/strongly agreed that it promoted knowledge sharing. About two-thirds (67%) of the respondents agreed/strongly agreed that Facebook allowed students to discuss topics of interests, provided collaborative learning opportunities (66%), and allowed them to find and share educational resources (66%). These data suggest that the majority of students perceived that Facebook facilitated course-learning experiences in their CoP related to knowledge sharing (items 2 and 3), collaboration and interaction (items 4, 5, and 6), and learner-centered activities (item 8).

The data in Table 3 indicate that students perceived Facebook's "comments" feature to be one of its most useful functions. We were interested in determining whether there was any relationship between this function and students' perception of the CoP that evolved when Facebook was integrated into the instructional design of their courses. The mean scores on the eight questionnaire items measuring community of practice were analyzed using a series of independent sample t-tests. The data revealed that there was a statistically significant difference in the means for community of practice between the group of students that perceived the "comments" function to be useful and the group that perceived it was not useful. In responding to the eight questions designed to measure CoP, students were directed to think specifically about their Facebook group networking site. The data on students' perceptions of the "comments" feature in their Facebook-enhanced CoPs are summarized in Table 5.

Table 5
Means and T-Tests of Community of Practice for Groups Based on "Comments" Function

Item	Comments Not Useful	Comments Useful		
	M	*M*	*df*	*t*
Knowledge Sharing				
1. Social networking site allows me to share my personal interests	2.73 (0.79)	3.43 (0.92)	90	2.42*
2. Social networking site allows me to find and share educational resources	3.55 (0.82)	3.78 (0.86)	89	0.84
3. Social networking site promotes knowledge sharing	3.36 (0.92)	3.98 (0.69)	90	2.65**
Collaboration and Interaction				
4. Social networking site allows me to hold forums to discuss topics of interest	3.17 (0.94)	3.84 (0.75)	91	2.81**
5. Social networking site allows me to communicate with classmates	3.73 (0.79)	4.03 (0.81)	89	1.15
6. Social networking site provides collaborative learning opportunities	3.17 (1.03)	3.86 (0.71)	90	2.98**
Learner-Centered Activities				
7. Social networking site allows me to personalize pages to express individuality	2.83 (0.94)	3.35 (0.90)	90	1.84
8. Social networking site encourages learner-centered activities	3.00 (0.63)	3.70 (0.70)	90	3.17**

* $p < .05$, ** $p < .01$

3.2.3 Research Question 3

This question aimed to determine how age, gender, and prior online course experience affected students' sense of classroom community in Facebook-enhanced courses. It focused on students' sense of learning and sense of connectedness. The mean scores on ten questionnaire items were analyzed using a series of independent sample t-tests. It was found that there were no statistically significant differences for gender or prior course experience. In other words, male students perceived the sense of community for both learning and connectedness in their courses no differently than their female counterparts; and students who completed an online course in the past perceived the sense of community no differently than students who had no online course experience.

The data revealed a statistically significant effect

for age on six of the 10 items that assessed students' perceptions of the sense of community in their Facebook-enhanced courses. These data are instrumental in addressing the intent of this study, which was to measure the effect of Facebook on classroom community as perceived by younger and older students. The results are summarized in Table 6.

Table 6
Means and T-Tests of Sense of Community as Perceived by Younger and Older Students

Item^	Age ≤ *25*	Age > 25		
	M#	*M*	*df*	*t*
1. Students in this course care about each other	3.24 (0.86)	3.30 (0.97)	103	0.36
2. I am encouraged to ask questions	3.56 (0.94)	4.24 (0.66)	103	4.24***
3. This course is like a family	2.76 (1.12)	2.88 (1.10)	103	0.54
4. Is not hard to get help when I have a question +	3.76 (1.00)	4.30 (0.79)	103	3.03**
5. I do not feel isolated in this course +	3.71 (0.90)	4.14 (0.95)	103	2.39*
6. My educational needs are being met +	3.70 (0.92)	4.28 (0.83)	102	3.33**
7. I can rely on others in this course	3.16 (0.92)	3.06 (1.17)	103	0.51
8. I am given ample opportunities to learn	3.64 (0.78)	4.00 (0.70)	103	2.51*
9. Others will support me	3.35 (0.84)	3.57 (0.88)	104	1.34
10. Course promotes a design to learn +	3.89 (0.83)	4.29 (0.91)	102	2.31*

* *p* < .05, ** *p* < .01, *** *p* < .001
# Standard deviations are shown in parentheses
^ A five-point Likert scale used for each item, 1 = strongly disagree, 5 = strongly agree
+ Reverse scored item, framed positively in this table

In Table 6, the odd numbered items relate to perceptions of social connectedness and the even numbered items relate to social learning. The data reveal that there was a statistically significant difference between students 25 years old or less and those older than 25 on all five items that measured social learning. Specifically, older students perceived greater learning as a result of the integration of Facebook into their courses than younger students. In addition, there was a significant age effect for one item related to social connectedness. Students over 25 (M = 4.14) perceived that Facebook enabled them to feel less isolated in their courses as compared to students under 25 (M = 3.71) years old (t = 2.39, df = 103, p < .05).

4. DISCUSSION

4.1 Three Research Questions

In research question 1, we sought to explain students' attitudes toward the use of Facebook in their university-level courses and found students to be favorably disposed. They agreed that Facebook enhances participation, provides personal and professional growth, and is a convenient tool for enhancing discussion. Students were somewhat in agreement that the overall Facebook experience was positive.

Attitudes were fairly neutral regarding whether Facebook should be introduced in more courses, that it improved the quality of the course, that it changed their overall view of the course, that it was well integrated into the course, that they felt more connected with fellow students, and that it enabled more frequent contact with their instructor.

Of the findings summarized in Table 1, perhaps the most surprising is that students did not find Facebook to be more effective than Blackboard nor did they prefer using it over Blackboard. These findings run contrary to those of Hurt, Moss, Bradley, et al (2012) who found that students preferred using Facebook over eLearning Commons, a Blackboard tool, in their courses. These disparate findings might be explained by a number of factors including discomfort using Facebook in the classroom, privacy concerns, course content, or how Facebook was integrated into the courses. Future research could explore the rationale.

Less surprising is the Facebook usage data showing that 60% of the surveyed students accessed it once a day or less and about 50% accessed their group Facebook page once a day or less. About 80% of these moderate users felt more connected with fellow students by using Facebook. Students considered the "comments" feature of Facebook as the most useful function. The "comments" feature provides students with the opportunity to readily communicate with one another about academic topics and thus develop a greater sense of community. Even moderate usage of Facebook, and the "comments" feature especially, seem to give students the feeling that they are more connected.

In research question 2, we sought to determine students' perceptions of the community of practice that evolved when Facebook was incorporated into the instructional design of their courses. The data suggest that Facebook facilitated the development of CoPs that culminated in knowledge sharing, collaboration and interaction, and learner-centered activities.

We engaged in a deeper examination of the relationship between the students' perception of the CoP that evolved for the students who found the "comments" feature of Facebook to be useful with those who did not find "comments" to be useful. There were statistically

significant differences between these two groups on five of the eight items that measured community of practice. Students who found the "comments" feature as useful, compared to students who did not find them useful, had higher mean scores on five items that assessed CoP. In descending order by mean score, these items are: 1) social networking site encourages learner-centered activities, 2) social networking site provides collaborative learning opportunities, 3) social networking site allows me to hold forums to discuss topics of interest, 4) social networking site promotes knowledge sharing, and 5) social networking site allows me to share my personal interests. The students who found the "comments" feature to be most useful felt especially strong about Facebook's ability to facilitate learner-centered activities and collaborative learning opportunities. This confirms the notion that engaging in discussion and commenting on posts facilitates the development of communities of practice. Future research could explore these perceptions, role of the instructor, student performance and other phenomena related to communities of practice.

The perception of increased community and connectedness through the use of Facebook and social media is not limited to the classroom. It may apply to the workplace, the home, the local neighborhood, and to engagement with family and friends. As social media and other Web 2.0 technologies further penetrate daily life, there may come a time when this form of communication is preferred over face-to-face communication and in fact becomes the norm. This in turn could lead to the obsolescence of one-way media such as television and radio. As individuals become empowered, the obsolescence of traditional one-way media poses enormous implications for the future of our society.

In research question 3, we examined whether age, gender, and prior course experience affected students' sense of classroom community when Facebook was incorporated into the instructional design of their courses. Neither gender nor prior course experience had any effect on students' perceptions. However, age had a major effect on students' sense of community, primarily with respect to social learning, and minimally with respect to connectedness. The direction of the effect was counterintuitive. It was thought that younger students, i.e., those 25 years old or less, would have perceived Facebook as beneficial to their learning. In fact, the opposite was found. Students older than 25 thought Facebook facilitated their learning. This is consistent with Smith's (2008) findings that older students had a higher sense of learning community than younger, traditional age students between the age of 18 and 25. In terms of the item measuring connectedness, it was found that students over the age of 25 perceived less isolation in their courses that used Facebook as compared with students 25 years old and under.

These results suggest that age affects students' sense of classroom community in courses that integrate Facebook into their instructional design. Older students appear to be more prone to the Facebook effect than younger students, perhaps because of its novelty. Younger people may be more accustomed to seeing Facebook applied to their lives, whereas it may still be a "newer" idea for older individuals, who are digital immigrants (Pensky, 2001). As such, older individuals, more so than their younger classmates, perceive a greater sense of learning and connectedness when Facebook is incorporated into the instructional design of their courses. In other words, Facebook facilitates a greater sense of classroom community because of its novelty and added value for older students engaged in higher education.

5. IMPLICATIONS AND LIMITATIONS

5.1 Teaching Implications

In this study we found that students had neutral to mildly favorable attitudes toward their Facebook-enhanced courses. We also found that Facebook facilitated students' sense of classroom community in terms of social learning and connectedness. Students who have strong feelings of community are more likely to be engaged (Junco, 2012) and persist in their academic programs (Rovai, 2002b) than students who feel isolated or alone. An instructional strategy such as using Facebook to supplement classroom activities will impact student learning and retention.

Integrating Facebook into university level courses provides students with the opportunity to interact with individuals within and beyond their classrooms. While not specifically measured, it was noted that most students' postings occurred outside of their scheduled class meeting times. It is believed that this enhances learning and participation in course-related discussion. Instructors contemplating the use of Facebook as an instructional strategy should realize that this activity is time-intensive for both faculty and students. In fact, students may find that they are overloaded with the information shared by classmates. To best manage this situation, instructors should develop a structured plan and mechanism for sharing information and managing interactions. In addition, instructors should manage classroom Facebook usage by establishing a group consisting only of students registered for their courses. In so doing, instructors would be able to respect their students' need for information security and privacy. Only students officially registered for their social media-enhanced courses, as opposed to everyone established as a Facebook "friend", would be allowed to access the group Facebook page.

5.2 Research Implications

This study focused on students' attitudes toward Facebook as an instructional strategy and the effect of that strategy

on their sense of classroom community. Future research should go beyond subjective measures of attitudes and perceptions. Studies should be designed to collect objective measures of how Facebook and other social media impact learning outcomes and student performance. These measures would provide greater insights into the pedagogical value of social media.

5.3 Limitations

This study has three potential limitations. The first relates to its use of a single survey instrument, which could result in a common method bias. Future research should use additional methods for collecting data such as interviewing or focus groups. This would buttress survey results and lessen the threat to validity occasionally observed in educational research that uses a single data collection instrument (Donaldson & Grant-Vallone, 2002). The second limitation relates to this study's reliance on self-report measures. Even though the student respondents completed the questionnaire anonymously, there is the potential for social-desirability bias. The third limitation relates to the fact that it is not practically feasible to separate how much Facebook enhanced the sense of community in the courses investigated and how much was due to more engaged faculty. The positive attitudes about Facebook and the enhanced sense of learning and connectedness found in this study may be explained more by an overarching disposition toward teaching than about the use of social media technology.

REFERENCES

Arbaugh, J. B. & Hornik, S. (2006). Do Chickering and Gamson's Seven Principles also Apply to Online MBAs? *The Journal of Educators Online, 3*(2), 1-18.

Barczyk, C. C. & Duncan, D. G. (2012). Social Networking Media: An approach for the Teaching of International Business. *Journal of Teaching in International Business*, *23*(2), 98-122.

Black, E. W., Dawson, L., & Priem, J. (2008). Data for Free: Using LMS Activity Logs to Measure Community in Online Courses. *The Internet and Higher Education, 11*(2), 65-70.

Bosch, T. (2009). Using Online Social Networking for Teaching and Learning: Facebook Use at the University of Cape Town. *Communication*, *35*(2), 185-200.

de Villiers, M.R. (2010). *Academic Use of a Group on Facebook: Initial Findings and Perceptions*. Paper presented at Informing Science and IT Education Conference (InSITE), Cassino, Italy, Retrieved from proceedings. informingscience.org/.../InSITE10p173-190Villiers742.pdf.

Dindia, K. & Allen, M. (1992). Sex Differences in Self-Disclosure: A Meta-Analysis. *Psychological Bulletin, 112*(1), 106-124.

Donaldson, S. I. & Grant-Vallone, E. J. (2002). Understanding Self-Report Bias in Organizational Behavior Research. *Journal of Business and Psychology, 17*(2), 245-260.

Facebook (2013). *Newsroom: Fact Sheet.* Retrieved from http://newsroom.fb.com/content/default.aspx?NewsAreaId=22.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education, 2*(3), 87-105.

Goodwin, K., Kennedy, G., & Vetere, F. (2010). Getting Together Out-of-Class: Using Technologies for Informal Interaction and Learning. In C. H. Steel, M. J. Keppell, P. Gerbic and S. Housego (eds.), *Curriculum, Technology & Transformation for an Unknown Future.* Proceedings of ascilite, Sydney, 387-392. Retrieved from http://www.ascilite.org.au/conferences/sydney10/procs/Goodwin-concise.pdf

Goudreau, J. (2010). *What Men and Women are Doing on Facebook.* Retrieved from http://www.forbes.com/2010/04/26/popular-social-networking-sites-forbes-woman-time-facebook-twitter_print.html

Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, Teaching, and Scholarship in a Digital Age – Web 2.0 and Classroom Research: What Path Should We Take Now? *Educational Researcher, 38*(4), 246-259.

Grosseck, G, Bran, R., & Tiru, L. (2011). Dear Teacher, What Should I Write on My Wall? A Case Study on Academic Uses of Facebook. *Procedia – Social and Behavioral Sciences, 15*, 1425-1430.

Hachey, A. C., Wladis, C. W., & Conway, K. M. (2012). Is the Second Time the Charm? Investigating Trends in Online Re-Enrollment, Retention, and Success. *The Journal of Educators Online, 9*(1), 1-25.

Hemmi, A., Bayne, S., & Land, S. (2009). The Appropriation and Repurposing of Social Technologies in Higher Education. *Journal of Computer Assisted Learning*, *15*, 19-30.

Hung, H. T. & Yuen, S. C. (2010). Educational Use of Social Networking Technology in Higher Education. *Teaching in Higher Education, 15*(6), 703-714.

Hurt, N.E., Moss, G. S., Bradley, C. L., Larson, L.R. Lovelace, M. D., Prevost, L. B., Riley, N., Domizi, D., & Camus, M. S. (2012). The Facebook Effect: College Students' Perceptions of Online Discussions in the Age of Social Networking. *International Journal for the Scholarship of Teaching and Learning*, *6*(2), 1-24.

Junco, R. (2012). The Relationship Between Frequency of Facebook Use, Participation in Facebook Activities, and Student Engagement. *Computers & Education, 58*(1), 162-171.

Junco, R., Heiberger, G., & Loken, E. (2011). The Effect of Twitter on College Student Engagement and Grades. *Journal of Computer Assisted Learning, 27*(2), 119-132.

Madge, C., Meek, J., Wellends, J. & Hooley, T. (2009). Facebook, Social Integration and Informal Learning at University: It is more for Socializing and Talking to Friends About Work than for Actually Doing Work. *Learning, Media and Technology, 34*(2), 141-155.

Maher, J. & Hoon, C. H. (2008). Gender, Space, and Discourse Across Borders: Talking Gender in Cyberspace. *Feminist*

Teacher, 18(3), 202-215.

Mazman, S. G., Usluel, Y. K. (2012). Modeling Educational Usage of Facebook. *Computers and Education*, 55(2), 444-453.

Muilenburg, L. Y. & Berge, Z. L. (2005). Student barriers to online learning: A factor analytic study. *Distance Education, 26*(1), 29-48.

Pensky, M. (2001). Digital natives, Digital Immigrants. *On the Horizon, 9*(5), 1-6.

Ractham, P., Kaewkitipong, L., & Firpo, D. (n.d.). The Use of Facebook in an Introductory MIS Course: Social Constructivist Learning Environment. *Decision Sciences Journal of Innovative Education*, *10*(2), 165-188.

Rovai, A. P. (2001). Building Classroom Community at a Distance: A Case Study. *Educational Technology Research and Development, 49*(4), 33-48.

Rovai, A. P. (2002a). Development of an Instrument to Measure Classroom Community. *Internet and Higher Education, 5,* 197-211.

Rovai, A. P. (2002b). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *Internet and Higher Education, 5,* 319-332.

Rovai, A. P. (2003). The Relationships of Communicator Style, Personality-Based Learning Style, and Classroom Community Among Online Graduate Students. *The Internet and Higher Education, 6*(4), 347-363.

Rovai, A. P. & Baker, J. (2005). Gender Differences in Online Learning. Sense of Community, Perceived Learning and Interpersonal Interactions. *The Quarterly Review of Distance Education, 6*, 31-44.

Selwyn, N. (2009). Faceworking: Exploring Students' Education-Related Use of Facebook. *Learning, Media and Technology, 34*(2), 157-174.

Shea, P. J. (2006). A Study of Students' Sense of Learning Community in an Online Learning Environment. *Journal of Asynchronous Learning Networks, 10*(1), 35-44.

Shea, P. J. & Bidjerano, T. (2008). Community of Inquiry as a Theoretical Framework to Foster "Epistemic Engagement" and "Cognitive Presence" in Online Education. *Computers and Education, 52*(3), 543-553.

Short, J., Williams, E. & Christie, B. (1976). *The Social Psychology of Telecommunications*. Hoboken, NJ: John Wiley & Sons, Ltd.

Smith, D. R. (2008). *Learning Style Preference, Sense of Classroom Community, Gender, Age, and Previous Experience Within Computer-Mediated Instruction (CMI)* (Unpublished doctoral dissertation). The University of North Carolina at Greensboro.

Summers, J. J. & Svinicki, M. D. (2007). Investigating Classroom Community in Higher Education. *Learning and Individual Differences, 17*(1), 55-67.

Tapscott, D. (1998). *Growing up Digital: The Rise of the Net Generation*. New York: McGraw-Hill.

Wenger, E. (1998). *Communities of Practice.* Cambridge: Cambridge University Press.

Zickuhr, K. & Madden, M. (2012). Older Adults and Internet Use. *Pew Internet & American Life Project.* Retrieved from http://www.pewinternet.org/~/media/Files/Reports/2012/PIP_Older_adults_and_internet_use.pdf.

