European Journal of Business and Social Sciences, Vol. 1, No. 12, pp 1-16, **March 2013.**
URL: *http://www.ejbss.com/recent.aspx*
ISSN: 2235 -767X

Facebook in U.S. and Taiwanese University Classrooms: A Comparative Analysis of Students' Perceptions of Community of Practice, Sense of Learning, and Sense of Connectedness

Casimir C. Barczyk
School of Management
Purdue University Calumet

2200 169th Street, Hammond, IN 46323-2094
(219) 989-2382 –Telephone
(219) 989-3158 – Fax
(708) 466-6039 – Mobile
Email: barczyk@purduecal.edu

Author Note
The author is indebted to Doris Duncan for her contributions to the development of the questionnaire and collection of a portion of the data analyzed in this study. The author is also indebted to John Lucas for his thoughtful contributions to this article.

ABSTRACT

Facebook is a category of social media that is becoming increasingly important in the lives of university students. It has the potential to facilitate collaboration between students and instructors instantaneously and globally. Relatively few studies have examined the use of Facebook as a classroom supplement. This article describes a posttest-only survey research design to analyze the perceptions of 106 university business students toward Facebook as a learning tool. Students were surveyed at two public universities in California and Indiana, USA. Students perceived that Facebook fostered a community of practice (CoP) and created a sense of community that impacted learning and connectedness. In addition, students from the U.S. rated their sense of connectedness in social media-enhanced courses significantly lower than their Taiwanese counterparts. Implications for teaching and further research are discussed.

Keywords: Facebook, Sense of Learning, Sense of Connectedness, Community of Practice, University classroom technology

1. Introduction

Practitioners and educational researchers suggest that the World Wide Web offers great potential to shape the way students learn (Barbour & Plough, 2009; Drexler, Baralt, & Dawson, 2008). Indeed, Web 2.0 technology has changed people's daily ways of interacting and communicating. This has profound implications for educators that are seeking to harness the power of the social nature of Web 2.0 so as to create enhanced natural environments for learning to flourish.

Social media consists of Internet practices, services, and websites designed to support sharing, collaboration, participation, and community building. These technologies have attracted the attention of faculty in higher education seeking to motivate and engage their students to be actively involved in their learning (Junco, Heiberger, & Loken, 2011; Hughes, 2009). Faculty with a disposition toward the use of newer technology in the classroom (Crook, 2008) have had a keen interest in integrating social media such as Facebook, YouTube, blogs, wikis, and virtual social worlds into the learning process (Grosseck & Holotescu, 2009; Schroeder, Minocha, & Schneider, 2010). Data from the Higher Education Research Institute (HERI, 2007) reveal that 94% of college freshmen use social networking sites. Also, a study by Mastrodicasa and Kepic (2005) found that 85% of the students at a large research institution had Facebook accounts. Hence, social networking is an integral part of student life (Jones & Fox, 2009; Matney & Borland, 2009).

A number of studies have examined the use of social media in the face-to-face teaching environment (Beaudoin, 2012; Kalin, 2012; Jefferies & Grodzinsky, 2007). Hung and Yuen (2010), for example, have explored how social networking technology was used to supplement traditional courses as a means to enhance students' sense of community at two universities in Taiwan. They used a social networking technology known as "Ning" to create a classroom community of practice (CoP) thought to impact students' learning experience. Hung and Yuen measured the extent to which their learners were socially connected and perceived value in the social bonds facilitated by the CoP. They found that students developed an enhanced sense of classroom community in their social media-oriented courses – strong feelings of social connectedness and strong positive feelings regarding their learning experiences.

The sense of classroom community measured by Hung and Yuen (2010) is based on definitions developed by Rovai (2002b). He asserts that *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).

In a study by Hurt, Moss, Bradley, et al (2012) that explored the effect of social media in university courses, it was found that Facebook users were able to become better acquainted with classmates, felt like valued participants in their course, and experienced a higher level of learning. These authors concluded that when Facebook was appropriately integrated into a course's instructional design, it enhanced student engagement by cultivating classroom community and stimulating intellectual discussion.

Facebook has the potential to become an exciting instructional tool given its popularity and students' familiarity with its site. In fact, it has the potential to influence students in the United States and globally. Because 80% of Facebook's one billion users live outside the United States (Facebook, 2012), it represents a

global, engaging information-sharing mechanism that can facilitate critical thinking and intercultural dialogue (Maher & Hoon, 2008). Research suggests that Facebook's focus on peer-to-peer interactions enhances informal learning experiences (Madge, Meek, Wellens & Hooley, 2009)). Other studies have shown that students have effectively used Facebook for learning and activism (Bosch, 2009; Grosseck, Bran, & Tiru, 2011).

While students' use of Facebook is well documented, research demonstrates that faculty members have also utilized it for academic purposes. Junco (2012) reports that faculty are using social media sites for course-related purposes and that usage is rapidly increasing. However, some college educators are hesitant to embrace Facebook as an instructional tool (Moran, Seaman, & Tinti-Kane, 2011; Roblyer, McDaniel, Webb, Herman, & Witty, 2010). A study by Kirschner and Karpinski (2010) reported that Facebook users had significantly lower grade point averages than non-users; and they spent fewer hours per week engaged in study compared to non-users. In sum, the current research suggests that Facebook is a promising, but not a perfect, educational tool that warrants further application and study.

The primary purpose of this paper is to discuss the results of a study designed to assess the attitudes and perceptions of students toward Facebook-enhanced courses at two U.S.-based universities. The perceptions of students on the classroom CoP established in their Facebook-enhanced courses will also be assessed. Additionally, whether or not students perceive a sense of classroom community associated with learning and connectedness will be analyzed. The second purpose of this paper is to explore whether there are differences between U.S. and Taiwanese students in their perceptions of social media-enhanced courses. Hung and Yuen (2010) documented a significant effect for social media on sense of classroom community in Taiwan. This study is an extension of their work and is relevant given Facebook's global reach and world-wide potential to influence higher education.

Organizationally, this paper is divided into four parts. The first reviews the literature and presents a statement of three research questions. The second describes the methodology used to address the research questions and begins with a description of how the classroom CoP was created using Facebook. The third summarizes the results associated with the research questions. The fourth part discusses the findings of this study and their implications.

2. Review of the Literature and Statement of Research Questions

2.1 *Community of Practice*

This study focuses on learning as a social construct, explained in part by students' sense of classroom community and their establishment of a course level community of practice (CoP). The social nature of learning can be distinguished from other perspectives that are either cognitive or affective in nature. Lave and Wenger (1991) contend that learning involves engagement in social interaction. It is part of a broader conceptual concept, namely CoP, which constitutes the lowest meaningful context for learning to occur. It is primarily a framework for social participation, in which people are engaged at home, work, school, or other group settings. Typically, individuals are involved in a number of CoPs, which share a common assumption. The assumption is that "engagement in social practice is the fundamental principle by which we learn and so become who we are" (Wenger, 1998, p. 45). The current study is modeled after that of Hung and Yuen (2010), which principally examined students' CoP and sense of classroom community (c.f. Rovai 2001, 2002a, 2002b, 2003).

A classroom community is psychological in nature and has the following characteristics: (a) its environment exists in the world of education; (b) its fundamental purpose is learning; and (c) the community has a fixed organizational tenure, i.e., the course or program in which members are engaged has a fixed length (Rovai, 2001). This view of classroom community suggests that any course in which students are

enrolled, whether good or bad, can be a classroom community. It implies that any efforts that classmates put into establishing and sustaining their community can be grounded in the framework of classroom CoP (Rovai, 2001).

Research has established the importance of classroom CoPs to facilitate effective learning. Summers and Svinicki (2007) investigated 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, CoP affected students' sense of classroom community. Other studies revealed 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). As cited in Hung and Yuen (2010), Rovai argues 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" (2002b, p. 321).

Based on these studies, the first research question proposed is:

What are students' perceptions of the CoPs associated with Facebook-enhanced courses?

2.2 *Sense of Classroom Community*

Social media such as Facebook, Google+, MySpace and others are designed to facilitate social interaction and information exchange. A number of researchers believe that social networking is the life blood of CoP. Among those researchers are Mason and Rennie (2007) who incorporated several forms of social media to support a local community's development of a land trust. They found that social media supporting social interaction increased the emotional connectedness of community members, which facilitated the development of the land trust. Russo, Watkins, and Groundwater-Smith (2009) believed that social media, specifically MySpace and podcasts, created knowledge-sharing in CoPs, which led to informal learning about museums.

Social media, especially Facebook, has the capacity to enhance student engagement and satisfaction. In a study by deVilliers (2010), Facebook groups were used to foster optional discussions in an online course. She found that the voluntary Facebook group members benefited in the course by critically thinking about required material and contributing to the online discussion. In another study by Schroeder and Greenbowe (2009), undergraduate students in a basic organic chemistry laboratory participated in an optional, out-of-class Facebook discussion group. Students who participated in the Facebook discussion group posted items more frequently and dynamically than those in the official course website.

Barbour and Plough (2009) analyzed the pedagogical use of social media in an online program at a charter high school. The high school attempted to increase students' sense of classroom community by incorporating technologies such as Facebook, Ning, and others. Incorporating social media into the blended learning courses at the charter school enhanced students' learning experiences, and was found to be effective and well-regarded by faculty as well as students. This body of research suggests that social media enhance the learning experience and student engagement in various types of CoPs – professional, informal, and online.

Based on these studies, the second research question proposed is:

What are students' perceptions of the sense of community related to learning and connectedness associated with Facebook-enhanced courses?

2.3 *International Differences*

Faculty members engaged in U.S. higher education undoubtedly note a marked difference in the behavior of foreign-born students as compared to American students. Asian students typically show greater deference to their instructors than do their American counterparts (Swart, Hall, & Chia, 2009). As individuals, they seem more collectively-oriented, with an emphasis on belonging to organizations and an identity based in the social system. U.S. students, conversely, are more individualistically-oriented, where the emphasis is on personal initiative and achievement, and where identity is based on the individual.

Power distance and individualism are two of four national culture characteristics described by Hofstede (1983). His four factor typology was based on data collected from 116,000 questionnaires distributed to workers in 50 countries and three regions at two points in time. Focusing specifically on the U.S. and Taiwan, it was found that Taiwanese workers perceive a greater power distance between themselves and their managers as compared to American workers. The power distance score for Americans was 40, compared to a score of 58 for the Taiwanese. In a classroom setting, this translates to a perception of greater distance between students and their instructors. And compared to individuals from the U.S., the Taiwanese are more collectively-oriented, while Americans are more individualistically oriented. The individualism score for Americans is 91, compared to 17 for the Taiwanese. In a university setting, this manifests itself in a different way of thinking and decision making. American students believe in individual decisions, universalism, and autonomy, whereas Taiwanese students believe in group decisions, particularism, and expertise as the basis for making decisions (Hofstede, 1983).

Researchers conducting the National Survey of Student Engagement have noted that there are significant differences between international and U.S.-born students. International students were more engaged in academically related activities than their American counterparts. They also reported greater outcomes in personal and social development. This is significant because Asian students, of which the Taiwanese are a part, represent approximately 56% of the total international enrollments in the U.S. (Zhao, Kuh, & Carini, 2005). In general, international students express a stronger preference for friendships from their own country or other countries over students from the host nation (Furnham & Alibhai, 1985).

In a study designed to analyze the effects of a culturally-responsive project to engage Asian students in group work, Han (2011), found that culturally responsive teaching can positively activate Asian students' potential in academic and social abilities. This finding helps address the recently investigated phenomenon showing that Asian students show low levels of engagement in group work activities. Studies have documented Asian students' negative attitudes about group work in American universities as arising from several sources: underdeveloped interpersonal communication skills; their cultural and educational background; and their learning to operate in a competition-oriented learning environment.

A study by Huang and Brown (2009) found that Asian students are quiet and do not speak up, are unwilling to take individual chances, and are unable to understand the notion of rewarding individuals for outstanding actions. Part of the Asian, including the Taiwanese, culture is influenced by Confucianism (Pye, 1985), which emphasizes inner peace and harmony. Many Asian students inherit these traditions, which involve respecting authority, avoiding arguments, and quietly refining themselves for personal success (Darder, 1995). This differs significantly from U.S. culture and is consistent with Hofstede's (1983) observation concerning the power distance and individualism differences between American and Taiwanese workers.

In a study on professionalism and work ethic among U.S. and Asian university students, Swart, Hall, and Chia (2009) found that there was a significant difference between U.S. and Asian students in self-reported engagement in pro-academic behaviors. But Asian students showed less of a discrepancy between intended and actual engagement in academic activities when compared to their American counterparts. The Swart, Hall, and Chia (2009) study focused generally on Asian students, but it makes the point that their findings also relate to Taiwanese and Korean students. These researchers explain the U.S. versus Asian country differences by asserting that Asian students are from Chinese origin, which has a deep rooted value in education. The Chinese are taught to regard education with reverence because it is the primary means to achieve upward mobility and an exit route from poverty. This attitude toward education is reflected in Taiwanese culture.

Based on these studies, the third research question proposed is:

How do perceptions of the sense of community and CoP differ between students from the U.S. and Taiwan?

3. Methodology

3.1 *Description of the Classroom CoP Created with Facebook*

Students at two universities in California and Indiana were encouraged to voluntarily participate in the Facebook component of four different business courses offered during two academic terms. The courses were accounting, business law, human resource management, and organizational staffing. While the subject matter in these courses was different, the classroom style and teaching philosophy of the instructors were similar. Both used a participative, student-focused, collaborative approach to teaching.

The instructors agreed on a uniform teaching protocol so that presentation of the courses was consistent and similar. Thus, course design and instructor differences were minimized. Only students registered for the course were allowed to access the Facebook group page. This protected privacy and provided an environment conducive to postings and the general use of Facebook. What follows is a description of how Facebook was integrated into the instructional design of the courses in order to create a CoP. All four courses used Blackboard as its official course management system and Facebook was employed as an instructional supplement.

Students were assigned a term project in their respective courses and worked in teams, usually comprised of four members. The project was required but incorporating Facebook use into the project was optional. Teams using Facebook held virtual meetings, posted YouTube links and research findings relevant to the team project and commented on one another's works. Initially some students were quite unfamiliar with social media technology, but the CoP evolved as they became more comfortable with using Facebook. Some students needed reassurance that their postings were private and would only be viewed by members of the class, i.e., participants in the CoP. They also needed reassurance about the security of the information posted, because while they had no objections to sharing thoughts and opinions in a classroom CoP, they did not want those ideas revealed to employers, outsiders, or even Facebook "friends."

It appeared that Facebook, more so than BlackBoard, facilitated student interactions and had a positive influence on their senses of learning and connectedness. Students in some teams used Facebook for other course work and discussions, even beyond their assigned projects.

After about six weeks, the semblance of a true CoP became apparent when students started asking questions on Facebook about the upcoming examination, quizzes, holiday break, and deadlines for the submission of their term project. 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. For example, 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 the group Facebook page and the information was effectively disseminated immediately to all the students in the course.

The CoP continued to evolve as both students and instructors became increasingly comfortable posting YouTube videos, comments about course-related events on campus, and summaries of material related to the term project. Class participation grew in terms of volume and quality. A review of the times during which material was posted indicated that students' interactions and engagement went beyond their classrooms and scheduled class meeting times.

Students who participated in the four Facebook-enhanced courses were encouraged to complete a paper-based questionnaire, which was designed to assess their course experiences.

3.2 *Survey Instrument*

The questionnaire consisted of 52 closed and open-ended items. To assess sense of community, a series of items from Rovai's (2002a) Classroom Community Scale (CCS) was adopted. Ten items that have been validated 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. Four items were reverse scored. Analysis of the questionnaire was carried out such 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 their Facebook-enhanced courses, a question containing eight sub-items was adapted from the Hung and Yuen (2010) study. The question assessed the extent to which the CoP 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. The questionnaire also assessed student demographics. It was administered in a paper-and-pencil format.

3.3 *Respondents*

Respondents included 106 students from four face-to-face business courses at two public universities located in California and Indiana, USA. There were a total of 110 registrants in the courses taught by the authors of this paper. Students in those courses voluntarily participated in the survey, which was approved by the universities' Institutional Review Board. They completed the questionnaire anonymously.

3.4 *Procedure*

During the last week of classes, students in the four Facebook-enhanced courses were surveyed. Each student received a paper questionnaire, was informed that participation in the survey was voluntary, would not affect their course grade, and that all data collected would be maintained anonymously. Students completed the questionnaire in approximately 12 minutes.

4. Results

4.1 *Characteristics of the Respondents*

There were 106 respondents to the survey, of which 49 (48.2%) were females and 56 (52.8%) were males. One respondent failed to indicate gender. The data on age were categorized into two groups: 25 years old or less and more than 25 years old. Fifty five respondents (51.8%) were between the ages of 18 and 25, while 51 respondents (48.1%) were over the age of 25. The majority of respondents (n = 82) had previous experience with online education (77.4%). Similarly, a majority (n = 88) were full-time students (83.0%). In terms of class level, the majority of respondents (91.6%) were upper division students and 8.4% were lower division undergraduate students.

4.2 *First Research Question - Perceptions of CoP*

Table 1 summarizes the data associated with the questionnaire items designed to measure students' perceptions of the course-learning experiences associated with the use of Facebook in their CoP. The table shows the means, standard deviations, and percentages associated with the current study and the Hung and Yuen (2010) study. The means reported for the Hung and Yuen study have been adjusted upward by one unit because these researchers' Likert scale ranged from 0 to 4, whereas ours ranged from 1 to 5. This facilitated the comparison of results across studies.

Table 1

Statistics on students' ratings to items assessing their perceptions of CoP

Item [a]	Current study [b]		Hung & Yuen study [b]			
	M	*P* [c]	*M*	*P* [c]	*df*	*t*
Knowledge Sharing						
Social networking site allows me to share my personal interests	3.27 (0.95)	47	4.20 (0.70)	92	99	9.77***
Social networking site allows me to find and share educational resources	3.70 (0.86)	66	4.50 (0.60)	97	98	9.26***
Social networking site promotes knowledge sharing	3.82 (0.81)	74	4.60 (0.50)	98	99	9.64***
Collaboration and Interaction						
Social networking site allows me to hold forums to discuss topics of interest	3.71 (0.80)	67	4.20 (0.70)	84	100	6.09***
Social networking site allows me to communicate with classmates	3.96 (0.81)	78	4.40 (0.60)	91	98	5.43***
Social networking site provides collaborative learning opportunities	3.70 (0.84)	66	4.40 (0.60)	97	99	8.39***
Learner-Centered Activities						
Social networking site allows me to personalize pages to express individuality	3.25 (0.91)	44	4.20 (0.60)	88	99	10.39***
Social networking site encourages learner-centered activities	3.56 (0.77)	56	4.40 (0.60)	92	99	10.91***

Notes:

[a] A five-point Likert scale used for each item, 1 = strongly disagree, 5 = strongly agree

[b] N = 106 for the current study; N = 67 for the Hung and Yuen study

[c] Indicates the percentage of respondents who agreed or strongly agreed with this item

*** $p < .001$

The data indicate that a lesser percentage of respondents in the current study agreed or strongly agreed with the statements concerning their CoP as compared to the respondents in the Hung and Yuen study. The data 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. Sixty-seven percent of the respondents agreed/strongly agreed that Facebook allowed students to discuss topics of interest, 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.

Results not summarized in Table 1 indicate that students used Facebook once a day or more (66%) and accessed their group page once daily or more (47%). Sixty three percent of the students agreed or strongly agreed with the statement that using Facebook for classroom discussion was very convenient, was more effective in the classroom than Blackboard (30%), and their overall experience using Facebook was very positive (52%). Fifty percent of the students agreed or strongly agreed that Facebook was well integrated into their courses. Seventy five percent of the students agreed or strongly agreed that they acquired personal or professional growth after completing the course with the Facebook CoP.

4.3 *Second Research Question – Sense of Classroom Community: Learning and Connectedness*

Table 2 summarizes the data associated with the questionnaire items designed to measure students' perceptions of the sense of community in their Facebook-enhanced courses. The table shows means, standard deviations, and percentages associated with the current study and the Hung and Yuen (2010) study. For the reason previously stated, the means reported for the Hung and Yuen study were adjusted upward by one unit.

Table 2

Statistics on students' ratings of items assessing their sense of classroom community

Item [a]	Current study [b]		Hung & Yuen study [b]			
	M	*P* [c]	*M*	*P*	*df*	*t*
Sense of Connectedness						
Students in this course care about each other	3.27 (0.91)	42	3.90 (0.83)	73	104	7.12***
This course is like a family	2.82 (1.11)	26	4.10 (0.80)	82	104	11.85***
I do not feel isolated in this course [d]	3.91 (0.94)	70	4.20 (0.90)	82	104	3.11**
I can rely on others in this course	3.11 (1.04)	38	3.40 (1.20	63	104	2.81**
Others will support me	3.45 (0.86)	49	4.00 (0.70)	85	105	6.53***
Sense of Learning						
I am encouraged to ask questions	3.89 (0.88)	74	3.90 (0.80)	71	104	0.17
Is not hard to get help when I have a question [d]	4.02 (0.94)	80	3.90 (1.00)	76	104	1.30
My educational needs are being met [d]	3.98 (0.92)	75	4.10 (0.90)	88	104	1.32
I am given ample opportunities to learn	3.81 (0.76)	71	4.30 (0.70)	92	104	6.61***
Course promotes a design to learn [d]	4.08 (0.89)	77	4.20 (0.80)	88	103	1.41

Notes:

[a] A five-point Likert scale used for each item, 1 = strongly disagree, 5 = strongly agree

[b] $N = 105$ for the current study and $N = 67$ for the Hung and Yuen study

[c] Indicates the percentage of respondents who agreed or strongly agreed with this item

[d] Reverse scored item, framed positively in this table

** $p < .01$. *** $p < .001$

As seen in Table 2, students in the current study demonstrated a lower percentage of agreement on statements related to sense of connectedness, as compared to their sense of learning. The percentages of agreement on 8 of the 10 statements summarized in the table are markedly higher for students in the Hung and Yuen study compared to those in the current study. In response to the items on "I am encouraged to ask questions" and "Is not hard to get help when I have a question," the percentage of student agreement was higher in the current study as compared to the Hung and Yuen study. However, on the remaining eight items, the percentage of agreement was somewhat lower in the current, as compared to the Hung and Yuen, study.

4.4 *Third Research Question – Differences in Perceptions of CoP and Sense of Classroom Community between U.S. and Taiwanese Students*

4.4.1 Differences in Perceptions of CoP

Table 1 summarizes the differences between U.S. and Taiwanese students in perceptions of the CoP created after their business courses were enhanced with social networking media. The means were analyzed using a one-sample t-test with the Hung and Yuen (2010) study serving as the control group. The purpose of this analysis was to determine whether students from the U.S. perceived a CoP in their social media-enhanced courses differently than students from Taiwan. For the reason previously stated, the means from the Hung and Yuen (2010) study were adjusted upward by one point.

The data in Table 1 indicate that there were statistically significant differences on all eight items that measured knowledge sharing, collaboration, and learner activities in the CoPs between students in the U.S. and Taiwan. The differences were significant at the .001 level. U.S. students, as compared to the Taiwanese students, had lower rating scores of the extent to which their CoP, in which social media were integrated, contributed to the sharing of knowledge, collaboration, or learner-centered activities.

4.4.2 Differences in Perceptions of Sense of Classroom Community

Table 2 summarizes the differences between U.S. and Taiwanese students in perceptions of the sense of classroom community involving learning and connectedness after social networking media were incorporated into their business courses. The means shown in the table were analyzed using a one-sample t-test with the Hung and Yuen (2010) study serving as the control group. The purpose of this analysis was to determine whether students from the U.S. perceived a sense of community in their social media-oriented courses differently than students from Taiwan. The means from the Hung and Yuen (2010) study were adjusted upward by one point.

The data in Table 2 reveal that there were statistically significant differences between the means on six of the ten items reported in the table. On those items, U.S. students rated their sense of classroom community lower than their Taiwanese counterparts. With respect to perceptions of learning, there were no differences between U.S. and Taiwanese students, except on one item related to having ample opportunities to learn, where the mean for U.S. students was 3.81 as compared to 4.30 for the Taiwanese students (t = 6.61, df =104, $p < .001$). With respect to perceptions of connectedness, there were statistically significant differences for all five items reported in the table. The Taiwanese students had consistently higher mean scores for their sense of connectedness as compared to the U.S. students.

5. Discussion

5.1 *Three Research Questions*

This article explored the nature of the CoP and sense of community associated with Facebook-enhanced courses in higher education. Facebook, the most globally popular social networking site, served as the classroom intervention. Overall, students found that it was convenient, user-friendly, and a beneficial supplement to their traditional on-campus courses.

While some faculty may have an active interest in using new technology in their classrooms, there are a number of research questions about whether social media hold the suggested power to enhance the natural teaching environment for learning to flourish. As such, this study explored three research questions.

In the first research question, we examined how students perceived the CoP that evolved in their Facebook-enhanced courses. It was found that 66% of students used Facebook once or more times daily and accessed their courses' group page at least once daily (47%). They indicated that it was very convenient for classroom discussion (63%). They also felt that they acquired personal or professional growth after engaging in the CoP created by Facebook (75%). The perceptions with the highest percentages related to items associated with knowledge sharing and student collaboration. An overwhelming majority of students perceived that Facebook (1) allowed them to communicate with classmates regarding their courses (78%), promoted knowledge sharing (74%), and provided collaborative learning opportunities (66%). Clearly, Facebook facilitated engagement among students in course-related dialogue, which is believed to have impacted their overall learning experience. Consistent with research by Garrison, Anderson, and Archer (2000), Shea (2006), and Shea and Bidjerano (2008), the integration of Facebook into students' courses was a social factor that created an effective CoP, which nurtured their sense of classroom community.

In the second research question, we examined how students perceived the sense of classroom community that resulted in their Facebook-enhanced courses. It was found that their classroom CoP facilitated greater learning than social connectedness. In terms of learning, students indicated that with Facebook they were encouraged to ask questions (74%), their educational needs were met (75%), they had ample opportunities to learn (71%), and found it easy to get help when they had questions (80%). In terms of connectedness, students reported lower percentages. With the integration of Facebook they perceived that members of the course were like a family (26%), cared about each other (42%), could rely on others (38%), and that others would support them (49%). It is apparent that adding Facebook to students' face-to-face courses enhanced their perception of learning and had some effect on their feelings of connectedness. These findings are consistent with the research conducted by Russo, Watkins, and Groundwater-Smith (2009) as well as Barbour and Plough (2009), providing evidence for the conclusion that Facebook created knowledge sharing, thus increasing students' perceptions of learning. It more directly enhances the learning experience and has a moderate effect on engagement as reflected by students' sense of connectedness.

In the third research question, we examined whether there were differences between U.S. and Taiwanese students in terms of their CoP and sense of community in social media-enhanced courses. This question focused attention on the differences in national culture (Hofstede, 1983) between these two student populations. The results of the Hung and Yuen (2010) study, which examined Taiwanese students' perceptions of social media, were compared with the results of the current study, which examined the perceptions of U.S. students. Because both Facebook (used in this study) and Ning (used in the Hung and Yuen study) performed the same functions in the courses into which they were incorporated, it can be assumed that the social media interventions in both studies were the same.

The mean scores on eight items that measured the CoP associated with the social media-enhanced courses revealed that there were highly significant differences between U.S. and Taiwanese students' perceptions. Students from Taiwan rated their CoP higher than students from the U.S. This applied to all items on knowledge sharing, collaboration, and learner-centered activities. These findings might be related to the deep rooted value of education reflected in students from Taiwan. They are taught to regard learning with reverence because it is the primary means to overcome poverty and achieve upward mobility (Swart, Hall, and Chia, 2009). Perhaps American students do not have the same level of belief in the power of education and the benefit of participating in a strong CoP that fosters learning because individuals in the U.S. can be financially successful with a limited amount of education.

A t-test analysis was utilized to determine whether there was a difference between U.S. and Taiwanese students' sense of classroom community in social media-enhanced courses. Overall, students from the U.S. rated their sense of community in social media type courses lower than their Taiwanese counterparts. The greatest number of differences was found for the five items related to perceptions of connectedness. Students from Taiwan consistently had higher mean scores on those items than students from the U.S. This is consistent with the fact that Taiwanese culture is collectively-oriented, while American culture is individualistically-oriented (Hofstede, 1983). There were a lesser number of statistically significant country-based differences in the items that measured learning. Only one item related to the perception that courses with social media provided ample opportunities to learn was found to be different for U.S. students (M = 3.81) as compared to Taiwanese students (M = 4.30).

These findings suggest that students' perceptions of the learning that was facilitated by social media are not culturally defined. While CoPs may be perceived differently in the U.S. and Taiwan, students' sense of learning appears to be perceived similarly between the two cultures. This can be interpreted as consistent with the Swart, Hall, and Chia (2009) findings showing that engagement in pro-academic behaviors was different between Asian and American students, but there was no difference between intended and actual engagement. Applying this notion to the current study suggests that while students from Taiwan and the U.S. perceived their CoPs as different, there was little or no difference between the two cultures in terms of how engagement in social media impacted learning.

5.2 *Implications for Teaching*

Our finding that Facebook facilitated students' sense of classroom community has implications for teaching and learning. Students who have strong feelings of community are more likely to be engaged (Junco, 2012) and persist in their studies (Rovai, 2002b) than students who feel alienated or alone. Any instructional design strategy that helps strengthen the sense of community in the classroom may help student learning, engagement, and possibly retention.

Social media such as Facebook may provide students with the opportunity to interact beyond their classrooms. Students were noted to post items in their Facebook-enhanced CoP outside of their scheduled class meeting times. It is believed that this increased participation in course-related discussion facilitated student learning. University instructors should examine and consider using Facebook as an instructional technology so as to create a productive learning community. Instructors should note, however, that using Facebook to supplement face-to-face classroom instruction needs to consider international cultural differences. Students respond to Facebook differently based on the extent to which their national cultures have higher or lower degrees of power distance and individualism. Instructors should also note that supplementing a course with Facebook is time-intensive. Students may find that they are overloaded with the abundant information shared by members of their CoP. As such, instructors should develop a strategic instructional plan and a structured mechanism for information sharing and interaction to manage their classroom CoP. In so doing, they can insure its effectiveness and resultant benefits.

When using Facebook for instructional purposes in university classrooms, instructors should respect students' need for privacy and information security. As students are introduced to Facebook in their courses, a concerted attempt should be made to limit outsider access to group pages. Only members of the CoP, i.e., students officially registered for the course, should be allowed to access the group Facebook page.

Until the instructional efficacy of social media is documented in further research, instructors should use prudence in enhancing their courses with Facebook. Finally, they should take into account learner characteristics that may impact on this classroom technology.

5.3 *Implications for Further Research*

This study found that Facebook facilitated the creation of a CoP that was highly related to knowledge sharing and social interaction. The mechanism by which Facebook creates information sharing and its implications for learning are areas that suggest additional research attention. This study also found that a significant number of students were not able to use Facebook to share their personal interests (56%) or to share educational resources (39%). Clearly, they struggled with the practice of knowledge sharing using Facebook in their classroom CoP. Not all students in the current study had prior online or Facebook experience. Those individuals may have felt a certain degree of uncertainty as to what constitutes knowledge sharing in their CoP. As such, it is possible that learner characteristics may impact students' perceptions of community and its use of Facebook for learning. Hence, there is a need for further research to explore how Facebook impacts the changing nature of social learning in higher education.

Additional research should be designed to go beyond subjective measures of attitudes and perceptions. The current study shed some light on the efficacy of Facebook to create a classroom CoP and enhance students' sense of community. It also illuminated cultural differences in students' perception of Facebook as an instructional tool. Future research should measure the extent to which Facebook and other social media impact learning outcomes and student performance. These objective measures would provide additional insights into the pedagogical value of social media.

5.4 *Limitations*

This study has three potential limitations. The first relates to its use of a single survey instrument, creating the potential for common method bias. To accomplish the research objectives, a survey was the most feasible means of efficiently collecting the necessary data. Future research should use additional data collection methods such as interviewing or focus groups to lessen the threat to validity occasionally observed in educational research (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 a potential for a social-desirability bias. The nature of the questionnaire, its anonymous administration, and the fact that students received no benefit for completing it likely prevented the respondents from knowing the research questions or desired responses. As such, there is a low probability that this effect would impact the study's findings.

The third limitation relates to the fact that it is not possible to determine how much Facebook enhanced the CoP and sense of classroom community in the courses investigated and how much is due to more engaged faculty. Crook (2008) notes that faculty play an integral role in the integration of social media into their courses. They must invest a considerable amount of time and have a positive attitudinal disposition to make their social media-enhanced courses successful. When students report that they perceived an effective CoP and an increased sense of classroom community in their Facebook-enhanced courses, it may be explained more by an overarching attitude about teaching and learning than about the use of social media technology. The disposition articulated by Crook (2008) may be explained by faculty having an increased interest in their courses and ability to motivate students to learn and socially connect.

References

1. Barbour, M. & Plough, C. (2009). Social networking in cyberschooling: Helping to make online learning less isolating. *TechTrends 53*(4), 56-60.
2. Beaudoin, B. B. (2012). Creating community: From individual reflection to SoTL transformation. *International Journal for the Scholarship of Teaching and Learning, 6*(1), 1-10. Retrieved from http://academics.georgiasouthern.edu/ijsotl/v6n1/essays_about_sotl/PDFs/Beaudoin.pdf
3. 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.
4. Bosch, T. E. (2009). Using online social networking for teaching and learning: Facebook use at the University of Cape Town. *Communicatio: South African Journal for Communication Theory and Research, 35*(2), 185-200.
5. Crook, C. (2008). Web 2.0 technologies for learning: The current landscape – opportunities, challenges, and tensions. Becta Research Reports. Becta, Coventry. Retrieved from http://research.becta.org.uk/upload-dir/downloads/page_documents/research/web2_technologies_learning.pdf (last accessed 7 January 2010).
6. Darder, A. E. (1995). Culture and difference: Critical perspectives on the bicultural experience in the United States. *Critical Studies in Education and Culture Series.* Praeger Press.
7. deVilliers, M. R. (2010). Academic use of a group on Facebook: Initial findings and perceptions. Paper presented at Informing Science & IT Education Conference (InSITE), Cassino, Italy. Retrieved from http://proceedings.informingscience.org/InSITE2010/InSITE10p173-190Villiers742.pdf
8. 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.
9. Drexler, W., Baralt, A., & Dawson, K. (2008). The Teach Web 2.0 Consortium: A tool to promote educational social networking and Web 2.0 use among educators. *Educational Media International, 45*(4), 271-283.
10. Facebook (2012). Key Facts, Facebook Newsroom. Retrieved from http://newsroom.fb.com/Key-Facts (last accessed 25 November 2012).
11. Furnham, A. & Alibhai, N. (1985). The friendship networks of foreign students: A replication and extension of the functional model. *International Journal of Psychology, 20*(6), 709-722.
12. 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.
13. Goodwin, K., Kennedy, G., & Vetere, F. (2010). Getting together out-of-class: Using technologies for informal interaction and learning. In *Curriculum, Technology & Transformation for an Unknown Future*, eds. C. H. Steel, M. J. Keppell, P. Gerbic and S. Housego. Proceedings of ascilite, Sydney, 387-392. Retrieved from http://www.ascilite.org.au/conferences/sydney10/procs/Goodwin-concise.pdf
14. Grosseck G. & Holotescu C. (2009). Can we use Twitter for educational activities? Proceedings of the 4th International Scientific Conference: eLearning and Software for Education, Bucharest, Romania. Retrieved from http://adlunap.ro/eLSE_publications/papers/2008/015.-697.1.Grosseck%20Gabriela-Can%20we%use.pdf (last accessed 12 January 2010).
15. 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.
16. Han, C. (2011). Effects of a culturally responsive project on engaging Asian American students in mathematics group work. Unpublished master's thesis, The Evergreen State College.
17. Higher Education Research Institute (2007). College freshmen and online social networking sites. Retrieved from http://www.gseis.ucla.edu/heri/PDFs/pubs/briefs/brief091107-SocialNetworking.pdf (last accessed 7 March 2010).
18. Hofstede, G. (1983). National cultures in four dimensions: A research-based theory of cultural differences among nations. *International Studies of Management and Organization, 13*(1-2), 46-74.
19. Huang, J. & Brown, K. (2009). Cultural factors affecting Chinese ESL students' academic learning. *Education, 129*(4), 643-653.

20. Hughes, A. (2009). Higher education in a Web 2.0 world. UISC Report. Retrieved from http://www.jisc.ac.uk/media/documents/publications/heweb20rptv1.pdf (last accessed 7 January 2010).
21. Hung, H. T. & Yuen, S. C. (2010). Educational use of social networking technology in higher education. *Teaching in Higher Education, 15*(6), 703-714.
22. 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). Retrieved from http://academic.georgiasouthern.edu/ijsotl/v6n2.html (last accessed 1 August 2012).
23. Jefferies, P. & Grodzinsky, F. (2007). Developing on-line collaborative research across international boundaries: Exploring the potential of new technologies. *International Journal for the Scholarship of Teaching and Learning, 1*(2). Retrieved from http://academics.georgiasouthern.edu/ijsotl/v1n2/articles/jefferies/Article_Jefferies-Grodzinsky.pdf
24. Jones, S. & Fox, S. (2009). Generations online in 2009. Data memo. Pew Internet and American Life Project, Washington, DC. Retrieved from http://www.pewinternet.org/~/media//Files/Reports/2009/PIP_Generations_2009.pdf (last accessed 7 March 2010).
25. Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education, 58*(1), 162-171.
26. 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.
27. Kalin, J. (2012). Doing what comes naturally? Student perceptions and use of collaborative technologies. *International Journal for the Scholarship of Teaching and Learning, 6*(1). Retrieved from http://academics.georgiasouthern.edu/ijsotl/v6n1/articles/PDFs/Kalin.pdf
28. Kirschner, P.A. & Karpinski, A. C. (2010). Facebook and academic performance. *Computers in Human Behavior, 26*, 1237-1245.
29. Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York: Cambridge University Press.
30. Madge, C., Meek, J., Wellens, 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.
31. Maher, J. & Hoon, C. H. (2008). Gender, space, and discourse across borders: Talking gender in cyberspace. *Feminist Teacher, 18*(3), 202-215.
32. Mason, R. & Rennie, F. (2007). Using Web 2.0 for learning in the community. *The Internet and Higher Education, 10*(3), 196-203.
33. Mastrodicasa, J. M. & Kepic, G. (2005). Parents gone wild. Paper presented at the National Meeting of the National Academic Advising Association, Las Vegas, NV.
34. Matney, M. & Borland, K. (2009). Facebook, blogs, tweets: How staff and units can use social networking to enhance student learning. Presentation at the annual meeting of the National Association for Student Personnel Administrators, Seattle, WA.
35. Moran, M., Seaman, J. & Tinti-Kane, H. (2011). Teaching, learning, and sharing: How today's higher education faculty use social media. Research report published by Pearson, The Babson Survey Research Group, and Converseon. Retrieved from http:///www.babson.edu/ESHIP/research-publications/upload/Teaching_Learning_and_sharing.pdf
36. Pye, C. (1985). The acquisition of transitivity in Quiche Mayan. *Papers and Reports on Child Language Development, 24*, 115-122.
37. Roblyer, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *Internet and Higher Education, 13*, 134-140.
38. Rovai, A. P. (2002a). Development of an instrument to measure classroom community. *The Internet and Higher Education, 5*, 197-211.
39. Rovai, A. P. (2002b). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *The Internet and Higher Education, 5*, 319-332.

40. 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.
41. Russo, A., Watkins, J., & Groundwater-Smith, S. (2009). The impact of social media on informal learning in museums. *Educational Media International, 46*(2), 153-166.
42. Schroeder, J. & Greenbowe, T. J. (2009). The chemistry of Facebook: Using social networking to create an online scientific community for the organic chemistry laboratory. *Innovate, 5*(4). Retrieved from http://www.innovateonline.info/pdf/vol5_issue4/The_Chemistry_of_Facebook_Using_Social_-Networking_to_Createan_Online_Community_for_the_Organic_Chemistry_Laboratory.pdf
43. Schroeder, A., Minocha, S. & Schneider, C. (2010). The strengths, weaknesses, opportunities, and threats of using social software in higher and further education teaching and learning. *Journal of Computer Assisted Learning, 26,* 159-174.
44. Selwyn, N. (2009). Faceworking: Exploring students' education-related use of Facebook. *Learning, Media and Technology, 34*(2), 157-174.
45. 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.
46. 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.
47. Summers, J. J. & Svinicki, M. D. (2007). Investigating classroom community in higher education. *Learning and Individual Differences, 17*(1), 55-67.
48. Swart, W., Hall, C., Duncan, S. & Chia, R. (2009). Professionalism and work ethic among U.S. and Asian university students in a global classroom: A multi-cultural comparison. *Journal of Systemics, Cybernetics and Informatics, 7*(1), 36-40.
49. Wenger, E. (1998). *Communities of practice.* Cambridge: Cambridge University Press.
50. Zhao, C. M., Kuh, G. D., & Carini, R. M. (2005). A comparison of international student and American student engagement in effective educational practices. *Journal of Higher Education, 76*(2), 209-231.