

Classroom Community, Pedagogical Effectiveness, and Learning Outcomes Associated with Twitter Use in Undergraduate Marketing Courses

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Purpose of the Study. This study explores various outcomes associated with the incorporation of Twitter in the marketing classroom. To determine if Twitter use is a beneficial pursuit for marketing educators, we investigated classroom community, pedagogical effectiveness, and learning outcomes based on Twitter use and non-use within a required marketing course.

Method/Design and Sample. For comparative purposes, a quasi-experimental design was employed across two semesters of the same undergraduate integrated marketing communications course. One semester (48 students) employed heavy Twitter use by both students and the instructor; the other semester had no Twitter use (36 students).

Results. Independent sample t-tests ($p < .05$) were conducted to test the hypotheses. The course using Twitter had a significantly higher sense of classroom community and perception of pedagogical effectiveness. While there was no difference in perceived learning across the two groups, the group using Twitter outperformed the non-Twitter group on actual learning.

Value to Marketing Educators. This study extends the small, but growing, body of knowledge on the use of Twitter in the higher education marketing classroom. Findings and recommendations add value to marketing educators by helping them make more informed decisions regarding whether or not to use Twitter in their courses.

Keywords: Twitter, Microblogging, Classroom Community, Pedagogical Effectiveness, Learning Outcomes

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A **microblog** combines blogging and instant messaging within a social media environment. Twitter is the most popular microblogging web application and has experienced tremendous growth since it launched in October 2006. At present, Twitter has over 100 million registered users and 460,000 new sign-ups daily (Twitter.com, 2012). On average, 44% of registered Twitter users visit daily and generate over 350 billion tweets per day (Olivarez-Giles, 2011). Like other forms of social media, Twitter provides some of the same benefits such as flexibility, convenience, timeliness, low cost, and efficiency. However, compared to other popular types of social media, Twitter possesses two very distinct characteristics. First, messages are in the form of 140 character postings known as "tweets," so this form of communication has a unique style and a length limitation. Second, established relationships and "friendships" are not required in order to interact and connect with others. In the Twitter environment, unless the tweets are protected from others' view, one can read and participate in conversations with complete strangers and even organizations. Because the norm

on Twitter is to leave the accounts unprotected, there is a very low barrier to interaction in Twitter. Crawford's (2008) Wiki provides an excellent overview of how Twitter works, who uses Twitter, how people use Twitter, and issues/concerns of using Twitter.

Microblogging is becoming an increasingly important component of business and marketing strategy (Case & King, 2011; Edosomwan, Prakasan, Kouama, Watson, & Seymour, 2011). Because Twitter is a default content syndication channel and pop culture icon (Rinaldo, Tapp, & Laverie, 2011), there are numerous business and marketing benefits to be gained. Some of these advantages include gathering marketing intelligence, building relationships, contributing to search engine optimization (SEO), providing customer service, reaching new people, and directing traffic to websites (Ojeda-Zapata, 2008). A body of academic studies is beginning to emerge about this new social media tool. Marketing researchers have explored how retailers use Twitter for marketing (Kunz & Hackworth, 2011), how consumers use Twitter (Barnes & Böhringer, 2011), and how microblogging more generally impacts

company-customer relationships, brand image, and brand awareness (Jansen et al., 2009a; Jansen et al., 2009b).

The Babson Survey Research Group reported that 80% of college faculty are using some form of social media in their teaching (McHugh, 2011), yet this same study revealed that Twitter is used as a teaching tool by only 2-3% of college faculty (Lytle, 2011). Thomases (2010) contends that institutions of higher education should be at the forefront of Twitter use and innovation, but instead have been very slow to adopt this technology. Further, the existing generation of tech-savvy college students often believes that if something does not exist in social media, it is not worth knowing (Mennecke, Hassall, & Triplett, 2008).

Academics are meeting these challenges by exploring Twitter and incorporating microblogging into various types of class assignments and projects (Croxall, 2009; Junco, Heiberger & Loken, 2010; List & Bryant, 2009; Vargas, 2009) as well as developing frameworks and passing along practical advice for teaching with Twitter (Sample, 2010). For example, List and Bryant (2009) found that Twitter increased student accountability and was effective overall, as long as other forms of peer-to-peer communication were also used. Vargas (2009) required students to critically analyze how the top 40 brands use Twitter (c.f., <http://mashable.com/2009/01/21/best-twitter-brands>). In another study, Miners (2010) reported how students made recommendations to local firms regarding whether or not Twitter should be a part of a firm's marketing strategy. Lowe and Laffey's (2011) graduate-level marketing students were invited, but not required, to follow course tweets about marketing events, contemporary marketing issues, key concepts, and issues raised in class. Similarly, students in an upper-level consumer behavior course used Twitter with the goal of promoting social interaction, applying course material, engaging in discussions, and reflecting on course experiences (Rinaldo et al., 2011). A social media marketing course, designed for working adults, used live blogging during the class by the instructor and the students to help students act and react in real time (Lytle, 2011). In a graduate seminar on current issues in marketing (Forrest, 2012), students developed their approach to Twitter marketing and produced presentations about the principles and practices they would employ.

With the strong interest in enhancing learning outcomes associated with instructional technology and student behavior (Clarke, Flaherty, & Mottner 2001; Young, Klemz, & Murphy 2009), researchers have been investigating the pedagogical uses of social media tools within higher education classes (Boostrom, Kurthakoti, & Summey, 2009; Granitz & Pitt 2011; Pentina, 2010; Rinaldo et al., 2011; Rodriguez, 2011). Given limited research about the use of microblogging in the marketing classroom, there is still much to learn about the limitations and advantages of Twitter as a pedagogical tool (Lowe & Laffey 2011). Therefore, this study's unique contribution is investigating the impact of Twitter on

undergraduate marketing students' sense of classroom community, their perception of how well the course was taught, and their perceived and actual learning outcomes. This study compares a course that incorporated a heavy volume of instructor tweeting into both the teaching and learning process to a control group course with no Twitter usage.

The Conceptual Framework of Factors Affecting Learning Outcomes (Young, Klemz, & Murphy, 2003) is the theoretical basis used to represent the multi-dimensional nature of learning when viewed in educational settings. This study extends the Learner-Interaction Model (Arbaugh & Benbunan-Fich, 2007) beyond the traditional focus (teacher-to-student and student-to-student) to capture the virtual environment of student-to-"Twitter follower." The practical implication is greater insight about incorporating Twitter into the marketing classroom. More specifically, this study explores if instructor tweets help students feel more connected to others in their class, improve attitudinal evaluations of course delivery, and enhance course learning. These issues are explored using the literatures from classroom community (Richardson, Maeda, & Swan, 2010; Sadera, Robinson, Song & Midon, 2009), pedagogical affect (Abrantes, Seabra, & Lages, 2007; Mitchell & Olsen, 1981) and learning outcomes (Marks, 2002; Williams, 1992; Young, 2001).

Classroom Community

Bandura (1986) contends that learning involves knowledge acquisition through cognitive processing from individual thought processes as well as from being part of a society. As such, we include a societal component, classroom community, in this study. Communities involve a group of participants, relationships, interactions, and social presence within a given environment. There are many different community types (Flavián & Guinalíu, 2005) such as brand communities, virtual communities, geographic communities, cultural communities, and organizational communities. Classroom communities (a.k.a., learning communities) have been studied since the early 1980s (Caverly & MacDonald, 2002) and are important because the potential for learning with others is greater than when one learns alone (Wenger, White, & Smith, 2010). Extensive research has shown relationships between feelings of closeness with instructors and students' learning (Richardson, Maeda, & Swan, 2010; Sadera, Robinson, Song, & Midon, 2009) and that participation within communities may enhance the learning outcomes among community members (Hargis, 2005; Kember, 1987). Vesely, Bloom, and Sherlock (2007) found that 85% of participants in a classroom community found the community to be helpful in their learning; they suggest that instructors play a key role in motivating students to engage as learning community members. Rovai (2002) and Shea (2006) uncovered positive relationships between students' sense of community and perceived learning in online courses but argued

that further research should be done in additional contexts.

In order to determine if this sense of community can indeed be felt among students, when Twitter is used as part of a marketing course, classroom community is included as one of the primary constructs of interest. It is believed there is potential for community to form because some of the unique characteristics of the Twitter environment (e.g., connection, interaction, boundaries, communication) are similar to what is observed in successful learning communities. McMillan and Chavis (1986) found that feelings of membership, influence, integration and fulfillment of needs, and shared emotional connection contribute to a sense of community. Java, Finin, Song, and Tseng (2007) found that microblogging users with similar intentions tend to connect with one another to seek and share information. Other researchers have uncovered common attributes within successful classroom communities such as shared purposes, interaction, boundaries, behavior, trust, interdependence, and respect (Vesely et al., 2007). Because Twitter is a social media technology that is community-driven and information-centric (Fernando, 2010), it represents an ideal setting to purposefully create learning communities to exchange knowledge. A synthesis of this body of literature suggests there will be a positive relationship between microblogging usage and sense of classroom community. Thus, we propose the following:

H₁: Instructor sharing of course-relevant information via Twitter in a marketing course affects a student's sense of classroom community.

Pedagogical Effectiveness

Pedagogical effectiveness is an obvious and growing interest to marketing faculty as evidenced by the quantity and quality of journals, manuscripts, conference tracks, workshops, and teaching competitions associated with the scholarship of teaching and learning. The Association to Advance Collegiate Schools of Business (AACSB) supports high-quality learning and pedagogical scholarship within business schools based on their respective missions. Pedagogical effectiveness is a broad area of inquiry which can include pedagogical affect and course effectiveness. Pedagogical affect is concerned with the emotional component of learning which includes attitudes toward the content or subject area (Avtgis, 2001; Gorham, 1988; Krathwohl, Bloom, & Masia, 1964; Richmond, 1990; Turman & Schrodt, 2005). Course effectiveness taps into the more mechanical aspects of course delivery such as organization and assignments (Sadera et al., 2009).

While Lowe and Laffey (2011) found that postgraduate students' perceptions of Twitter use in the classroom were positive, the potential influence of Twitter on pedagogical effectiveness in undergraduate marketing courses has remained relatively unexplored. Prior studies of student-teacher interaction suggest that high levels of engagement can positively influence

student ratings of instruction (Paswan & Young 2002; Willamse et al. 2005). Therefore, it is hypothesized that Twitter usage in the marketing classroom will enhance student evaluations of pedagogical effectiveness.

H₂: Instructor sharing of course-relevant information via Twitter in a marketing course impacts pedagogical effectiveness.

Learning Outcomes

Young et al. (2009) define learning performance as a self-assessment of knowledge gained, skills/abilities developed, and effort expended compared to other courses. Their conceptualization of learning performance is expanded in this research to include additional assessments of learning beyond the self-assessment. To delineate between various forms of learning outcomes, learning performance is hereafter referred to as *Perceived Learning* where students evaluate themselves, their teachers, and their overall learning process. This is in contrast with *Actual Learning*, another commonly used, yet different type of learning outcome that captures assessed knowledge gained from the course. Consistent with other researchers, the use of multiple learning outcome variables (in this case perceived and actual learning) in educational settings is merited (Marks, 2000; Williams, 1992). Thus, the use of the term "learning performance" is broadened to include both self-assessed perceived learning as well as actual learning based upon course performance.

Various learning theories suggest that when assignments reflect real-life and applied contexts, student learning improves (Bransford, Brown, & Cocking 2000; Driscoll 2002). However, Schacter's (1999) comprehensive review of the impact of technology on learning reveals that a variety of positive and negative outcomes could occur. Rinaldo et al. (2001) discovered that marketing students felt better prepared for future careers when they engaged in Twitter use with their professor. Lowe and Laffey's (2011) study of post-graduate marketing students revealed that Twitter usage enhanced a variety of learning outcomes such as enriched learning about marketing and better application of marketing theory to real-world examples. Abrantes, Seabra, and Lages (2007) found that perceived learning is indirectly a function of the student-instructor interaction. These initial studies suggest that instructor Twitter use will produce positive outcomes in both perceived and actual learning.

H₃: Learning outcomes differ when there is instructor sharing of course-relevant information via Twitter in a marketing course.

METHOD

Sample

Junior- and senior-level students enrolled in an undergraduate integrated marketing communications (IMC) course at a mid-Atlantic university were participants in the study. Eighty-four students across two different semesters of the same course, taught by the same instructor, were asked to complete a voluntary online survey conducted in Qualtrics and approved by the Institutional Review Board. The sample included 24 males, 55 females, and 2 students that did not report their gender. The average age of the respondents was 21 years with a self-reported GPA of 3.17. The sample was almost equally split between juniors (n=38) and seniors (n=41). The survey was administered at the end of the semester and posed a series of questions related to their experiences in the class. A quasi-experimental design was employed and the courses were identical in each semester with the exception of the use of Twitter. The first semester did not require student utilization of Twitter in any manner. During the second semester, the faculty member and students utilized Twitter for ten weeks during the course.

In the "Twitter Use" course, 45 out of 48 students participated in an online anonymous survey; all 36 students completed it in the course that did not use Twitter. For validity purposes, tests for differences between the two versions of the course were conducted. Using independent sample t-tests, there was no significant difference in the two conditions for self-reported GPA on a 4.0 scale (Twitter M=3.15, SD=.21; Non-Twitter M=3.19, SD=.29) $p=.361$ and age

in years (Twitter M=20.95, SD=1.01; Non-Twitter M=21.14, SD=.487) $p=.319$. Chi-square analysis was used to test if there was a difference in the two conditions for gender (Twitter Males=14; Twitter Females=29; Non-Twitter Males=10; Non-Twitter Females=26) $p=.645$. There was not a significant difference in the number of males and females in the two groups. Thus, the two groups were statistically similar on observed and unobserved characteristics. Chi-square analysis revealed that the only significant difference was that the semester with Twitter use had more juniors (n=36) and only 7 seniors; the semester with no Twitter use had more seniors (n=34) and only 2 juniors $\chi^2(2) = 48.890, p<.0005$.

Procedure

For the Twitter use course, participation with Twitter was voluntary. Students were offered an alternative assignment if they had any reservations about using Twitter and any class assignments associated with Twitter. None of the students opted for the alternative assignment. After determining that 43% of the class had no prior experience with Twitter, the instructor delivered a presentation on the applications of Twitter for marketing, branding, and communication. As suggested in Lowe and Laffey's (2011) tips on teaching with Twitter, students were briefed on various Twitter topics such as how to use a Twitter client on a mobile phone and how to use Twitter applications on Facebook and LinkedIn to allow interactions through other social media web tools. Table 1 lists the specific briefing topics covered as well as the recommended readings.

Table 1: Twitter Briefing Topics and Recommended Readings

Topics	Readings
<ul style="list-style-type: none"> Differences between Twitter and Facebook such as "following" and "friending" Searching for content to determine what people are talking about Using #hashtags and other commands Private messaging versus replying publicly Retweeting (RT) and using other Twitter symbols Operating third-party apps (HootSuite, SocialOomph, etc.) Using link shortening tools and link tracking Customizing the user interface 	<ul style="list-style-type: none"> The Beginner's Guide to Twitter http://michaelhyatt.com/the-beginners-guide-to-twitter.html Ways Marketers Can Use Twitter http://www.squidoo.com/how-to-use-twitter-for-marketing 12 Twitter Tips for College Students http://collegethrive.com/12-twitter-tips-for-college-students 25 Twitter Tips for College Students http://www.collegedegrees.com/blog/2008/06/04/25-twitter-tips-for-college-students/ Twitter for College Students http://makingconnections4fye1220.wordpress.com/2008/09/09/twitter-for-college-students-7-tips-plus-a-bonus/

After the initial briefing, students established Twitter accounts using their first and last name and a short bio. Because students' privacy rights may be violated when they are required to post photographs of themselves online (Waterhouse & Rodgers, 2004),

uploading a professional-looking photo of themselves in Twitter was encouraged, but not required. In lieu of a photograph, students were given the option of creating an avatar using one of the many free online programs such as <http://avatar.pho.to/> and

<http://cartoon.pho.to/>. Twitter IDs were exchanged so that the instructor and all enrolled students could easily follow all others in the course. Aside from the class members and instructor, the students were required to follow a minimum of 50 accounts of their choosing (e.g., social media experts, journalists, celebrities, marketing organizations, university-oriented Twitter accounts, friends, etc.) in order to be exposed to a broad spectrum of Twitter users. The instructor provided suggestions for good marketing-oriented accounts to follow, but students had complete freedom of choice.

In terms of instructor usage of Twitter, both the quantity and quality were carefully monitored throughout the semester to ensure that a sufficient level of relevant tweeting occurred. The quantity of instructor tweets was measured by counting the number of tweets per week. The quality of instructor tweets was designated as class-oriented (e.g., reminding students of important due dates, upcoming class events) or subject-oriented (e.g., information germane to the subject being taught such as news headlines, current events, and the latest research). Tweets were approximately divided into 2/3 subject-oriented tweets and 1/3 class-oriented tweets. Lowe and Laffey (2011) recommend that instructors tweet three to five times per week to arouse and stimulate interest. While they did not empirically test the ideal number of tweets, they inferred that instructor tweeting beyond five per week may cause information overload. To investigate if this inference is merited, this study employed a "heavy" level where the instructor tweeted at minimum of six times per week (2+ subject matter and 4+ class related) during each week of the semester. The instructor tweet count at the end of ten weeks revealed that heavy tweeting did indeed occur with 155 total tweets (120 subject matter and 35 class related).

To encourage students to engage in Twitter, several strategies were employed. First, for the content-related and subject matter tweets, a class-specific hashtag was used to help students identify relevant tweets that were directly related to the course. The hashtag symbol (#) is used to mark topics or certain words in a tweet. For instance, #mktg300 could be used in a tweet as follows: "The second exam for #mktg300 will be held in three weeks." Students were likewise advised to use the class-specific hashtag for any course-related tweets that they made. As a second strategy, the instructor's timeline of recent tweets was embedded within the course learning system (e.g., Blackboard) as the first point of entry. Students were always exposed to the instructor's last ten tweets each time they logged into the course to access all other course materials. Some of the instructor and student tweets were mentioned during class discussions when appropriate opportunities arose. Finally, to encourage student tweeting, students were required to create a minimum of three course-related "tweets" each week during a ten week period. For the tweets to qualify towards the 30 total required, three criteria must be met: 1) the course-related

hashtag had to be used, 2) the tweet had to be about something associated with marketing course content (e.g., branding, advertising, internet marketing, social media, sales promotion, consumer behavior, etc.), and 3) it could not be a retweet. After the 10 weeks was over, a class discussion involved reflection on what was learned through the Twitter experience and identifying reasons why it is valuable to continue engaging in Twitter as a college student and soon-to-be marketing professional.

Measures

Rovai's (2002) 20-item 5-point Likert-type scale was used to measure **Classroom Community**. These items, which were summed to generate a total score, focused on the student's sense of in-class relationships, social presence, and interactions in learning environments.

Two independent scales were used as an indicator of **Pedagogical Effectiveness**: pedagogical affect and course effectiveness. *Pedagogical Affect* was measured using Mitchell and Olsen's (1981) seven-point semantic differential scale of four items, which was successfully used by other researchers (Davis, Misra, & Van Auken, 2000; Young et al., 2009). This scale addresses methods of instruction in terms of effectiveness, usefulness, satisfaction, and whether the instruction was good or bad. Items were summed to get a total measure of pedagogical affect. *Course Effectiveness* was measured by a 6-item, 5-point Likert scale developed by Sadera et al. (2009). Questions pertaining to issues such as course evaluation, class organization, and course enjoyment were summed to get a total course effectiveness measure.

Thought-leaders in pedagogical research (Marks, 2002; Williams, 1992) have recommended the use of multiple learning outcome variables in educational settings. As such, various **Learning Outcomes** were assessed in this study. *Perceived Learning* was measured using six items on six-point scales ranging from extremely high (a level rarely attained in other classes) to very low (much below that of other courses). Young et al. (2009) used this scale as an adaptation of the Young (2001) Learning Performance Scale. The total measure of perceived learning was based on a sum of all of the items. *Actual Learning* was operationalized through the instructor-assigned final numerical course grade earned. Student scores from a departmental learning assessment test were used as another indicator of actual learning. There were five multiple choice questions assessing the integrated marketing communications (IMC) perspective, examples of communication goals, and the IMC planning process. Both indicators of actual learning were measured on a 0-100% scale. Each multi-item scale attained a good level of internal consistency based on Cronbach's alpha, exceeding the generally acceptable cutoff of .70 (Nunnally, 1978).

Commonly used descriptive characteristics (e.g., age, gender, etc.) were also included in the survey.¹

¹The lead author may be contacted at clarketh@jmu.edu for further information about the five multiple choice questions assessing the integrated marketing communications (IMC) perspective, examples of communication goals, and the IMC planning process.

RESULTS

Table 2 below illustrates the distribution of 48 students based on their tweet volume meeting the course criteria during the 10 week period. While 16% of the class did not meet required criteria towards the minimum of 30 required, 31% met the minimum number and 52% exceeded the number.

Table 2: Ten Week Distribution of Total Student Tweets

Total Number of Tweets That Met the 3 Criteria	<10	11-29	30	31-100	>100
Number of Students (n = 48)	4	4	15	20	5

To test if there were differences based on instructor Twitter use, independent sample t-tests were performed. Table 3 illustrates that the course using Twitter had a significantly higher sense of classroom community, pedagogical affect, and opinion of the effectiveness of course. While there was a high level of overall learning, there was no significant difference

in perceived learning performance based on those that used Twitter versus those that did not. However, the final course grade earned and the results from the departmental assessment data indicate that the students in the Twitter course had higher levels of actual learning compared to the students not using Twitter.

Table 3: Results

	α	Twitter Used in Course	Twitter Not Used in Course	t	p Value
Classroom Community	.882	M = 78.63 SD = 7.113	M = 74.38 SD = 10.691	-2.019	.047*
Pedagogical Effectiveness					
<i>Pedagogical Affect</i>	.884	M = 25.95 SD = 2.535	M = 24.00 SD = 4.156	-2.544	.013*
<i>Course Effectiveness</i>	.874	M = 25.45 SD = 4.089	M = 22.89 SD = 4.234	-2.748	.007*
Learning Outcomes					
<i>Perceived Learning</i>	.887	M = 36.09 SD = 3.814	M = 34.33 SD = 5.116	-1.759	.082
<i>Actual Learning (Final Course Grade Earned)</i>		M = 85.05% SD = .848	M = 81.03% SD = 1.412	-2.750	.007*
<i>Actual Learning (Assessment Data)</i>	.720	M = 93.18% SD = 3.371	M = 84.44% SD = 2.860	-1.977	.042*

*Significant at $p < .05$

DISCUSSION

As expected, the heavy Twitter usage course experienced higher feelings of classroom community. The social nature of Twitter, combined with the strategies used to encourage interaction, likely contributed to a greater sense of belonging. Twitter appears to be quite promising in marketing courses where relationships, fellowship, and camaraderie amongst the students are essential, including those with significant teamwork requirements or case/discussion-based courses. Marketing courses, such as consumer behavior, services marketing, and relationship marketing, may be well-suited for Twitter use in order for students to directly experience and demonstrate how Twitter can enhance communication with consumers.

When taken as a whole, pedagogical effectiveness (pedagogical affect and course effectiveness) was rated more favorably by students in the Twitter course compared to students in the course that did not use Twitter. Together the pedagogical effectiveness scales imply that Twitter had a positive impact on the students' thoughts and/or feelings about course mechanics, delivery, effectiveness, and usefulness. Further, the Twitter students had more positive attitudes in the combined areas of clarity of course objectives, evaluation techniques, course organization, required readings, and overall enjoyment. Thus, incorporating Twitter contributes towards positive feelings about the course. However, the effectiveness of any technological tool is dependent upon the instructor's effort, motivation, and competence as well as the student's corresponding inputs.

The results of this empirical study showed mixed findings regarding learning outcomes, but it seems clear that Twitter was at least partly responsible for supporting overall learning. Findings are similar to Lowe and Laffey's (2011) discovery that Twitter had a positive influence on some, but not all, learning outcomes. Students in the Twitter course had a higher overall course grade and demonstrated higher performance on important course concepts from the departmental learning assessment test. Thus, evidence suggests that instructor Twitter use had a positive influence on the students' level of actual learning.

Perhaps the most critical finding of this study is that the Twitter group did not have a significantly higher level of perceived learning than the non-Twitter group. It is assumed that a strong level of perceiving learning is a highly desirable outcome for students. Because this outcome was not achieved, findings imply that Twitter may not have been viewed as an important learning tool, such as a required course textbook, but instead regarded as social entertainment or a "less important" course supplement. Further studies are needed to confirm or deny this assumption and determine to what extent Twitter adds or detracts value from the student's perceived learning experience. In the interim, to improve student

perceptions of learning, instructors may want to periodically reinforce how Twitter helps bridge theory and practice, by bringing real-world marketing information into the course in a timely basis.

Limitations and Future Research

This study had a modest sample and was limited to one instructor teaching IMC to undergraduate marketing students at one university. A natural research extension would include other settings and samples. Because Twitter does not require face-to-face interaction, and can be used in an asynchronous manner, studies are warranted in online and hybrid courses. Further, the instructor in this study had extensive knowledge of Twitter, was proficient in its use, and used it heavily. Exploring outcomes with varied tweeting volume (e.g., low-, moderate-, and high) would be useful. Before teaching with Twitter, especially if one is new, it is recommended to review Cordell's (2010) comprehensive guide to Twitter as O'Reilly and Milstein (2009) suggest it is important to understand key jargon such as tweet, @messages, retweet, and DM before getting started. Thomases (2010) and OnlineColleges.net (2009) provide specific ways that professors could use Twitter such as class communication, Q&A sessions, reaching distance learners, keeping current with news, and providing student services.

Quasi-experiments are subject to internal validity concerns, because the treatment and control groups may not be comparable at baseline (e.g., in this study there were more juniors in the Twitter course than seniors, and more seniors than juniors in the non-Twitter course). Carefully controlling for class year in future studies is suggested because it is a possible reason why there were differences between the two groups. To avoid timing effects across two semesters, conducting such studies in a single semester using a course with multiple sections (some with heavy Twitter use and some with no use) is also merited. However, this approach was not used due to anticipated inequity issues that might be discovered by students.

Researchers are encouraged to explore variations of the methodology presented in this paper. This study defined heavy Twitter usage as 6 or more instructor tweets per week that were 2/3 subject-oriented (e.g., course content) and 1/3 class-oriented (e.g., announcements and reminders); students were required to tweet 30 times in a 10 week period. Other combinations of subject/class-oriented tweets, student quantity/content of tweets, and required length of time tweeting may lead to different relationships than those uncovered in this study. The overall amount of content delivered to students in the Twitter group was heavier than the non-Twitter group. As such, future researchers could develop experiments that hold the overall level and type of content the same, but vary the type of media used (e.g., microblogging, blogs, discussion boards, etc.). Other measures of actual learning could also be employed beyond class average and a 5-item multiple-choice measure derived from part of a larger curriculum assessment test.

Finally, it would be informative to more deeply investigate the experience from the students' perspective to assess the quality of tweeting and whether that quality improved over time.

CONCLUSION

This study provided empirical evidence that, when compared to a marketing course with no Twitter use, instructor Twitter use yielded positive outcomes for the students and the instructor. Twitter is an ideal technological setting for extending the traditional Learner-Interaction Model (Arbaugh & Benbunan-Fich, 2007) beyond the classroom. For the marketing students, the Twitter group scored higher than the non-Twitter group in their sense of classroom community. Their actual learning of course content and their overall course performance was higher than those students not using Twitter. The students also gained valuable experience about real marketing tools while simultaneously creating their online personal brand.

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For the instructor, the evaluations of the course effectiveness and the pedagogical affect were higher in the Twitter use class. Tenure decisions, promotion in rank, merit raises, and academic awards can often hinge upon a faculty member's student-evaluated teaching effectiveness and performance. For marketing instructors who may be considering whether or not to incorporate Twitter into their course, we conclude that there are more benefits than drawbacks. Exploration of the resources identified in Table 1 can help professors learn valuable tips for effective microblogging in Twitter for faculty to remain technologically current and to prepare students for their respective careers. As marketing technologies proliferate and Twitter continues to develop, we hope that this study motivates researchers to continue exploring classroom community, teaching inputs, learning performance, and other outcomes associated with Twitter use.

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