

Modeling #Twitter Use: Do Students Notice?

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Abstract: Despite the observed beneficial effect of Twitter on student engagement, interaction, and overall performance within different subject areas, little empirical evidence is available concerning the dynamics of students' activity on Twitter in an educational setting and which factors influence this activity. This study aims to observe whether the Twitter activity of preservice teachers differs in the presence of an instructor serving as a co-Tweeter. A total of six sections, each with approximately 20 students enrolled, of an educational technology course at a large research university in the United States participated in the study. We conducted a preliminary content analysis of student tweets from the first two months of the course. The analysis showed that students tend to model their Twitter activity on the model of the co-tweeting instructor, both in terms of the content of their tweets and their likelihood to use certain features.

Twitter is a popular social networking tool, enabling users to share short messages via computers and mobile devices. Public twitter users engage in message broadcasting; anyone can see the messages that they share, and their messages may be aggregated with those of other users based on search terms or hashtags (e.g., #tag). Twitter has been criticized for creating more noise than signal and for lacking depth or substance (Ebner, Lienhardt, Rohs, & Meyer, 2010; Suh, Hong, Convertino & Chi, 2010). At the same time, it has been identified as a potentially useful knowledge-sharing tool (Dennen & Jiang, 2012; Letierce, Passant, Decker & Breslin, 2010). For this study, Twitter was implemented in six sections of an undergraduate education class in an attempt to support knowledge sharing and community building across multiple course sections. We adjusted the instructor's presence to see how instructor presence and modeling can help shape student Twitter use in a class setting.

Background

Twitter has been of interest to educators because, like other social media, it holds the potential to support collaborative interactions and to foster both community building and knowledge sharing (Ebner et al., 2010; Junco, Heiberger & Loken, 2011; Lee & McLoughlin, 2010; Schroeder, Minocha & Schneider, 2010). Additionally, many educators have noted the popularity of social networking tools among their students in their everyday life activities (Merchant, 2012). In a formal education setting, Twitter has been used to support face-to-face learning environments (Elavsky et al., 2011; Rinaldo, Tapp, & Laverie, 2011) and to conduct out-of-class activities (Junco et al., 2011). However, relatively few studies document the use of Twitter as a learning tool in a higher education setting. Junco, Heiberger, and Loken (2011) observed a direct relationship between the use of Twitter to complement face-to-face classes and student grades and engagement. Rinaldo, Tapp, and Laverie (2011) observed a relationship between students' involvement and the use of Twitter to support in-class activities, make announcements, solve student issues, and perform course-related administrative duties. Furthermore, Dunlap and Lowenthal (2009) observed positive relationships between the use of Twitter as a ubiquitous communication tool, students' interaction, and social presence of the instructor in a distance learning setting.

Although these studies suggest a beneficial effect of Twitter on student engagement, interaction, and overall performance within different subject areas, research has not focused on the dynamics of students' activity on Twitter in an educational setting and which factors influence this activity. This study aims to fill this gap, and it is mainly directed to instructors and researchers interested in implementing Twitter as a tool to foster knowledge sharing and collaborative learning among higher education students.

Context, Purpose and Research Question

As Twitter-using educators ourselves, we believe that Twitter can be a useful tool for developing and maintaining a professional learning network. Rather than just suggesting to preservice teachers that they might use Twitter for post-graduation professional development, we desired to give them direct experience with how Twitter could be used to build and interact with a professional learning network. In earlier semesters using Twitter with these students, we found that participation was minimal and lackluster. Students engaged in little to no peer interaction, shared few resources, and at best met minimum posting requirements with little substance or knowledge sharing. However, we noted pockets of desired activity occurring in instances where there was an instructor presence (Dennen, Kim & Hsieh, 2011). The purpose of this study, then, is to observe whether the Twitter activity of preservice teachers differs in the presence of an instructor model. Of particular interest is whether students who have a model make greater use of Twitter elements that support knowledge sharing and

management, such as retweets, hashtags, @replies, and URLs (Dennen & Jiang, 2012), than students who lack an instructor model.

Additionally, we looked to see if message content differs across the two conditions. Thus, our research question is: How does the presence of an active instructor who models knowledge sharing and community building via Twitter affect student use of Twitter across multiple sections of a university course? We hypothesized that an ongoing instructor presence that modeled appropriate tweets might encourage desired knowledge sharing and community building via Twitter within and across class sections. The findings of this study may help researchers and instructors interested in using Twitter as a learning tool—especially in a formal learning setting with periodical face-to-face meetings and a strong online component—to design Twitter-based learning activities that shape a specific behavior, promote knowledge sharing, and foster collaborative learning among higher education students.

Methods

Participants. The participants in this study were students enrolled in an educational technology course at a large research university in the United States. Most students were in education-related majors, although a few enrolled to meet a university computer course requirement. There were six sections of approximately twenty students each, and three sections were assigned to each condition. Participation was voluntary and had no bearing on student grades.

Study conditions. The study was incorporated into an existing semester-long Twitter participation assignment. Per this assignment, students were required to post an entry on Twitter on two different days each week during eleven weeks of the course, for a minimum of 22 tweets during the semester. They also were required to follow at least four Twitter accounts belonging to educators/educational technology experts; to use a common course hashtag at least five times to communicate with the whole class; to use other hashtags at least five times; to reply to at least five tweets using the @ function; and use the retweet (RT) function at least five times. Beyond these requirements, the content of posts was not constrained. Students were told that it was preferable to tweet about course-related topics, to interact with their classmates, and to share relevant resources. To foster student-student interaction in both conditions, we encouraged students to follow all of their classmates on Twitter in addition to following the course hashtag.

Two hashtags were used to aggregate tweets, one for the control group (three course sections) and one for the experimental group (three course sections). Control group instructors only replied to students if they received a direct question from students. Experimental group instructors could do same, but this group had the addition of an instructor-like person who tweets alongside the students and serves as a model. One of the researchers controls the experimental account, and regularly posts tweets to the experiment hashtag. These tweets modeled the desired use of Twitter (e.g., share relevant resources, interacted with course members).

Data Collection and Analysis

The primary data source for this study is the students' tweets, which were archived using HootSuite (hootsuite.com). Additional data sources include pre- and post-course surveys and student reflection papers. This brief paper focuses on a content analysis of the student tweets, with the survey data and reflection papers used for triangulation. Coding categories were emergent and developed by both researchers together after a preliminary review of the data. They fall into three main categories: Course related, school related, and non-school related. Table 1 presents the codes and an example of each code.

Table 1: Content analysis codes with examples of tweets.

Code	Example
Course related (CR) – Social / greetings	Happy Halloween everyone!
CR – Educational Technology	Looking forward to using Jing for the first time!
CR – Assignment – Commentary	Completed the blog post
CR – Assignment – Promoting work	Follow me on Wordpress! http://...
CR – Identity as a teacher	Seriously considering becoming an art teacher at the elementary level
CR – Class – Positive attitude	Ready for a little education to technology tomorrow. I love that class
CR – Class – Negative attitude	First skill check done. That was painful
CR – Class – Neutral attitude	Skill Check #1 officially done #holla
CR – Sharing resources (URL)	http://... Hey guys, a cool teaching opportunity. Creative writing w/ 9-11
CR – Asking questions	How do we find the prompts for the blog posts?
School Related (SR) - Sports	Let's go ...!
SR – Other classes	Getting ready for my next class today
SR – Campus life / studying	Join the SFEA today! Includes personal liability insurance! http://...
Other	Feeling better today! #notsickanymore

Findings

At the beginning of the semester 22% of students in the control group and 36% of students in the experimental group were unfamiliar with Twitter. Further, 24% of students in the control group and 27% of students in the experimental group were uncomfortable with the idea of using it; those percentages dropped to 12% (control) and 7% (experiment) by the end of the term. After tweeting for a semester, students were not necessarily enamored with Twitter, but experimental group students were more likely in open survey questions to indicate that it was a valuable tool for interacting with others and also gave more in-depth and thoughtful critiques of using Twitter in a class setting.

Table 2 summarizes the total number of tweets written to the course hashtags by students across both conditions, and using each of the Twitter communication features. The overall number of tweets was similar within the two groups, which is not surprising given that students were striving to fulfill assignment-mandated requirements. Students in the control group were more likely than students in the experimental group to make use of the reply feature; this suggests that, in the absence of an instructor, students might tend to communicate more with each other. In contrast, students in the experimental group were more likely to retweet, especially the instructor's entries with links to online material inherent to the topics covered in class. However, the percentage of tweets that include a link is low for both groups, suggesting that students were not heavily interested in sharing resources with their classmates. When the students used additional hashtags, another feature that was not modeled, they used them expressively rather than for the purpose of aggregation with other related tweets. Examples of these hashtags are #everymonday, #help, #thatwaseasy, and #notsickanymore.

Table 2: Summary of hashtag and feature use by students (S) and instructor/researcher (I/R)

	Course hashtag		Other hashtags		Reply		Retweet		URL	
	S	I/R	S	I/R	S	I/R	S	I/R	S	I/R
Experiment (N=55)	505	68	98	0	14	11	92	3	14	43
%			19.4%	0%	2.8%	16.2%	18.2%	4.4%	2.8%	63.2%
Control (N=62)	534	14	93	0	35	3	74	0	15	5
%			17.4%	0%	6.5%	21.4%	13.8%	0%	2.8%	35.7%

Table 3 summarizes the content of students' tweets. Omitted from this summary are retweets, since they were not composed directly by the students. Interestingly, students in the control group almost entirely limited themselves to course-related topics, with most focused on providing a commentary either about an assignment or about the class in general. An examination of time stamps and tweet content indicated that most of the tweets were composed the day before class while the students were working on their other homework for the class (e.g., "Trying to figure out this assignment" and "Finishing my homework"), or, especially for the control group, during the weekly face-to-face class meeting (e.g., "Learning about wiki in #..." and "Making my own storybook in class"). The predominant attitude toward the class and homework was usually neutral ("Hoping the skill check in #... today isn't too hard"), with peaks of enthusiasm for tools explored in class ("I learn so much about technology in my #... class"). Probably because of the instructor's model, the percentage of the tweets about educational technology in general was higher for the experimental group than the control group.

Table 3: Content analysis codes and corresponding number and percentage of tweets posted by students of both conditions.

	Experimental condition		Control condition	
	Number	%	Number	%
Course related (CR) – Social / greetings	15	3.6%	18	3.9%
CR – Educational Technology	36	8.7%	21	4.6%
CR – Assignment – Commentary	161	39.0%	187	40.6%
CR – Assignment – Promoting work	11	2.7%	6	1.3%
CR – Identity as a teacher	6	1.5%	2	0.4%
CR – Class – Positive attitude	19	4.6%	32	6.9%
CR – Class – Negative attitude	8	1.9%	25	5.4%
CR – Class – Neutral attitude	43	10.4%	106	23.0%
CR – Sharing resources (URL)	12	2.9%	10	2.2%
CR – Asking questions	35	8.5%	18	3.9%
School Related (SR) - Sports	17	4.1%	6	1.3%
SR – Other classes	9	2.2%	1	0.2%
SR – Campus life / studying	9	2.2%	9	2.0%
Other	32	7.7%	19	4.1%
Total	413		460	

The content of the tweets suggests that students were aware of the presence or absence of an instructor. In the control group, students were more likely to post negative sentiments. In the experimental group, they were more likely to ask questions and post about educational technology in general. Students in the experimental group also were more likely to engage socially on the hashtag, not restricting themselves to course-related content.

Discussion and Conclusion

These findings suggest that the presence of a co-tweeting instructor does affect how students use Twitter. Students in the experimental condition had a higher tendency to focus on course-related topics, much as the instructor model did. However, one unintended effect was the student's orientation toward the instructor in the experimental condition; rather than interacting with each other more, students engaged in activities that centered around the model account (e.g., retweeting the model tweets). At the same time, in the absence of an active instructor students more freely shared their thoughts about the class. Thus it seems likely that students were clearly aware of the presence or absence of an instructor in this activity. In other words, instructor presence seems to have influenced both the content of student tweets and students' likelihood to use certain features. Following their co-tweeting instructor's model, students in the experiment group were more likely to support knowledge sharing and community building within and across class sections than students of the control group.

Based on these findings, we recommend that instructors who implement Twitter with their students be mindful of their desired outcomes and then actively and consistently model the types of tweets and interactions that should lead to those outcomes for their students. Providing a static model in the assignment directions is not sufficient to influence student actions over the course of the semester; an ongoing, dynamic model provides students with a continuous reminder of how to complete the assignment. However, student tendency to focus on interacting with the instructor over each other is concerning and could limit the development of an ongoing personal network on Twitter. In future iterations, we plan to adjust the instructor model to include interactions that should explicitly connect two or more students.

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