The Use of Yammer in Higher Education: An Exploratory Study

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Abstract

Organizations depend more than ever on the ability of their workforce to master the means to most effectively communicate and engage in online collaboration activities. Social media technologies are being called on to help facilitate that process in organizations today. One social media technology that is making inroads into numerous industries, including higher education, is Yammer. This study addresses the use of Yammer in facilitating communication and collaboration among project teams in an upper-level marketing course. The results document the extensive online activity of college students. Respondents from student project teams did not embrace the use of Yammer for communication and online collaboration, however, correlation analysis showed a significant positive relationship between the amount of Yammer usage and communication effectiveness.

Keywords: Social media, Online learning, Higher Education, Teamwork, Communication, Online collaboration

INTRODUCTION

Organizations depend increasingly on integrated, team-based performance for crucial value-added outcomes in their business ventures. A critical component of enhanced team-based performance is the use of effective communications networks and media options, so critical for this sort of long-term success in the marketplace. Whether the goal is to link project teams operating in multiple geographical settings, enable marketing to connect with the customer base,

or support the coordination of supply chain partners, communication methods represent a critical enabler of corporate success. Thus, it is crucial for firms to develop an employee base that is well trained and conversant in the use of these multiple media alternatives. Indeed, effective business writing, project management, and advanced communication abilities are listed among the top ten critical skills employers identify for new hires (Ghannadian, 2013).

The reasons for this emphasis on communication fluency are clear: organizational work crosses national boundaries; supply chain partners are a worldwide phenomenon, requiring sophisticated methods for linking and coordinating logistics and operations activities. Additionally, with more organizational work project-based, firms routinely develop cross-functional teams for new service, product, and process development. These teams work at a frenetic pace, are rarely co-located due to functional or geographical differences, and are charged with producing outcomes that require both clear goals and consistent direction. Thus, it is clear that organizations depend more than ever on the ability of their workforce to master the means to most effectively communicate and engage in online collaboration activities.

BACKGROUND

Web 2.0

Although the necessity for communication organization-wide is a well-known and exhaustively researched phenomenon, much of the work that originally characterized the field focused on traditional computer-mediated communication channels, including telephone, internet (e-mails), teleconferencing, and other electronic methods for linking team members. In recent years, however, the rise of social media platforms, often referred to as Web 2.0, has called into question the power of these various communication methods for organizational success. This second

generation of web-based tools “allows users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community, in contrast to websites where people are limited to the passive viewing of content” (Web 2.0, 2013).

Organizations are increasingly adopting social media and integrating it into their workplaces. “Like it or not, social networking is mattering more and more in the office” (Vaughan-Nichols, 2013). The annual survey by McKinsey & Company provides documentation of this trend. They reported that two-thirds (66%) of the respondents (a sample of 3,249 executives across a range of regions, industries and functional areas) all use features of Web 2.0 in their organizations (Bughin & Chui, 2010). The companies surveyed reported using Web 2.0 technologies to collaborate and communicate both internally and externally see measurable business benefits such as increasing access to information, improved customer satisfaction, decreasing travel costs, and increasing revenue (Bughin & Chui, 2010).

One social media technology that is making inroads into numerous industries, including higher education, is Yammer. From their website, the company describes the technology in the following manner:

> Yammer is a secure, private social network for your company. Yammer empowers employees to be more productive and successful by enabling them to collaborate easily, make smarter decisions faster, and self-organize into teams to take on any business challenge. It is a new way of working that naturally drives business alignment and agility, reduces cycle times, engages employees and improves relationships with customers and partners (https://www.yammer.com).

Yammer has been described as “Facebook in a business suit” (Shuttleworth, 2013). Similar in functionality to Facebook, it offers user-friendly features including: posting events, praising, posting polls, team notes, chat, online collaboration, uploading team files, adding links to websites, uploading photos, updates/posts to team, and update/posts to entire organization. It was developed to facilitate employees to network and collaborate across their organizations. Users post messages that can be seen only by other company employees who have authorized access to join the particular (Shuttleworth, 2013). Yammer helps alleviate some of the problems that have surfaced from employees “spouting off” on public social networks such as Facebook and Twitter; keeping all comments in-house through the internal social network (Vaughn-Nichols, 2013).

According to the company website, Yammer is used by more than 200,000 companies worldwide or more than 80 percent of the Fortune 500® including Ford, Nationwide, 7-Eleven, Orbitz, and Rakuten. In addition, Yammer has been adopted by several universities worldwide, including: the University of Sydney, Curtin University, Pepperdine University, Ohio State University, East Carolina University, and Pennsylvania State University.

Yammer is an example of the way Web 2.0 offers enhanced opportunities to promote team-based interaction and online collaboration in a less-formal, social media-enhanced setting. Indeed, research has suggested that informal means of communication work better for encouraging project team interaction and cross-functional cooperation (Pinto & Pinto, 1990). Research and developments in the area of social media have pointed to the advantages offered by employing these supplemental means of communication. In their recent work, Treem and Leonardi (2012)

argued that "social media has important consequences to organizational communication processes because they afford behaviors that were difficult or impossible to achieve in combination before these new technologies entered the workplace: Visibility, persistence, editability, and association" (p.143).

- Visibility refers to "the means, methods, and opportunities for presentation; in our usage it primarily addresses the speaker's concerns with the presentation of self" (Bregman & Haythornthwaite, 2001, p. 5). For example, *Delicious*, social tagging application is an "easy, free tool to save, organize, and remember the links you find interesting on the web" (https://delicious.com/). It contains a feature to display the number of people who bookmarked the same content offering "visibility" to subscribers.
- Persistence refers to the notion of having documentation of previous communication. Social media allows conversations to persist past their time of initial presentation (Treem & Leonardi, 2012). For example, microblogging applications like Yammer allow for links to past posts, entries to be cataloged by date and subscriber, etc. providing a history of past activities and discussions.
- Editability suggests that communication can be adapted or altered. Social media offers users the feature to modify or revise asynchronous text-based entries (Treem & Leonardi, 2012). This feature is advantageous for individuals working alone or in teams and provides an ongoing opportunity for revision and improving quality of content.
- Association pertains to the community characteristic of social media networks. "The associations of people to other people, people to content, or content to content afforded by social media have potential implications for both users and potential audiences" (Treem & Leonardi, 2012, p. 163). Facebook is the largest social network in the world

with 751 monthly million active users of whom 87% log in on a daily basis (Facebook, 2013). Facebook encourages its subscribers to form relationships with others (e.g. Friends) and to make comments and opinions about others' posts (e.g. "Like" button). Its "mission is to make the world more open and connected" (Facebook, 2013).

Social Media Application in the Classroom

Because of the increasing demands from employers that prospective employees be conversant with social media applications, business professors are motivated to incorporate these experiences into their curriculum. One emerging field is the application of Web 2.0 to a variety of business settings, to help students learn the advantages and disadvantages of various media platforms, the most beneficial applications of these platforms, and the wide range of options and uses for which Web 2.0 can enrich business student education as well as best preparing them for the modern workforce. Several studies of late have considered the application of social networking in higher education and assessed the use of this technology to advance learning in the college setting (Friedman & Friedman, 2013; Gao, 2013; Charlton, Devlin, & Drummond, 2009; Goodman, 2010; Grantz & Koernig, 2011; Li, 2010; Munoz & Towner, 2009; Xion & Ching, 2010). This research validates the importance of engaging the students in learning and the need to use the "technology that students are using to communicate" (Goodman, 2010, p. 1004).

This paper will consider the use of one Web 2.0 application, Yammer, in an undergraduate Marketing course. Students were given training in the use of Yammer and encouraged to use it in a semester-long, team-based activity; precisely the sort of application for which Yammer was developed and in which it has been shown to be successful. As part of this paper, we will

explore some of the critical links in the acceptance and use of this social media tool, as well as its relationship to team communication and online collaboration.

Research Questions

This study addresses the use of Yammer in facilitating communication and collaboration among project teams in an upper-level marketing course. Four sets of research questions were investigated:

(1) Communication: What communication methods were relied upon for group work? How effective was the communication within each team?

(2) Yammer: What Yammer features were most used by students? What were students' attitudes about Yammer?

(3) Online Collaboration: What were students' perceptions of online collaboration?

4) What was the relationship between Yammer usage and communication effectiveness and students' attitude toward online collaboration?

METHODOLOGY

A mixed-method study was employed for this research. First, a pretest of survey items was conducted with a sample of 73 undergraduate students, all juniors and seniors, from two sections of an upper level marketing courses at a public university in the eastern half of the United States. Their responses allowed the testing of the psychometric properties of the scales used in this study.

Next, both quantitative and qualitative data was collected according to the process used by Havard, Du, & Xu, (2008). This data included both quantitative survey responses and open-ended responses from an end of the semester questionnaire. As noted by Havard, et al., (2008)

and Knupfer and McLellan (1996), studies of collaborative learning with descriptive research demonstrate statistically and qualitatively robust findings that may not be apparent through strictly qualitative or quantitative methods. Thus, this study, employing both qualitative and quantitative data, offers broader implications than would be recoverable through only quantitative survey analysis.

Sample

Data for this study was collected during the spring term of the 2013 academic year.

The sample included undergraduate students from one upper level consumer behavior course offered at a public university in the eastern half of the United States. For the semester project, students worked in teams as "consumer analysts" for a local industrial organization. There were a total of 9 project teams consisting of 4 to 5 members per group. The teams conducted consumer research, developed promotional materials, submitted a final report, and made formal business presentations. Group work accounted for 35% of their final semester grade. Yammer was a required component of the course content for the Spring 2013 semester. The syllabus stated:

> "**Yammer: Have you ever heard of Yammer?** Yammer is a secure, private social network for organizations. It helps individuals (students, employees, etc.) to collaborate easily, make smarter decisions faster, and self-organize into teams to take projects and/or activities (see: https://www.yammer.com). Similar to the look and functionality of Facebook, Yammer should have a short learning curve for anyone not familiar. Our course is a pilot for studying the use of Yammer in the classroom. All students are required to us Yammer for posting and discussion current events in marketing that apply to the field of consumer behavior. These posts may count toward bonus points at the end

of the semester. I am looking for discussion back and forth between students on these consumer behavior applications. Any teams that want to use Yammer for a discussion platform may do also. Yammer WILL NOT be used for the submission of any required deliverables. We will be anxious to hear your thoughts and suggestions at the end of the term."

Respondents were recruited at the end of the semester through an announcement in class, an announcement on the course management (Angel) page, and an announcement on the Yammer course page. To participate in the survey, students were asked use the Survey Monkey link provided in the announcement. Students were told that completing the survey was totally voluntary; however, their feedback would be very helpful in assessing the usefulness of Yammer in the classroom setting. A total of 38 students (out of the 39 students enrolled in the class) participated in this study, including 14 men and 24 women. Seventy-one percent were seniors and twenty-nine percent were juniors. All students were business majors with seventy-six percent reporting to be marketing majors. The average age of respondents was 21.5 years. While the small sample size is acknowledged, Kirk (2013) and Russell and Russel (1992) demonstrated that a minimum of 36 responses are necessary to achieve a statistical power of .85 and a Type 1 error probability of .05 in the detection of a small effect size (i.e., .5 standard deviations from the population mean).

Measures

Internet Usage. Respondents were asked if they had access to the Internet off campus and to indicate how many minutes/hours per day they spent logged on to the Internet.

Facebook Usage. Electronic media and social networks such as Facebook, Twitter, Instagram, and Tumblr, have become a natural part of life for most college students and ubiquitous on college campuses today (Marketing Profs Research, 2010; Lenhart, Purcell, Smith, & Zickuhr, 2010). To measure the frequency of Facebook use and duration of use, respondents were asked how many minutes/hours they spend on Facebook in an average day and at what age they first joined Facebook (Sheldon, 2008).

Yammer. Three elements of Yammer's application in a classroom setting were measured: Familiarity, Feature Usage, and Attitude toward Yammer. To measure prior Familiarity with Yammer, respondents were asked if *before* the start of the current term, they had any experience using Yammer. The familiarity scale was 1= No experience to 5 = Extensive experience. To measure Usage of Yammer Features, respondents were asked to indicate how often they used the various features of the social media platform including: posting events, praising, posting polls, team notes, chat, online collaboration, uploading team files, addling links to websites, updates/posts to team, and update/posts to entire class. The usage scale was 1= Never to 5 = Very Often. Attitude Toward Yammer was assessed using a combined modified version of two previous scales: One scale used by Charlton, et al., (2009) to assess Attitude Toward Facebook and a second scale used by Geissler, Edison, and Wayland (2012) to study students' critical thinking, creativity, and communication skills. The14-item scale was coded on a 5=point Likert scale (1= Strongly Disgree and 5 = Strongly Agree). Sample items included: "Yammer encouraged me to be more open with my teammates." "Yammer facilitated creative discussions." "Yammer helped me build trust with my teammates." "I would look forward to using Yammer again in another class." Scale reliability as measured by Cronbach alpha was .83.

Communication. An overwhelming number of problems in business are often tied to ineffective communication (Pinto & Pinto, 1990; Soni, 2013). Good communication skills have long been touted as the "building blocks" of a tool kit for both personal and organizational success (Noone, 2011). It is even more essential today, "in the diverse environment of the current labour markets, to promote teamwork and communication skills at an international level" (Escudeiro & Escudeiro, 2012, p. 279). For example, new product and service development teams interact with a variety of individuals both internally and externally to the organization (often across continents), acquiring and disseminating information in order to accomplish several distinct purposes (Pinto & Pinto, 1990). Communication and teamwork are central to the success of these organizational processes.

Responding to this need for excellence in communication and team-based skills, business professors have incorporated the use of student teams, group work, and cooperative learning into their curricula (Issa, 2012; Forrester & Tashchian, 2006; Markulis, Jassawalla, & Sashittal, 2006). A key determinant of student satisfaction when undertaking group work is communication, along with workload sharing and mutual support (Pang, Kong, Tong, & Wong, 2011). Team success has been shown to depend on the communication processes team members use to interact with each other (Marks, Mathieu, & Zaccaro, 2001; Hoegl & Gemuenden, 2001).

To create a picture of students' overall communication behavior, two aspects of team communication were investigated in this study: First, what communication methods do students use for their teamwork? Specifically, respondent were asked to indicate how often they used face-to-face interaction, social media, and/or traditional computer-mediated methods to

communicate with their team members. The frequency of use scale was 1= Never to 5 = Very Often. Communication methods included were: cell (voice), texting, email, face-to-face, Google Docs, Yammer, Classroom Management System (Angel), Facebook, and Skype. Second, to measure communication effectiveness within the team setting, a seven-item scale from Hoegl and Gemuenden (2001) was used to address the frequency, formalization, structure, and openness of information exchange within the team. The items were measured on a 5-point Likert scale that ranged from 1= Strongly Disagree to 5 = Strongly Agree. Sample items included: "There was frequent communication with the team." "The team members were happy with the timeliness in which they received information from each other." Scale reliability as measured by Cronbach alpha was .83.

Online Collaboration. Research on collaborative learning stems from the early work of Johnson and Johnson (1975) and Slavin (1987); it focuses on the social or interpersonal processes by which groups of students cooperate and work together as a team (Kahiigi, et al., 2012; Alavi, 1994). Collaborative learning has been shown to increase student engagement in coursework (Miller et al., 2011; Collier, 1980), enhances student interaction and discussions (Kahiigi, Vesisenaho, Hansson, Danielson, & Tusubira, 2012) and promotes critical thinking and problem solving (Gliddon & Rosengren, 2012). Overall, it has been shown to be more effective than traditional instruction methods in promoting student learning and academic accomplishments (Jones & Jones, 2008; Alvi, 1994).

Collaborative learning has been taken to a new level with the advancements in technology and their applications in the classroom. Almost a decade ago, Arbaugh (2004) cited the trend that

students were “learning to learn” online. This trend is continuing to increase at an increasing rate (Friedman & Friedman, 2013; McGinley, Osgood, & Kenney, 2012). “Online peer collaboration occurs whenever you use an online tool to collectively work on a document, demonstration, etc. and improve it beyond where you could by working on it individually” (Havard, et al., 2008; p. 44). Perceptions of online collaboration were measured with an eight-item scale adapted from Havard, et al., (2008). The items were measured on a 5-point Likert scale that ranged from 1= Strongly Disagree to 5 = Strongly Agree. Sample items included: “Online collaboration is more advantageous than individual work in providing a high quality deliverable.” “ Online collaboration is challenging because it is hard to get one’s own ideas across and get prompt feedback from others.” Scale reliability as measured by Cronbach alpha was .73.

RESULTS

This study investigated the use of Yammer in a college setting; specifically, how the social media platform facilitated communication and online collaboration among project teams. Ninety-four percent of the sample (36 students) reported having Internet access off campus and indicated being online an average of 4 hours per day (s.d. = 2.7 hours; range = 0 minutes to 13 hours per day). Ninety-two percent of the sample reported having a Facebook account, spending an average of 2 hours per day (s.d. = 2.8 hours; range = 5 minutes to 12 hours per day). This wide range in activity supports a previous study by Pempek, Yermolayeva, and Calvert (2009), who found that the amount of time respondents reported spending on Facebook varied greatly: from 2 minutes to 165 minutes. The average age for starting to use Facebook was 16.2 years (s.d. = 1.45; range = 13 to 20 years). Ninety-two percent of the sample indicated they had never used Yammer.

Four sets of research questions were investigated in this study. Each will be addressed in turn. The first set dealt with communication among the project teams: what communication methods were used and how effective was the communication. As illustrated in Table 1, respondents relied most heavily on face-to-face interaction (mean = 4.68; s.d. = .53) and texting to communicate with their teammates (mean = 4.63; s.d. = .67), followed by email exchanges (mean = 3.49; s.d. = 1.28) and voice calls via cell (mean = 3.16; s.d. = 1.48). On average students usage of Yammer was 2.74 (s.d. = 1.30).

Table 2 shows the results for communication effectiveness. Relying on the research of Hoegl and Gemuenden (2001), the scale addressed the frequency, formalization, structure, and openness of information exchange within the team. The findings indicate that over half of the respondents (52.7%) reported having frequent communication with their team and most of this interaction occurred face-to-face. Fifty percent of the respondents were pleased with the timeliness of the information shared. A smaller percentage (26.4%) or 10 respondents reported dissatisfaction with the general lack of communication among team members. The results point to problems with some team members not responding to texts or other forms of communication (18.2 % or 7 respondents perceiving problems).

The second set of research questions addressed Yammer – its functionality and students' attitudes toward the social media platform. When considering the functionality of Yammer (Table 3), the *most* used feature was "updates and posts to the entire class" (44.8%). The *least* used features were: "chat" (10.6%), "praise" (7.9%), "posting polls" (7.9%), "posting events" (5.2%), and "using the team note feature to work on group assignments" (10.6%).

In terms of students' attitudes about Yammer, none of the statements in the 14-item scale elicited a positive response. Students did not report being comfortable using Yammer, did not feel it facilitated creative discussions, and did not perceive it as a useful tool for group projects. Respondents would not look forward to using Yammer in another course and would prefer using a course Facebook page. In fact, Table 4 shows that over half of the class (54%) indicated an agreement of a 4 or 5 that "Yammer was a waste of time."

The qualitative data provided an interesting dichotomy of responses. The negative comments about using Yammer included:

- "I absolutely hate Yammer. I already have to check email, Facebook, Twitter, my bank account, and Angel (the classroom management system). I don't need to add something to that list."
- "Texting and Google Docs work better than Yammer for group work."
- "Yammer is just one more thing to worry about."
- "Yammer could be great because we are in projects in multiple courses and it would give me one place to access all of my groups on one site. But the teachers all use different things. And I did not like it that the instructor could see the work our team was doing (or not doing) and then would made comments about it. I felt micromanaged posting documents and drafts on Yammer."
- "Group work is a pain. Team members don't all contribute equally. Yammer did not make it any easier."

There was a core group of students who did perceive positive benefits from Yammer. The findings show that 12 students or 31.7% of the respondents saw Yammer as a beneficial tool.

Those perceiving benefits from Yammer felt that it helped them perform better in the class, helped them collaborate on the team project, and could be effectively applied in other courses. Some of the open-ended comments included:

- "Yammer helped coordinate our whole project. I loved using it."
- "We used Yammer at least twice a week for group conversation. It was nice because it was sort of like talking to each other in group text messages – because everyone did not have iPhones."
- "Yammer made it easy for our group to upload all of our files and be able to have them in one place."

The next research question pertained to online collaboration. Specifically, what were students' perceptions about using online tools to collectively work together? As indicated in Table 5, half of the respondents indicated that that online collaboration provides an additional method beyond face-to-face meetings (mean = 3.34; s.d. = 1.15). They pointed to challenges getting one's ideas across and getting prompt feedback in an online format (mean = 3.34; s.d. = 1.45). The respondents do not perceive online communication to be as effective as face-to-face meetings (mean=2.51; s.d. = 1.26) or phone (cell) conversations (mean = 2.71; s.d. = 1.27). As familiarity with Yammer increased, students reported still not preferring using the tool for online collaboration (mean = 2.81; s.d. = 1.24).

The final set of research questions assessed the relationship between Yammer usage and both communication effectiveness and students' attitude toward online collaboration. Correlation analysis showed a significant positive relationship between the amount of Yammer usage and communication effectiveness (see Table 6). A factor score was calculated for the seven-item

scale of communication effectiveness and correlated with the single item measure of Yammer Usage. In other words, the more students used Yammer the more they perceived their team to be communicating effectively with each other. To assess the relationship between perceptions of online collaboration and Yammer usage, a factor score was calculated for the 8-item scale of online collaboration and correlated with the single item measure of Yammer Usage. There was no significant correlation between Yammer usage and perceptions of online collaboration. This finding is reinforced by the fact that only 21% of the class (8 students) reporting using Yammer for online collaboration (see Table 3).

Discussion

Teamwork has become a vital part of not only the work world but also the academic world. Faculty members have integrated teamwork and collaborative assignments into their business curriculum to help better prepare graduates for the demands of prospective employers (Karim, et al., 2012; Amato & Amato, 2005). The purpose of this research study was to examine student perceptions of Yammer, a private social network used by many organizations today; and assess the use of Yammer in facilitating communication and collaboration among student project teams.

This study documents the extensive online activity of college students. Supporting previous research, the results show that respondents were online an average of four hours per day and were heavy users of Facebook. The Pew Research Center (2010) states that college students today are "history's first 'always connected' generation. Steeped in digital technology and social media, they treat their multi-tasking hand-held gadgets almost like body parts" (p. 1). As result of their familiarity with and usage of computers and digital media, they are also drawn to utilizing online communication (Mangold & Smith, 2012; Smith, 2012). The results show that

the heavy use of texting, email and voice (cell) in addition face-to-face communication (see Table 1).

In general, the project teams did not embrace the use of Yammer for communication and online collaboration. Although there was a core group that heavily used Yammer, that group represented only 11 out of 38 students or 29% of the class (see Table 1). Those who preferred not to use Yammer, perceived it just as another required activity that (in their opinion) did not add value above and beyond their regular communication methods (email, texting, etc.). In terms of the functionality of Yammer, most students did not use its myriad features. Only updates and posts to the class were used often or very often by class members (see Table 3). It is understandable that the *most* used feature was updates and posts to the entire class. Participation in this course was measured by in-class participation and also posting consumer behavior applications on Yammer to the entire class. Bonus points were given for providing these updates via Yammer. It is noteworthy that only 21% of the class (8 students) reporting using Yammer for online collaboration. The students who used the features of the platform did comment on their benefits. For example, open-ended comments suggested that the note feature and uploading of files allowed teams members to work together from remote locations. Others suggested that the group text feature was an asset for teams without iPhones.

The technology acceptance model (TAM) may shed some light on students' perceptions and reluctance to use Yammer. According to Davis (1989; 1993) the perceived usefulness of the technology, its perceived ease of use and user acceptance of the technology have a major impact on behavioral intentions and actual system use. Respondents were not sold on the usefulness of

the technology (see Table 4). Since the majority are users of Facebook (over 92% reported having a Facebook account), over forty percent (41%) of them would prefer just using a Facebook course page. Facebook and its integration into coursework have been documented (Wang, Lin, Yu, & Wu, 2013; Charlton, et. al., 2009). Very similar to Facebook, the features of Yammer are extremely to use; however, respondents reported very light usage of the broad array of features it provided. Table 3 illustrates that only a handful of respondents (2 or 3) used several features such as posting polls or events and praising someone. Only four respondents (10.4%) reported frequently using the team note feature.

This research points to some practical suggestions for instructors from pedagogy of use perspective. First, Yammer needs to be well integrated into instructional design of the course – i.e., the grading system and expectations for the course material. In the current study, Yammer was offered as an alternative (but not required) means for communication and collaboration among team members. The results suggest that students did not see Yammer as a helpful option and were not overly self-motivated to integrate the tool into their collaboration efforts. Qualitative comments point to some level of frustration with the tool itself and the collaborative process, e.g., "Group work is a pain. Team members don't all contribute equally. Yammer did not make it any easier." But, as Capdeferro (2012) found "frustration is a common feeling among students involved in online collaborative learning experiences" (p. 26). In addition, Jung, Kudo, & Choi (2012) found that "technology use" is one of the factors creating stress in online collaboration. As the TAM suggests, these factors limited the students' intentions to use the technology. Correlation analysis did, however, show that the more students used Yammer, the more effective they perceived their team communication.

It is not all bad news for Yammer. Yammer, as a communication technology, affords new types of behaviors that have been previously difficult or impossible to achieve in the workplace (Treem & Leonardi, 2012). For example, Penn State University's webpage for its Yammer network includes the following quote: "Yammer's opened up lines of communication otherwise impossible to have happen at a university of our scale. I don't know what someone down the hall is doing let alone 2 or 3 miles away across campus. Yammer has enabled me to not only let others know what I'm working on but brought my colleagues closer together to make sure we aren't reinventing the wheel when it comes to tackling IT problems" (Why Yammer, 2013).

For the classroom setting, the popular press has documented numerous examples of Yammer "revolutionizing classroom teaching" and calling it the "ultimate problem-based learning tool" (Wecker, 2011). As the CFO of Dachis Group commented regarding his firms adoption of Yammer, "It is amazing how much this tool has cut down on email traffic and how much more efficient the interchange of information and ideas become through using it." (43 Ways, n.d., p. 38). It is recognized that to date the majority of users on college campuses has been staff, with faculty and staff making up a smaller percentage. This was an interesting first attempt to introduce the Yammer technology into a college classroom and assess how it can be used to facilitate team communication and online collaboration. Research and practice both demonstrate that Web 2.0 tools like Yammer (particularly as they migrate to the mobile Web 3.0 class) will only continue to grow and be applied in organizations. Students and faculty in courses involving teams and online communication need to develop their expertise in these technologies. Faculty must prepare their students for what is ahead and Yammer looks to be one of those things.

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Table 1. Usage of Communication Methods

N=38				
	Mean[a]	S.D.	Frequency[b]	Percent
Cell (voice)	3.16	1.48	18	47.4
Texting	4.63	.67	36	94.8
Email	3.49	1.28	21	55.2
Angel (classroom management system)	1.92	1.38	5	13.2
Yammer	2.74	1.30	11	29.0
Facebook	1.82	1.20	3	7.9
Face-to-face	4.68	.53	37	97.4
Skype	1.5	.98	2	5.2

Notes:
[a]Scale: 5-point Likert scale, anchored by 1= Never and 5=Very Often
[b]Frequency: # of responses of 4 or 5 on the 5-point Likert scale

Table 2. Communication Effectiveness

N=38				
	Mean[a]	S.D.	Frequency[b]	Percent
There was frequent communication with the team	3.50	1.21	20	52.7
The team members communicated often in spontaneous meetings, phone conversations, etc.	3.61	.99	22	57.9
The team members communicated mostly directly face-to-face with each other	4.13	.93	31	81.5
Project information was openly shared by all team members	3.52	1.08	21	55.2
The team members were happy with the timeliness in which they received information from each other	3.42	1.15	19	50.0
There was a general lack of communication among team members	2.41	1.27	10	26.4
Our team had member(s) who would not respond to texts or other forms of communication	2.46	1.32	7	18.2

Notes:
[a]Scale: 5-point Likert scale, anchored by 1=Stronly Disagree and 5=Strongly Agree
[b]Frequency: # of responses of 4 or 5 on the 5-point Likert scale

Table 3. Usage of Yammer Features

N=38				
	Mean[a]	S.D.	Frequency[b]	Percent
Chat feature	1.66	1.17	4	10.6
Updates/posts to team	2.95	1.37	13	24.2
Updates/posts to entire class	3.08	1.30	17	44.8
Uploading team documents/files	2.74	1.35	11	29.0
For online collaboration on team assignments	2.50	1.27	8	21.0
Adding links to pertinent websites/materials	2.53	1.46	11	29.0
Posting polls	1.47	1.00	3	7.9
Praising someone	1.71	1.16	3	7.9
Posting an event	1.47	.95	2	5.2
Using the team note feature to work on assignments	1.82	1.11	4	10.6

Notes:
[a]Scale: 5-point Likert scale, anchored by 1= Never and 5=Very Often
[b]Frequency: # of responses of 4 or 5 on the 5-point Likert scale

Table 4. Attitude Toward Yammer

N=38				
	Mean[a]	S.D.	Frequency[b]	Percent
Encouraged me to be more open with my teammates	2.13	1.66	6	15.8
Helped me get to know my teammates' preferences, opinions, and interests	1.97	1.20	5	13.2
Helped me build trust with my teammates	2.02	1.08	3	7.9
I am comfortable using Yammer to interact with my teammates	2.76	1.51	14	36.9
Helped me collaborate with my team on project activities	2.51	1.30	9	23.7
All team members were active on Yammer sharing project information	2.32	1.16	8	21.0
Yammer provided no benefits to me	2.97	1.40	16	41.1
Yammer could be applied effectively in other courses	2.68	1.38	8	21.1
Yammer facilitated creative discussions	2.54	1.45	9	23.7
Yammer was a waste of time	3.50	1.52	21	54.3
I would rather use a course Facebook page	3.13	1.51	16	41.1
Yammer helped me perform better in this class	2.00	1.16	5	13.2
Yammer was a useful tool to use for our class project	2.29	1.39	7	18.5
I would look forward to using Yammer again in another class	1.79	1.34	4	10.5

Notes:

[a]Scale: 5-point Likert scale, anchored by 1=Stronly Disagree and 5=Strongly Agree

[b]Frequency: # of responses of 4 or 5 on the 5-point Likert scale

Table 5. Perceptions of Online Collaboration

N=38				
	Mean[a]	S.D.	Frequency[b]	Percent
Online collaboration….				
Is more advantageous than individual work in producing a high quality deliverable	2.76	1.24	10	26.4
Provides an additional means for collaborating beyond face-to-face meetings	3.34	1.15	19	50.0
Is challenging because it is hard to get one's own ideas across and get prompt feedback from others	3.34	1.45	21	55.2
Is convenient and efficient	3.06	1.26	15	39.4
Can be just as effective as face-to-face meetings	2.51	1.26	8	21.1
Can be just as effective as phone (cell) conversations	2.71	1.27	10	26.4
Has the advantage of allowing one to think more comprehensively when articulating one's ideas	2.76	1.14	9	23.7
Once I get familiar with a communication tool such as Yammer, I don't mind using it for online collaboration	2.81	1.24	10	26.4

Notes:
[a]Scale: 5-point Likert scale, anchored by 1=Stronly Disagree and 5=Strongly Agree
[b]Frequency: # of responses of 4 or 5 on the 5-point Likert scale

Table 6. Correlation Analysis

Variable	Mean[a,b]	S.D.	1	2	3
(1) Yammer Usage	2.74	1.30	----		
(2) Overall Communication Effectiveness	2.84	.905	.614[c]	--	
(3) Overall Online Collaboration	3.62	.707	-.076	.084	---

Notes:

[a]Mean of Yammer Usage is on a 5-point Likert scale from 1=Never to 5=Very Often

[b]Mean of Overall Online Collaboration and Overall Communication Effectiveness is on a 5-point Likert scale from 1=Strongly Disagree to 5 = Strongly Agree

[c]Correlation is significant at $p<.01$