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# **Tweeting and blogging: Moving towards Education 2.0**

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## **Introduction**

Since 2004, a variety of Web 2.0 technologies have been rushing into people's daily lives (Greenhow, Robelia, & Hughes, 2009; Olaniran, 2009). The concept of Web 2.0 comprises a multitude of different connotations resulting in an increased emphasis on user-generated content, information sharing, collaborative and cooperative effort, learner-to-learner and learner-to-instructor interactivity, and informal and formal learning, which all together potentially formulates a newly-emerging paradigm of Web 2.0-based online learning, as compared to traditional Web-based or e-learning paradigms (Brown, 2010; Craig, 2007; Selwyn, 2008).

Web 2.0 technologies have its own distinctive characteristics which can substantially assist the learning and teaching process. Web 2.0 technologies consist of a considerable number of Web tools, including social network sites, such as Facebook, Twitter; social bookmarking tools like Delicious and Diigo; media sharing tools, such as YouTube and Flickr; collaborative editing tools such as wikis; blogs; and a great number of tools that cross all of those categories. The content sharing functionalities of Web 2.0, including textual, audio, and video format, has opened up opportunities for students to customize their own learning pace and maximize their learning outcomes. Collaborative editing tools, such as wiki, have made collective content creation amenable and easy to control. In addition, social networking tools including Facebook,

Twitter, and MySpace have provided remarkable networking capabilities, which have allowed for nurturing and growth of an online learning community (Burgess, 2009; Lu, 2010).

The changes in young adults who are using these Web 2.0 tools have been interesting. According to Pew Internet and American Life Project (Jones & Fox, 2009), as of September 2009, more than 72% of online young adults (18-29) use social networking sites, while only 39% of older Internet users (ages 30 and up) use these sites. As of May 2011, 83% of online young adults (18-29) use social networking websites (Madden & Zickuhr, 2011). With the increasing number of users on social networking sites, much of the drop in blogging among younger internet users might be perceived to be highly relevant. In December 2007, 24% of online 18-29 year olds reported blogging; by 2009 the numbers had dropped to 15% (Lenhart, Purcell, Smith, & Zickuhr, 2010). College students are among this age group. It appears that social networking sites are particularly attractive to the younger age group of users who previously would have been using blogs. As Web 2.0 tools increasingly penetrate into our daily lives, more and more instructors have considered incorporating the tools into their academic courses (Craig, 2007).

It is only in recent years that researchers have started to conduct empirical and exploratory research studies to assess and evaluate the actual impact of using those Web 2.0 tools, especially social networking tools, both in and outside of classroom settings. This research seeks to bridge the gap between the conceptual research and the empirical studies to help scholars better understand this emergent agenda while shedding light on this area and to suggest methods for future study. As social media and Web 2.0 tools share the same fundamental attributes, these two terms are used interchangeably in this paper.

## **Education 2.0**

A considerable body of literature in recent years has touched on the topic of Web 2.0 for learning and teaching (Asselin & Moayeri, 2011; Bower, Hedberg, & Kuswara, 2010; Brodahl, Hadjerrouit, & Hansen, 2011; Doherty, 2011). There exists research that provides a conceptual framework of Web 2.0 for learning and teaching and deals with conceptual implications of Web 2.0 applications (Brown, 2010; Franklin & Van Harmelen, 2007; Greenhow et al, 2009). These research studies have made comparisons between Web 2.0 social software and Web 1.0, evaluated the classroom and scholarship transformation enabled by Web 2.0 tools, and redefined the notion of a new learning ecology in the digital age. The conceptual research has suggested changing paradigms where Web 2.0 technologies have been transforming the structure of the traditional Web-based learning and their distinguishable impacts (Craig, 2007; Greenhow, Robelia, & Hughes, 2009).

Despite the enthusiasm of research into Web 2.0 technologies, there have been limited empirical research studies targeting the impact of Web 2.0 tools in higher education. Studies vary remarkably in how they evaluate the adoption of Web 2.0 tools, depending on the researchers' goals, the types of online learning communities, the specific platforms of Web 2.0 technologies, as well as the methods of data collection in a given circumstance. A few of these studies revolve around the relationship between the incorporation of Web 2.0 tools and online learning community building (Ke & Hoadley, 2009), student engagement (Cole, 2009; Junco, Heiberger, & Loken, 2011), collaborative learning and knowledge building (Brodahl et al., 2011; Brown, 2010; Craig, 2007), social presence (Dunlap & Lowenthal, 2009), and student achievement results (Junco et al, 2011), among other factors.

### **Educational Benefits of Microblogging Tools**

It has been widely acknowledged that Web 2.0 tools “enable hybrid learning spaces that travel across physical and cyber spaces” (Greehow et al., 2009, p. 247) through students’ attendance and participation in an online environment. Microblogging tools have been used not only to facilitate in-class learning activities but to support a more digital, flexible and free mode of learning beyond the classroom.

Twitter is a microblogging tool that provides text-based content to be displayed on the user’s profile page to update what they are doing. By allowing for no more than 140 characters in a post called a *tweet*, it enables users to publish brief text updates in real-time as well as asynchronous communication. It creates online communities where interaction, discussion, and collaboration can take place among a group of users at different geographical locations (Java et al., 2007). Although this interaction and collaboration are often perceived as informal and even sometimes playful (Dunlap & Lowenthal, 2009), scholars have been conducting research examining the unique educational benefits of microblogging and exploring ways of incorporating it into a variety of learning scenarios. The following identifies several types of formal in-class and after-class learning as well as informal leaning supported by microblogging tools.

**Formal learning.** In terms of in-class activities, Ebner and Maurer (2009) emphasized that the blogging approach provided *just-in-time* assistance to students to better catch up with the class progress. In addition, it offered multimedia content including visuals and audios which can add more variety to the traditional text-based content. In Junco et al.’s research (2011), the Twitter assignments promoted active learning by helping students relate the course material to their own experiences both inside and outside of the classroom. Ebner and his colleagues (Ebner, Lienhardt, Rohs, & Meyer, 2010) concluded that microblogging has great potential for the future by expanding teaching and learning beyond the classroom.

**Informal learning.** In Dunlap and Lowenthal's (2010) research, Twitter was perceived as a tool that students used to support informal learning activities and to discover relevant resources and tools to help with their coursework. Similarly, Ebner and Maurer (2009) noted in their research that the use of microblogging tools promoted informal learning. In his succeeding research, Ebner et al. (2010) extended and expanded the informal learning concept to process-oriented learning. At the end of their course, it was shown that microblogging had indeed become a new form of communication. They further explained that the transfer of information or status messages were not the crucial factors that contribute to process-oriented learning; instead, the opportunity to "be a part of someone else's process" (p. 98) by reading, commenting, discussing the tweets is the key, as it conduces to the formation of a learning community.

**Learning community.** The formation of a learning community was a common theme that appeared across many different studies (Borau, Ullrich, Feng, & Shen, 2009; Dunlap & Lowenthal, 2009; Junco et al., 2011). The concept of a learning community is associated with and expanded to a social view of learning in which learning is deemed as a collective and collaborative learning process (Ke & Hoadley, 2009). In Junco et al.'s (2011) research, the researcher affirmed that although the course only met for an hour each week, the adoption of Twitter enabled students and instructors to continue discussion and build a strong learning community among students. Wright (2010) stated that the sense of community was created during the Twitter practice, which largely reduced the sense of isolation among some student groups.

Holotescu and Grosseck (2009) found identical results in their research study, due to the advantages of the microblogging platform, the learning community continued to be active after the course ended. They found that microblogging can tailor the course pedagogy to be more

responsive to students' needs. Borau et al. (2009) investigated students' community building and its relationship with the integration of Twitter. Since Twitter is not designed for conversation but for updates, interaction between multiple users is not often perceived. They claimed that the fact that people used the @ symbol to respond to each other in a conversational setting could be perceived as a marker of "social coherence and community forming" (Borau et al., 2009, p. 84).

**Social presence.** Dunlap and Lowenthal (2010) probed the usage of Twitter from a social presence perspective. Twitter was used in online instructional design and technology courses in which Twitter was not mandatory but optional for students to get involved. Through an examination of students' tweets and possible participatory observations, the researcher claimed that social presence in this online course was highly elevated by the just-in-time social interactions via Twitter. Students were found to be more engaged in information sharing, collaboration, brainstorming, problem solving, and context-based content creation.

**Collaborative learning.** In addition to the notion of learning community, collaborative learning can be enhanced through Twitter. Twitter and other alternative microblogging tools were used in a class to create more collaborative learning opportunities for students to collaborate and cooperate with each and collectively be engaged in certain activities.

Junco et al.'s (2011) research suggested that students achieved a certain level of collaboration on their service learning projects by tweeting *at and with* their peers. They provided emotional support for one another, which all together essentially established real-world study groups on Twitter.

In Holotescu and Grosseck's (2009) research, they designed a series of collaborative learning activities via Cirip.ro. They concluded with the statement that "collaborative activities proved to be an effective tool for professional development and for collaboration with students,

which can change the rules of the courses and models good pedagogy responsive to students' learning needs" (p. 3).

**Reflective thinking.** Wright (2010) identified evidence of reflective thinking through analysis of students' tweets. Participants in this research consented that they were in fact forced to think more in-depth about the content due to the 140-character limit, which encourages students to write clearly and concisely. In Rankin's (2009) case, the 140 character limit was inversely perceived as a barrier in elaborating complex ideas but meanwhile, it restricted the possibility of conveying miscellaneous or trivial information.

In contrast, Ebner et al.'s (2010) research the *non-reflective* nature of students' tweets appeared to problems and challenges within the microblogging intervention. The content of their postings did not reflect on their experiences with using microblogging; instead, they stated that "there was no attempt to make the medium itself an object of consideration or discussion. Therefore, the final conclusion was that most of the students used the microblogging naively (p. 97)."

**Participation and engagement.** A few researchers (Junco et al., 2011; Rankin, 2009) found that more students were able to participate in classroom discussion at a level that they would not normally participate. Junco et al. (2011) contend that the use of Twitter encouraged online participation from some students who otherwise may not be active participants in class. Student interactions on various topics using Twitter have led to "a culture of engagement and a deepening of their interpersonal connections" (p. 129). Rankin (2009) found that the integration of Twitter as a communication tool allows for more students to participate in classroom discussions than before. She attributed the success of the Twitter incorporation to Twitter's role in encouraging engagement of students who otherwise would not have participated.



## **Educational Benefits of Blogging**

Compared with Twitter, blogging has been used for education and as a tool for curriculum development for a longer period. As for individual use, blogs have features such as knowledge filtering, personal diaries, and e-notes where students can use a blog to facilitate their learning at their own pace (Blood, 2002). In addition, Flatley (2005) stated that a blog is an effective interactive tool that could promote learner's collaboration and interaction so as to create more knowledge construction.

As compared to online discussion forums that mainly focus on providing a discussion environment or social networking tools that concentrate on spontaneous interaction and resources sharing, researchers believed that blogs not only allow individuals to share knowledge with others but also allow a demonstration of one's express his/her personal style (Nardi, Schiano, Gumbrecht, & Swartz, 2004).

Since blogs have a wide variety of discussion and interaction functions that help learners with similar interests to gather and promote knowledge sharing (Efimova & de Moor, 2005), it is often easy for learners to enhance the sense of community through a personal space that blogs afford (Glogoff, 2005).

The *beyond classroom* concept that was discussed earlier in the formal learning section of Twitter was found to be applicable for the blogging tools. Akin to Twitter, blogs enable students to structure their thoughts and make them available on the Internet. Betts and Glogoff (2004) stated that blogs have the potential to serve as a transformational technology as they lend opportunities for establishing online learning communities and thus bringing users a sense of belonging. In addition, blogs offer student-centered pedagogical practices that could better promote learner autonomy (Dettori, Giannetti, & Persico, 2005; Oravec, 2002; Sun, 2010).

## Recommended Practices

Among the empirical studies that researchers have conducted in recent years, it is found that many of them either recommended guidelines and suggestions for future research or demonstrated good practices as examples to be followed for other Web 2.0 integration into education. For example, Dunlap and Lowenthal (2010) suggested that defining clear expectations for participation, setting good models of participation, and continued active participation in Twitter in the long run are good practices, which all support future research studies that incorporate Twitter into formal online courses.

Rankin (2009) found that it was best to provide students discussion topics so that the comments stayed under a common theme or at least remained relevant to each other. Students could tweet for ten minutes and then she would suggest a change of topic. TA's participation was attributive to the success of this Twitter integration. Another important segment was what Rankin called *processing time*. In the last five to ten minutes of class, she brought the 90 students back together to watch the screen, then reviewed and reinforced some of the most useful comments that had been posted during class.

Ebner and Maurer (2009) inferred that to achieve high-level critical thinking and quality assurance, the microblogging adoption needs more control elements. This somewhat resembled Rankin's (2009) practice in her class; the instructor needs additional efforts to put in order to achieve desirable results of technology incorporation.

Along the same line, Holotescu and Grosseck (2009) admitted that the effort and time needed for microblogging intervention are more important than those for an online course hosted on a traditional learning management system (LMS). They recommend running entire online courses on the microblogging platform only if the course duration is within a few weeks. If not,

the efforts needed for facilitation and communication would become too demanding for instructors and students. They recommended the usage of tags in order to classify class notes and to organize messages within groups or within topics defined by the facilitator.

Churchill (2009) found that an instructor needs to provide continuous encouragement for students in his postgraduate class. Those encouraging activities included: regular learning tasks for students; blogging used as part of an assessment requirement; regular blogging of an instructor. He noted the use of RSS technology and tagging helped students deposit resources and display in their personal blogs.

### **Research Questions**

The landscape of social media users has been changed dramatically (Jones & Fox, 2009). The questions such as —Is there a change in the nature of blogging and microblogging, or is there a behavior change in using Web 2.0 tools? What triggers it, and how learners and instructors react or counteract this perceived change? — are the interesting questions to investigate. Furthermore, given that social media is changing so rapidly, it seems that a mixed method of research that includes both quantitative and qualitative data is appropriate.

This research sought to assess the impact of Twitter and a blogging tool usage for learning in an undergraduate class in higher education. The specific research questions that guided this study are:

1. What usage pattern already existed for use of Twitter and blogs in this class?
2. In what ways did Twitter support learning in this class?
3. In what ways did Blogging support learning in this class?

### **Method**

#### **Single Case Study Design**

The methodological approach to this research is a case study. First and foremost, a case study allows an in-depth investigation of critical contextual conditions. Rather than providing descriptive and exploratory evidences, a case study focuses on *how* and *why* questions, which probe into a contemporary, complicated phenomenon. In addition, case studies embrace a multi-dimensional approach to analysis, especially through the use of multiple sources of evidence (Yin, 2009). A combination of qualitative and quantitative methods is often found in case study methods and serves the best purposes, as different strengths and weaknesses of both qualitative and quantitative methods and are essentially complementary (Flyvbjerg, 2011). Lundervold and Belwood (2000) noted that single-case designs were geared towards usage in practice settings.

This study uses case study methodology, involving both quantitative and qualitative approaches, to explain how this small case at a higher education institution, used Twitter and blogs to facilitate their learn learning. A quantitative approach is more objective and generalizable in the sense that it provides more quantifiable and scientific data, while qualitative research is a more in-depth exploration of what is assumed to be a dynamic and complex reality (Yin, 2009). Two surveys, a usage survey and an exit survey were distributed to students in this study. The usage survey sought to provide the researcher an opportunity to understand students' general usage of blogs and Twitter *prior to* the activities. The exit survey investigated the details of students' engagement on blogs and Twitter *during* the activities. 12 in-depth interviews were conducted which offered more insights of students' perceptions. Data were gathered and analyzed to provide a more systematic and explicit picture of this case.

### **Instructional Context**

Twitter and blogging were integrated into a class titled *Introduction to Social Media*. This course aims to examine the structure, function, and social impact of the major forms of new

media in the United States. The course provides students an understanding of the role of the new media in society and provides them with a foundation for becoming critical new media users and practitioners. Students were given short question-and-answer type of quizzes every other week to ensure that students would make timely reflections. Although the instructor's lecture was the major in-class activity, students' input and reflection were highly encouraged and necessary to establish a well-rounded discussion.

Given the learning objectives and the reflective nature of this class, the incorporation of Twitter and blogging was suggested as a tool to promote high-level learning and knowledge/content construction. The instructor provided the following learning goals of participation in the Twitter and blogging activities (a) have a hands-on experience of intensive usage of social media tools; (b) formulate dynamic online learning groups via the facilitation of social media; (c) reconstruct one's own understanding of using social media tools for educational purposes; and (d) gain more resources and insights on social media.

### **Procedure**

Twitter and blogging were introduced into the class in its second week. Although the instructor stated the educational benefits of and justifications for using Twitter and blogging in this class, the Twitter and blogging activities were completely voluntary. The only explicit incentive was that students who participated in the Twitter or blogging activities would be given five extra credits points by the instructor. The assessment of students' participation of either Twitter or blogging activities would not affect their final grade.

Based on these standards, 14 students of the total 16 students voluntarily agreed to participate in the Twitter and blogging activities with seven in the Twitter group and the same number of students in the blogging group. In the meantime, those 14 students were asked to

complete a survey before the technology incorporation to determine their technological familiarity level. In addition, the researcher and the instructor set clear goals for learners' participation and provided specific guidelines and instructions for posting. Clear expectations for participation were defined and good models (tweets and blogs) of participation were demonstrated to students.

During the adoption process, two students from the blogging group failed to continue their commitment, another one switched to be in the Twitter group, and one other student proposed to be in both groups. Throughout the quarter (seven weeks), the researcher and the instructor monitored and reviewed the activities to determine if the series of identified activities were taking place.

Starting from the ninth week, students were asked to participate in interviews conducted by the researcher for two weeks. 12 students participated in the interviews, which lasted 15 to 30 minutes per person. On the tenth week, all participants were provided paper-based surveys to complete as a post-survey of the Twitter and blogging activities.

### **Participants**

A total of 14 students participated in this study. Students' ages ranged from 20 to 24 with the mean age being 21 year old. The majority of them were white Caucasian, with one African American and one Asian. Four students were females and ten were males. In terms of ethnicity, one was an international student while the rest were American students. Students in the Twitter group and the blog group shared relatively equivalent demographic characteristics, including age, ethnicity, and gender.

## **Results and Analysis**

## Usage Survey

The pre-survey delved into students' familiarity with blogs and Twitter, their level of interest, their self-reported perception of adoption of new technologies and other demographics information. Additionally, it served to the purpose of examining any perception change after the completion of the case.

**Usage of Twitter and blogs.** In terms of account ownership, participants reported that only one person out of the 14 did not have a Twitter account, and five did not have a blog account while nine had accounts.

Among the nine blog users, one student did not have any blog entries, two had less than five, and six had more than ten. Among the 13 Twitter users, one student followed less than ten people, three followed less than 50, four followed less than 100, while five followed more than 100. Participants' Twitter followers were found impressive. Four students had less than ten followers, and eight had more than 51 followers. More than half of students had over 50 tweets, and only four had less than five tweets.

With respect to time to start using blogs and Twitter, the patterns of both groups seemed similar. Approximately half of students, either who had blog accounts or who had Twitter accounts, started their first usage more than one year ago. In either user groups, only two started to use within three months. Among all Twitter users, 11 out of 13 of students had used Twitter more than three months.

The data suggested that participants were not newbies to Twitter or to blogs. Among students who were on Twitter, roughly half had used it for more than a year. The same number was found among students who are on blogs. The information on Twitter use was particularly interesting in that the number of students' followers and people who students follow were almost

the same. This suggests that many people from this group were in fact advanced Twitter users who had been on Twitter for a long time and who had possibly developed some personal habit and standards of using Twitter.

**Technology familiarity level and pre-perception.** Four questions in the usage survey investigate students' technology familiarity level. When asked, "How familiar are you with social media types of technology?" 10 responded "very familiar" and four responded "familiar." When asked, "How quickly can you learn an online tool or a piece of software/online program?" nine of students responded "very quickly" and five responded "quickly." Another question was designed to find out students' pre-perception on Twitter and blogs' integration into education. When asked, "Do you think that using Web 2.0 tools such as blogs or Twitter is helpful to achieve your learning goals?" 10 students responded "Yes," and four responded "Maybe."

These findings indicate that this group of users is conceivably representative of a group of learners who are the earlier adopters of social media and the pioneers in incorporating social media use into learning. They maintained a high familiarity level of social media use and a firm belief in its educational benefits.

### **Exit Survey**

In the exit survey, the researcher used Likert-scale questions to examine the changes in (a) students' use of Web 2.0 tools (Twitter and blog); (b) students' perception of Web 2.0 tools for educational purposes. Students were asked questions concerning (a) community building; (b) understanding of content area; (c) how the students use those tools and what they used them for. One multiple-choice question that allow multiple answers inquired about students' top three choices being factors that were most important to the success of Twitter or blogging activities. In addition, there were three open-ended questions to be used as qualitative data for this research.



**Perceived good practices.** Table 1 reflects students' responses to what they perceived as good practices that contributed to the success of the Twitter and blogging activities. In Table 1, students were provided with a list of statements that indicate good practices in the class and asked to check those that they agreed to be positive factors contributing to the success of the Twitter or blogging activity. Numbers in this table denote the number of students who agreed with the statement.

Among all the statements that suggested good practices in the class, both groups of students agreed upon the importance of setting goals, providing specific guidelines and instructions, and understanding expectations for the posting activities. When it comes to the most-agreeable practice, the Twitter group reported that "Continuous feedback and reply for participation were provided on Twitter/blogs" was the most important ones as perceived by the students. Interestingly, the blogging group reported fairly low on that statement; instead, they perceived offering instructions prior to the activities, such as setting clear goals and specific guidelines and expectations for participation, were more important than providing feedback.

These responses to some degree reflect discrepancies of the nature of Twitter and blogs. Twitter, as a microblogging tool, tends to be more *disruptive* which requires more instructors' control and monitoring. In contrast, blogs are relatively more *conventional* in the sense that it shares more commonalities of traditional reflective learning activities such as writing a diary.

Table 1 *Good Practice in using Twitter and Blogging*

Good Practices	Twitter	Blog
Clear goals were set before the activities	4	2
Specific guidelines and instructions for posting were given	4	2
Clear expectations for participation were defined	4	2
Continuous feedback and reply for participation were provided on Twitter/blogs	6	1
Good models/demonstrations of participation were demonstrated	3	1
Ongoing weekly report through email	3	1
Other	0	0

**Students' Post-Perception.** Table 2 demonstrates student's perceptions of using Twitter/blog in this class. Both groups of students share favorable perceptions on these two tools' importance of enabling them to have a lot of fun, feel a sense of community, interact with their classmates, and share resources.

In the Twitter group, students reported that the Twitter incorporation contributed to their understanding of the content area of the course, social media. In addition, they perceived high association between Twitter usage and a larger volume of interaction with their classmates. Interestingly, although they interacted more due to Twitter, their perception of sense of community and closeness to their classmates did not accordingly increase; instead, their ratings on those two items were fairly low.

The distribution of students' responses in the blogging group was distinct from the Twitter group, which again may be representative of the inner characteristics of those two tools. Students' responses predominantly were centered on the actual utilities of blogging, such as serving as documentation tool, a resource sharing tool, and a reflection tool. They perceived blogs' impact upon fostering a closer community and relationship between peers was lower.

Table 2 *Students' Perception of Twitter/blogs incorporation*

Statements	Twitter	Blog
I feel myself closer to my classmates because of the Twitter/blogging activities.	4.00	3.00
This Twitter/blogging activities were of NO help to my understanding of social media.	*4.75	*4.00
I had a lot of fun through using Twitter/blogs in this class.	4.50	4.50
I felt a sense of community among my classmates.	4.00	3.75
I interacted LESS with my classmates due to the Twitter/blogging activities.	*4.75	*4.50
I used Twitter/blogging to document my thoughts & ideas.	4.13	5.00
I used Twitter/blogging to share resources.	4.63	5.00
I used Twitter/blogging to reflect on news, books and articles that I read or come across.	4.38	4.75

*Note.* 1=Strongly Disagree; 2=Disagree; 3=Somewhat Disagree; 4=Somewhat Agree;5=Agree; 6=Strongly Agree

\* Means of negatively phrased items were recoded

**Open-ended questions.** The students were asked about the benefits they had experienced and the perceived drawback or disadvantages through open-ended questions. Both groups of students perceived social learning as a key element in using blogs or Twitter. Five students noted the benefits stemmed from social learning such as “learning from others” and “offering different ways to interact with classmates and make class discussion easier.” One student noted the benefits as “Knowing that my tweet will be studied for a possible positive outcome.” In regards to disadvantages, four students perceived Twitter’s drawbacks as difficulty in keeping track of tweets. They further noted its constraints being a potential distraction to the in-class lecture. The 140 character limit was perceived as a constraint to convey more complex meanings. Two

students in the blogging group referred blog's inability to be used on a smart phone as a constraint.

### **Twitter and Blogging to Support Learning**

**Perceived educational benefits.** In the interviews, students from both groups perceived various educational benefits of using either Twitter or blogs in this class. They believed that not only the Web 2.0 tools enhance their in-class engagement and participation, but they also provided much room for informal learning beyond the classroom.

***In-class learning.*** Many students agreed that the Twitter activities outside the classroom contributed to their in-class learning. From the Twitter group, six out of eight participants noted that they were glad that they can bring up things that they shared on Twitter and talked about them when they met face-to-face in class. For example, Student [1] said, "We all laughed together at stuff we posted on Twitter when we met in class. This made us feel much closer to each other." The similar comment was made by three other participants. Many students believed that this connection that they made outside of class indeed promoted their discussion and participation inside the class. As Student [2] stated, "The use of Twitter helped me to make new friends so that I can engage more in in-class discussion." Students from the blogging group shared similar feelings. As Student [10] said, "I am glad that my fellow read my blog and we can talk about it when we meet. It makes me feel more comfortable to talk to him and we discussed further about it when we met physically in class."

***Informal learning.*** Informal learning is a theme that constantly emerged from students in the Twitter group. Although most of the students using Twitter believed the Twitter activities helped them to participate more in-class, some of students admitted that what they gained most out of the integration was indeed the links and resources which they perceived as a type of

informal learning. Especially for the advanced Twitter users, since they were not new to Twitter, they did not “learn much from getting on Twitter itself,” as Student [3] stated; instead, four students shared the statement that “contents from my classmates are very interesting so that I retweeted them on my Twitter account and shared with others in my network.” Advanced users seemed more selective in sharing their classmates’ links and more carefully engaged in this informal learning, “Since I followed so many people on my Twitter, I really have to judge that their tweets have great values before I will retweet it on my own account,” Student [4] stated.

*Sense of community.* Students in both Twitter and blogging groups agreed that they perceived a certain level of sense of community. Those participants who were more involved in the activities often perceived a higher level of sense of community. Student [7] noted that “Knowing that people I knew would talk back to me is great. This helped me to branch out more and to be willing to participate more, and also motivated me to post more and share more of what I am interested in.” Students often aspire for affirmation of their tweets; however, in the larger public space on Twitter, it’s difficult to seek feedback and responses. Connecting with people they know in real life actually helps them to maintain the momentum of their participation online. The blogging group shared resembling thoughts in this respect. For example, Student [11] said, “Students get more connected through blogging; I think it’s a good outlet for us because it offers a convenient place for us to share with everyone else in the class.”

### **Characteristics of Advanced Twitter Users**

One of the distinctive characteristics of this group of students is that many of them were advanced users of social media who already nurtured their personal habits of social media utilization. Unlike most of users in the previous research where using Twitter is the first-time experience for the participants (Dunlap & Lowenthal, 2009; Ebner et al., 2010; Ebner & Maurer,

2009; Wright, 2010), in this study, most of the students were all seasoned social media users who have been on Twitter for over a year and who had developed their stable opinions on the utilization of social media. This difference makes them have distinguishing perceptions of the Twitter/blogging activities and how to use these technologies for education in general.

*Set boundaries.* As most of the students were advanced Twitter users, they did set rigid boundaries on who to follow and what to share on Twitter. Five out of eight were seasoned social media users who had been on Twitter more than a year and who have hundreds of tweets before starting the activities. They were not *easy to be fooled*, since they themselves had developed some understandings of social media or at least had many personal experiences on Twitter. Although they were asked to follow every classmate on Twitter, Student [3] refused because she thought “some of the kids in class are not follow-worthy. I don’t want to see their tweets on my wall.” She further explained that “Someone follows you because they like what you have to say, they have to find value of your tweets in order to follow you.” It demonstrates that she has clear-cut standards for people that she follows.

Three students discussed their clear purposes of tweeting and their own distinctive definition of *correct* usage of Twitter. Student [5] stated, “Twitter is not Facebook, you don’t do back and forth talks more than seven times. If you need to, go to Facebook or just simply call.” Student [7] stated, “Twitter is more about sharing and networking. You gotta make the distinction between Twitter and Facebook. Nobody is really interested in what you’re doing on Twitter. So you’re not supposed to tweet things like ‘I am in the library’ or ‘I am feeling happy’ all the time.” Student [3] said, “I believe Twitter is more for communication purposes, and I believe it could be for educational as well. But I don’t want to be like just following everybody in a class and say that’s educational.”

***Problem-solving.*** The students have problem-solving capabilities in dealing with technical difficulties in using Twitter in this class and incorporation of Twitter in educational settings in a larger sense. When many of the students encountered the difficulty of keeping track of their peer's tweets, Student [4] volunteered to make a public list which listed all the people in the class so that they can just click on the list and see the tweets from their classmates only. When asked to make use of hashtags, the advanced users responded quickly and used hashtags in their tweets and shared great ideas on how to incorporate social media into education. Student [6] stated, "Higher education should definitely capitalize on the power of social media and empower the use of social media in education." Many students suggested good ways of using social media, such as using Twitter as a new form of discussion board; using it for a large-size class to promote student engagement; using it for after-class reflection posts; using it for students to post their questions in-class when they are not able to follow but too shy to ask; and using it for enhance instructor and student interaction after classroom and office hours.

Student [6] specifically stated ways to incorporate Twitter into the classroom setting, including creating class Twitter accounts; making class hashtags; using hash-tags# to initiate a discussion; bringing it up on the projector screen to showcase students' updates and thought simultaneously. Student [4] suggested that educators use Twitter for high-schoolers as they were the younger age group who were on Twitter more frequently compared to the college age group. Some of the ideas noted here have already been identified in other research activities (Holotescu & Grosseck, 2009; Rankin, 2009; Wright, 2010).

***Social learning.*** This group of learners was perceived to be *social* in nature due to the large number of followers they had on Twitter. Many students have more than 100 followers and they followed hundreds of people at the same time. They checked their Twitter three times a day

usually and they were quicker to obtain information from people's retweets than from textbooks or newspapers. Student [5] stated, "Being on Twitter is making yourself present in a larger discourse. Even if nobody responds to you, I still see the value of pushing out my tweets on Twitter because you know it's a channel where everybody is out there. It's not just you talking to yourself." They distinguished the definition of a *fan* versus a *friend*. As Student [7] commented, "the follower on Twitter is more like a fan rather than a simple friend. Someone follows you because they like what you have to say. They have to find value of your tweets in order to follow you because you're not their only friend." Student [1] perceived the live aspect of Twitter, "Twitter is so quick and almost instant. I really enjoy the live aspect of it and the live stream displayed on the wall."

### **Challenges**

Although students perceived multiple benefits of integrating Twitter and blogs in the class, at the same time they pointed out some challenges that hindered them from achieving their learning goals. Particularly, students in the Twitter group pointed out many challenges they experienced when using Twitter in the class.

***Difficulty in teasing out the class tweets.*** Four of the eight students in the Twitter group stated that it was difficult for them to keep track of and pay special attention to their peers' tweets when seeing a mass amount of tweets on their wall. Although the list was found helpful, some of them still perceived a difficulty to move an extra step to click on the list and see people's tweets within the list. Student [3] noted that "I have more than 300 people to follow and about that number who followed me, so there is too much attention to be drawn to elsewhere because of this large number. It's hard to focus on the class Twitter."



***Information branch-out instead of convergence.*** Two students found it difficult to perceive a central convergence of the information flow in Twitter. Student [5] further explained that “People’s tweets are always in pieces... There’s a disconnection among people’s tweets. I am not sure whether it is because of our course subject or something else, but there’s something missing.” Student [7] articulated that “Sometimes it’s easier to initiate a conversation, but it’s much harder to carry on a conversation because sometimes you don’t see that the conversation goes anywhere. It’s easier to get confused on Twitter.”

***Difficulty in conveying solid information.*** One of the issues was that the students who belonged to seasoned social media users were not accustomed to using social media to convey messages that are meaningful to the general public. As for many novice Twitter users, the Twitter/blogging activities for the class were their initial exposure to social media, they were more inclined to tweet exclusively about themselves, which made the advanced user group discontent. Another issue was that the 140 character limit posed a challenge in conveying solid information. As Student [7] noted, “The 140 character limit definitely makes it much harder to carry on a conversation, especially if you are geared towards academic discourse. To completely express what I want to say in 140 characters without using abbreviations or *chatspeak* is difficult in any sense.”

***Inability to be quick and instant.*** Student [8] noted that the reason that he wasn’t able to engage as much as he wanted was that he, unlike most of the people in the group, didn’t have a smart phone. He was not able to get quick and instant access in order to review and reply to others’ tweets and post his ideas. “I am slow in following up with my classmates. Also, when I want to post something myself, by the time I sit in front of a computer, those ideas are already

gone away.” He further asserted that unless he got a smart phone, there was no way for him to be so responsive and engaged in the Twitter activities.

**Control elements.** Some students perceived a lack of control elements in the Twitter activities. Student [7] noted that it would be more effective if everybody were forced to sign up in the first week so that there could be more time spent on the actual activities instead of the process of sign-up or waiting for everybody to sign up. Another student commented that if the whole process was completely compulsory but not optional; if the instructor had in fact set up rigid standards to get a certain number of tweets or blogs rather than just giving an expectation, these activities would have been more effective. Students sometimes really need to be compelled to act; otherwise, they can become stagnant.

### **Differences between Twitter and Blogs**

Some students suggested some of the major perceived differences in the blogging and tweeting activities. Compared with Twitter, blogs are more difficult to maintain due to a requirement of more time spent and more effort put in. Student [12] stated that “Blogs are more professional – there’s no room for error. You should look like an expert when you are blogging, which means it needs much more commitment, but it’s hard to make time to write another content-based, intellectual-quality blog on top of other commitments you gotta make in school.”

With regard to the form of information, students indicated that Twitter is less rigid and solid in content. Student [5] commented that “it’s just a link directing to a Web page, and the information could be so trivial, and much colder.” In contrast, blogs could be more in-depth and accurate. Two students in the blogging noted that they need to spend time editing a blog before publishing it. As compared to blog, Twitter is shorter and concise. As Student [2] noted, “people

can't get too much about you just from a single 140 character tweet, but blogs are so much lengthier and contain more solid information.”

Blogs could be more converged than Twitter in nature. Student [11] stated, “I try to link everything in one blog post, I put in a lot of citations, and my posts are a lot more thought-involved, instead of rambling. It usually takes me an hour to get the linkage of everything, about other people's thoughts, and my own thoughts.”

Compared to Twitter, blogs contain more personal elements, which show more personality and personal experience of the blogger. Student [8], who participated both Twitter and blogging activities, commented that this makes the blogger himself and the blog post itself more vulnerable, “because it's so much about you, my blogs are all my opinions on social media, such as how it is shaping us and how we are using it.” He further elaborated, “I feel vulnerable to think how other people think about that, do they think I'm wrong? How many people agree with me? ...On Twitter you only retweet other people's stuff; on blog, you are analyzing something, and putting up your own thoughts.”

## **Discussions and Implications**

### **Great Potential of Using Twitter/blogs in Education**

In the surveys and interviews, almost all of the students (11 out of 12) believed in the considerable potential of incorporating social media, either Twitter or blog, into educational settings. This finding corresponds to researchers' prior postulations that using social media such as Twitter can maximize the possibility of augmenting students' engagement and participation, enhancing their sense of community, and facilitate in-class formal learning and informal learning beyond the classroom (Borau et al., 2009; Dunlap & Lowenthal, 2009; Ebner et al., 2010; Holotescu & Grosbeck, 2009; Junco et al., 2011; Rankin, 2009; Wright, 2010). As the number of

social media users has witnessed a soaring increase (Jones & Fox, 2009), more and more students will become advanced users and develop their stabilized behaviors of social media usage. It is critical to reassure that advanced users, as perceived in this study, exhibited an embracing attitude on incorporating Web 2.0 tools into educational settings, which is therefore worth researchers and educators' endeavor in promoting the emergent paradigm of Education 2.0.

### **Recommendations for Educators**

Some good practices were identified in the Twitter/blogging activities and affirmed by the students, which include: define clear expectations for participation, set good models of participation, and continue an active and ongoing participation in Twitter/blogs. These practices are in alignment with Dunlap and Lowenthal's research results (2010). Students' suggestions, such as using it for a larger-size class, are in coincidence with Rankin's (2009) research in her history class.

Another recommendation is a call for more control and compulsory elements of the Twitter intervention, which agrees with Ebner and Maurer's (2009) research. Ebner and Maurer (2009) inferred that to achieve high-level critical thinking and quality assurance, the microblogging adoption needs more control elements.

As indicated in the survey and interviews in particular, the instructor should draw a line between the novice users and advanced users when introducing Web 2.0 tools into the formal class setting. This need for a learner's analysis is significantly important as different strategies ought to be in line with different user groups. Novice users have fewer expectations so they feel a sense of community more easily as they see their classmates' accounts are out there, while advanced users have higher expectations so that they are more critical. Students as advanced users have to see their classmates as posting worthy resources and they have to perceive great

value of those posts to feel a sense of community, and this sense of community actually becomes *a sense of belonging*, as stated earlier.

In this sense, the seasoned users are much more difficult to satisfy but at the same time, if they are deeply involved, they can in fact elevate a positive learning atmosphere and impact a larger body of the class. Given the fact that seasoned users may be earlier adopters of technologies, their higher comfort level and experiences in utilizing Web 2.0 tools enable them to offer their own constructive thoughts, as well as invaluable assistance to the rest of the novice group. Additionally, due to the inherent characteristics of advanced users, they are potentially the group who can profit the most from social media's integration. Educators should take great steps to tap the talents of advanced users and mobilize them in maximizing of the affordances of Web 2.0 tools-supported learning environments.

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