

Motivating learning engagement through Twitter both *In* and *On* the enterprise

Ruth V. Small^a and Anthony Rotolo^b

^a*Ph.D., Laura J. & L. Douglas Meredith Professor, School of Information Studies, Syracuse University*
E-mail: drruth@syr.edu

^b*Professor of Practice and Social Media Strategist, School of Information Studies, Syracuse University*
E-mail: anrotolo@syr.edu

“Space, the final frontier. These are the voyages of the starship ‘Enterprise.’ Its five year mission: to explore strange new worlds, to seek out new life and new civilizations. To boldly go where no man has gone before.”

—From the opening credits of *Star Trek* television show, premiered 9/8/66

1. Introduction

Kaplan and Haenlein (2010) define social media as a Web 2.0 application that “allows the creation and exchange of user-generated content” (p. 61). They may be used for communication and social networking, (e.g., blogs, Facebook, Twitter), collaboration (e.g., wikis, social bookmarking, Skype), creating and sharing (e.g., Google Docs, Storify, podcasts), social gaming (e.g., Farmville, Words With Friends), and opinion gathering/question answering (e.g., Quora, Poll Everywhere).

While research demonstrates that students are using these tools *outside* of the classroom far more often and differently than *in* the classroom (e.g., Fahser-Herro, 2010), studies indicate that, for example, students reluctant to participate in classroom discussions and activities are more than willing to participate via social networking technologies (Gabriel, 2011). Therefore, social media may serve as a tool for more than just learning; it may also serve as a tool to stimulate the motivation to engage in learning.

Examples of innovative instructional designs using socio-constructivist approaches that integrate social media are beginning to emerge in education. These approaches not only provide robust learning environments but stimulate student intrinsic motivation through cognitive engagement and active learning.

The goals of this article are (1) to describe two courses that use Twitter for instructor-student and student-student communications and to motivate learning engagement and (2) describe an analysis of the “motivational quality” of these Twitter-based learning environments, using the ARCS Model of Motivational Design as a framework for analysis (e.g. Keller 1987, 1999, 2008).

2. The ARCS Model of Motivational Design

Developed by John M. Keller, Professor Emeritus at Florida State University, the ARCS Model of Motivational Design (1987) is a widely used and validated instructional design model, based on a synthesis of motivation theories (e.g., expectancy-value, social learning). The ARCS Model was created to foster instructional designs that stimulate intrinsic motivation in students. It specifies four broad motivation goals for promoting students' intrinsic motivation for learning or, what Brophy (1998) describes as those actions we engage in "because we want to" (p. 7).

The ARCS Model specifies four broad motivation goals for promoting students' intrinsic motivation and cognitive engagement: (1) gaining and sustaining **A**ttention, (2) providing **R**elevance, (3) building **C**onfidence, and (4) promoting **S**atisfaction (e.g., Keller 1987, 1999). Attention is gained by stimulating curiosity and interest and sustained through variety. Relevance is provided by connecting instruction to needs, interests and goals. Confidence is built by sharing learning expectations, providing a learning environment with autonomy and choice, and offering opportunities for success. Satisfaction is promoted by developing positive feelings about learning accomplishments, when those accomplishments are evaluated using equitable assessment criteria and when those accomplishments receive appropriate recognition (Keller, 1987).

3. Twitter in the classroom: Two examples

Twitter has been integrated into two courses at Syracuse University's School of Information Studies, both taught by the same instructor. The first course, titled "Social Media for the Enterprise," is a course for both upper-level undergraduate and graduate students and is focused on the strategic use of social media in organizations, including strategies for building relationships with constituent groups, management and creation of original content and exploration of policy concerns. After successful completion of this course, students are expected to be able to:

- Understand how users organize, share, and access information using social media.
- Use information technologies such as blogs, Twitter, and social network sites to build a social media presence on behalf of an enterprise organization, small business/startup, nonprofit or personal brand.
- Develop and implement a social media strategy according to established best practices for utilizing information in a two-way approach that informs organizational decisions.
- Understand and manage the issues an organization must consider when working with social media technology, including opportunities and threats involved in enterprise use of social media.
- Address the privacy concerns associated with both individual and organizational use of social media.

- Assess emerging trends in social media technology to make reasonable and well-supported decisions.

In creating Social Media for the Enterprise, it was thought that students could gain competence with social media tools by utilizing them as part of class participation. One method of participation is through the use of real-time Twitter discussions during face-to-face classroom meetings. Students are encouraged to bring their personal device of choice – laptop, smart phone or tablet – to tweet during class. Using a class-specific hashtag (hashtags are used on Twitter to group conversations around a topic or event), students are asked to share their thoughts or questions anytime they like. A live feed of tweets containing the class hashtag is displayed on-screen at all times during class, thus providing opportunities to interact with each other and the instructor.

Used in this way, Twitter provides a platform for a “backchannel” discussion that accompanies lecture or verbal discussion. With the exception of tweets that are inappropriate for a classroom, students are free to post whatever they like. A list of student Twitter names is kept to identify which student posts each message and whether students are participating as expected. Student tweets range from questions or points of clarification to humorous observations, which often add levity to the experience. In addition, students routinely share links to additional resources related to the topic at hand which helps to build competence.

Since this classroom practice began in 2007, there have been several notable observations related to the motivation of students in this course. First, most students have been eager to participate in this way, despite previous experience with Twitter or mobile technology. There has been no notable differences observed in the way students of different backgrounds, gender or age approach this practice. Second, while students who tend to participate verbally also participate via Twitter, students who do not typically ask questions or participate in face-to-face discussion have shown a willingness to interact in the live Twitter feed, thus building confidence. Third, because the Twitter discussion is publicly viewable, students have demonstrated an eagerness to connect with individuals outside of class. It is common for students to “@ mention” companies and thought leaders in their classroom tweets (Twitter mentions are a way of publicly including another Twitter user account in your tweet, which notifies the other party of the message). Lastly, course discussion via Twitter is not contained to the class meeting time or the school day. Students have demonstrated a willingness to continue connection throughout the week, evenings and even during weekends to share observations, links and other thoughts related to the course.

Lastly, when the course is taught in a distance (online) format, discussion is conducted exclusively via Twitter periodically during the semester. Using a technique common for “Twitter chats,” students are asked to be present online synchronously, at a specific time. The class uses a tool like TweetChat.com to filter out all Tweets except for those containing the class hashtag. For one hour, a series of 4–5 questions are posed

to the class for discussion. This process is very fast paced and serves to not only cover the course material, but provide students the opportunity to practice using social media to engage as they might while working on behalf of an organization. They are able to experience the high volume of messages while attempting to write a clear and concise message within the 140-character limit on Twitter. In order to facilitate this process, a class-specific Twitter account was added (in addition to the professor's personal account) in spring 2011. The account, managed by the course Teaching Assistant (TA), is now used for face-to-face sections as well, providing class announcements and answering student questions both in and out of class.

As a two-way medium, Twitter has also opened the door for those who are not in the class to engage with students. A following has developed for the course consisting of students and faculty, from across campus and at other institutions, who are interested in the course topic, experts from industry, members of the community and casual observers from the United States and abroad. These followers often engage with students in the Twitter feed, ask questions that add to the classroom discussion or offer additional insights. For example, during one class discussion related to General Motors' use of blogging, students began mentioning GM's Twitter account name in their tweets. Moments later, the official GM account began interacting with the class. Similarly, a co-author of the class text, "Trust Agents: Using the Web to Build Influence, Improve Reputation, and Earn Trust" (John Wiley & Sons, 2010), Chris Brogan, frequently responds to student tweets and has joined the class live via Skype video on several occasions. These experiences demonstrate for students how their work relates to the world outside the classroom.

The "Social Media for the Enterprise" course was analyzed to identify instructional strategies used to motivate a desire to learn and promote interactivity and engagement (see Table 1). The ARCS Model was used as the framework for analysis. Each instructional strategy was categorized by the co-authors, experts in social media and motivational design, according to its *most appropriate* ARCS component, with the understanding that some strategies may also fit one or more other component.

The second course, entitled "Star Trek and the Information Age," is a project-based course, utilizing examples from the popular science fiction franchise to explore contemporary issues of technology, society and leadership in the Information Age. Social media such as real-time Twitter and collaborative blogging are utilized differently in each case. After completion of this course, students are expected to:

- Understand and address contemporary issues of technology, policy and society related to the information field, including adoption of technology by individuals and organizations, cultural views of technology in the workplace and personal lives, the "knowledge economy" and careers of the Information Age, social media and the "always on" lifestyle, etc.
- Identify similarities between current and emerging technologies and those depicted in the fictional environment of Star Trek.

Table 1
Analysis of motivational strategies in “Social Media for the Enterprise” course using ARCS Model as framework.

Attention	Relevance	Confidence	Satisfaction
Real-time Twitter is used for discussions.	Students use social media to learn about social media.	Students can share thoughts or questions anytime.	Students can see all Twitter messages displayed on large screen during class time.
Twitter messages are sent and displayed on large screen during class time.	Course goals and expectations are clearly conveyed.	Participants reluctant to participate verbally participate willingly via Twitter.	All students are equally able and motivated to participate.
Students have opportunities to interact with other students and instructor during class.	Students can use personal device of choice.	Students gain skills for using Twitter for various purposes.	Students share links to related resources.
Students can post humorous tweets.	Twitter discussion provides platform for “backchannel” discussion to accompany class lecture/discussion.	Students gain skills in establishing social presence and social media strategy.	Students connect with outside experts and innovators.
	Students can post tweets on topics of interest or inquiry.	Students understand issues associated with social media use via class experiences.	Students continue communicating beyond the classroom setting via social media.
	Fast pace of Twitter chat allows students to simulate real-world work environment.		

- Address challenges related to the development and adoption of emerging technologies such as social media, mobile and location-based systems, within organizations and by individuals.
- Explain how the information science field is connected to the research and discovery of emerging technologies.
- And leverage social media technologies such as blogging and Twitter to interact with an online community.

“Star Trek and the Information Age” was developed as a general elective course for undergraduate students from throughout the university. The goal of the course is to connect students’ interest in science fiction or pop culture with critical issues related to the information field or careers in a knowledge economy. The course lectures were developed around specific episodes of the various Star Trek series ranging from the original *Star Trek* (1966) through *Star Trek: The Next Generation* and other series that

THE COLLECTIVE BLOG
TREK CLASS

Welcome! If you wish to join the discussion you must login using Facebook below.
CONNECT

WRITE A POST!

HOME ABOUT SYLLABUS ARCHIVES PROJECTS POST

A CAPTAIN'S LOG SUPPLEMENTAL: SCORPION
find in episode Scorpion

Janeway and the crew of *Voyager* have struck a deal with the Borg so that *Voyager* can cross Borg territory and the Borg can develop a weapon to defeat their new enemy, Species 8472. However, different collaboration styles, as well as an increased threat by the aliens, put tension on the treaty.

The reading for today dealt with MIT's Collaboratorium, and the different ways in which we collaborate digitally. Different styles have different strengths and weaknesses, which the Collaboratorium puts to the test.

In class we will be discussing these different methods to large-scale collaboration, as well as the merits of investigation versus assimilation.

Edit | No Comments »
posted by Meghan Dornbrock on stardate October 20th, 2011 in Captain's Log

A RESPECT YOUR ELDERS
find in episode Relics

In the *Next Gen* episode, "Relics", the crew of the *Enterprise* is surprised to find a centuries old Capt. Scotty inside a vessel known as a Dyson sphere. They then go on to treat this magic, time traveling, old man as if he is more of a nuisance that Data or Will Wheaton.

The fact of the matter is this - Captain Scotty holds a wealth of information on the Dyson sphere and the Jenolen system; This means that he should be sat down in a contained room, and questioned about all this. If we were to find a pioneer, or a soldier from the Civil War, he wouldn't be allowed to just stroll about the Pentagon or White House and get a tour like an eighth grader on a field trip - he'd be interviewed heavily. The crew of the *Enterprise*

SEARCH

@TREKCLASS
official class twitter

TrekClass Q2 Why might the Federation be more reticent to use nanoprobes than the Borg? What might the Federation use them for?
#TrekClass
12 minutes ago

#TREKCLASS
live twitter discussion

Dj/twin1324 The Borg is taking the L11! #trekclass
15 seconds ago

Figure 1. Screen from "Star Trek and the Information Age" course Web site.

have aired since the late 1980s. Figure 1 shows a screen from the course Web site, which is built on the Wordpress blogging platform.

There were several challenges to designing a rigorous academic experience around so much video content. Because students in the course have varying degrees of familiarity with Star Trek, it is difficult to present examples out of context. Therefore, episodes must be shown in their entirety to allow students to grasp characters and story. However, this serves to greatly reduce in-class contact time for the instructor to engage students in discussion of course topics. In order to reclaim time lost while watching video episodes, the real-time Twitter practice from the social media course was adapted from a backchannel discussion to a primary method of student engagement.

After beginning each class session with a brief introduction to the topic (called the daily "briefing"), the associated Star Trek episode are viewed on one screen in the classroom. On the other screen, a real-time Twitter feed, such as is used in the social media class, is displayed. For the approximately 40-minute duration of the episode, a Twitter chat is conducted using the class hashtag, #TrekClass. The chat, which is moderated

by the class TA using a course-specific Twitter account (@TrekClass), consists of four or five questions designed to introduce the concepts associated with the episode and to prompt students to begin thinking and responding to these ideas. The instructor participates in the chat from his personal Twitter account, responding directly to students and offering additional information.

Many of the same results are observed in this course as were noted in the social media class, including the continuing connection with the outside world. In the first semester of the course, CBS's Star Trek franchise reached out to the course instructor to initiate a relationship that has resulted in the official @StarTrek Twitter account having frequent interactions with students in the class, answering questions about plot and fictional components of the episodes which occasionally arise. Additionally, the course has attracted a considerable following of Star Trek fans who enjoy watching the episodes along with the class and participating in discussion.

Another social media component built into the Star Trek course is the use of collaborative blogging. A custom-built Wordpress blog, equipped with login managed through Facebook integration, is employed as the main vehicle for course content and student contributions. Called "The Collective," after the "Borg Collective" (a race of tech-enhanced beings in the Star Trek universe that share a single, hive mind), the blog is where students are first introduced to each course topic. It is also the place where students must reflect on each discussion in the week that follows.

The Collective features post categories built around the three duty assignments given to Starfleet officers in Star Trek – command, science and tactical. Students are asked to craft their posts from one of these three perspectives, with the goal of writing an even number of each type throughout the semester. The blog allows students to easily view the number of posts they have written in each category, as well as assign rankings to posts they find most helpful or interesting. A special section called the Captain's Log introduces each new episode and the associated topics. The feed from the class hashtag and Twitter account is also aggregated on the main page for reference. After posting each week, students are also asked to comment on the posts submitted by their peers.

Like the "Social Media for the Enterprise" course, the "Star Trek and the Information Age" course was analyzed to identify instructional strategies used to motivate a desire to learn and promote interactivity and engagement, with the ARCS Model providing the analytical framework. Each strategy was categorized according to its most appropriate ARCS component, recognizing that some strategies may fit one or more other components (see Table 2).

The two course motivational profiles appear somewhat different. The Social Media course has less emphasis on Attention and more emphasis on Relevance while the Star Trek course seems to put somewhat greater emphasis on Attention and Relevance strategies. This may be due to the fact that the Social Media course included graduate students who may already be interested in the subject matter but still need to understand the usefulness of the course content. Since the Star Trek course is totally an undergrad-

Table 2
 Analysis of motivational strategies in “Star Trek and the Information Age” course using ARCS Model as framework.

Attention	Relevance	Confidence	Satisfaction
Course is open to students university-wide.	Pop culture (Star Trek) theme is connected to issues in information field.	Questions are posed to allow students to think about issues while viewing video episodes.	Students use Twitter as they watch Star Trek episode.
Course content is connected to pop culture (Star Trek).	Video episodes provide relevance to course discussion topics.	Students can view the number of posts they have made to the blog for each of the three categories.	Instructor responds directly to student tweets, offering additional information.
Course lectures are connected to actual Star Trek episodes.	Students are connected to Star Trek experts.	Aggregated feed from hashtag and Twitter appears on main page for reference.	Star Trek franchise may provide additional information about episode components.
Video episodes are shown in class.	Twitter provides platform for “backchannel” discussion to complement videos and class lectures.	Blog is visible to public, giving opportunity for comments by those outside class.	Students use course blog (The Collective) for reflection on discussions.
Star Trek franchise and fans interact with students.	Students can assign rankings to posts they find most useful and interesting.		
Collaborative blogging is used to introduce course topics.	Projects allow choice on creative use of social media and video.		

uate course, there may be greater need for more Attention strategies to stimulate student interest, as well as more Relevance strategies to reveal how the course will be relevant to their lives.

4. Conclusions

The power of Twitter as a learning tool in instructional design is beginning to be recognized. Twitter has the potential to engage students through its ability to motivate active participation and provide greater learning autonomy.

This article described two college courses in which Twitter is used in innovative ways to motivate student engagement and active learning. The motivational teaching strategies were identified for each course and analyzed using the ARCS Model of Motivational Design as a framework. Results indicate that both courses emphasized Rele-

vance strategies but the “Star Trek and the Information Age” course incorporated more Attention strategies while the “Social Media for the Enterprise” course included more Confidence and Satisfaction strategies. These differences in emphasis are likely based on individual differences. However, a limitation of this analysis was that the method used is subjective, based largely on the social media and motivation expertise of those conducting the analysis.

5. Recommendations and lessons learned

It is recommended that additional ways to use and study Twitter as a tool to stimulate learning and motivation in the classroom and methods for analyzing the results should be explored. For example, the real-time Twitter display in the front of the classroom during lectures and face-to-face discussions has not seemed to be a distraction for students, including those with learning disabilities. It also appears that the multiple modes of delivery and repetition of concepts across channels may offer some learning advantages to students with such disabilities. These would require more robust data collection and analysis methods, such as surveys, observations, and learning assessments.

Finally, there are some critical lessons learned when using Twitter as a teaching/learning tool in the college classroom, including the following:

- Most students join the class with some experience using Twitter – which was not the case when the courses began several semesters ago – but not all students are familiar with the tool, and many have previously limited use to personal communication. While students are not required to send a specific number of tweets per week or assigned to tweet about or mention specific topics, the instructor has found it useful to explain some Twitter best practices. These may include established practices for “re-tweeting” a statement made by someone else, how to “live tweet” (i.e. share interesting highlights of an event or lecture with your followers), and how to use a “hashtag” to group together a Twitter conversation. These practices have been largely adopted by the Twitter user community and many are new to casual Twitter users.
- When this technique was initially adopted, the instructor and students found it challenging to identify each student on Twitter, and to determine which participants were “visiting” rather than enrolled in the course. This has been addressed by providing students with a Google spreadsheet where each member of the class adds his or her Twitter username, full name and other information. This list can be consulted throughout the semester.
- Sometimes class discussion needs to remain private. For example, when discussing details about the client organization working with the social media class each semester, or when offering feedback on student work or presentations, it may be awkward for all comments to be “live tweeted” publicly. To address these mo-

ments, the instructor has added the phrase “do not tweet” or “DNT” to the class vocabulary. Anyone is allowed to call a “DNT” moment before sharing something they do not wish to be tweeted publicly. This has helped encourage free and open discussion in class.

- Providing too many guidelines for Twitter use in class appears to have a negative impact on student motivation to use the tool. Students seem more eager to share when they are not limited to specific prompts or told that certain topics are off limits. Instead, the instructor encourages the class to “tweet freely” about their thoughts. This has led to community building and camaraderie which often extends beyond class time. Conversely, attempts to limit discussion only to specific prompts creates an environment that, in the words of one student, “feels like class,” with responses that are crafted more carefully as one might answer a quiz question. The more open approach has so far led to a balance of substantive responses and social engagement.
- Displaying Twitter in real-time during class can be challenging for an instructor during lecture, particularly when the online conversation begins to attract attention away from the lecture. It is important to recognize that this technique requires some flexibility to pause the planned discussion and address emerging topics in the Twitter “back channel.” For example, if an outside expert begins to communicate with the class, or a student shares a particularly interesting link, the class discussion may need to pivot to capitalize on the “teaching moment” presented.

References

- Brophy, J. (1998). *Motivating students to learn*. Boston, MA: McGraw-Hill.
- Fahser-Herro, D. C. (2010, January 1). Exploring Student Practices, Teacher Perspectives, and Complex Learning with Web 2.0 Technologies: A Socio-Constructivist Approach. *ProQuest LLC*, Retrieved from EBSCOhost.
- Gabriel, T. (2011). Speaking Up in Class, Silently, Using the Tools of Social Media. *New York Times (Late New York Edition)*, A1, A16. Retrieved from OmniFile Full Text Mega database.
- Kaplan, Andreas M., & Haenlein, Michael (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68.
- Keller, J. M. (1987). Strategies for stimulating the motivation to learn. *Performance & Instruction*, 26(8), 1–7.
- Keller, J. M. (1999). Motivation in cyber learning environments. *Educational Technology International*, 1(1), 7–30.
- Keller, J. M. (2008) First principles of motivation to learn and e3-learning. *Distance Education*, 29(2), 175–185.