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Twitter as a Pedagogical Tool in Higher Education

By Renee Hobbs

Abstract

The ability to access information and actively participate in knowledge communities is an essential component of being a lifelong learner. The use of Twitter can be valuable particularly in the context of online learning in graduate higher education. Tweets can be used to help students summarize and analyze course content, engage in peer-to-peer social interaction, develop professional relationships beyond the classroom, share informational content or other resources, engage in self-promotion, and learn how to use feedback and attention as a management tool. As digital media and technologies become essential dimensions of learning and teaching, educators must consider the learning progression involved in the effective use of Twitter as an information and communication tool. However, the authority structures of school may combine with the public nature of Twitter to sometimes discourage students from playful or genuinely dialogic experimentation with Twitter. Furthermore, strategic use of Twitter in higher education may intensify the development of narrow interest-driven communities that create filter bubbles; when used well, it may help connect people to wider stakeholders and heighten awareness of social and political concerns and controversies. As a powerful digital tool for cementing social relationship that enable cultures of respect and trust, the use of Twitter may help create and maintain social ties within the classroom community that support meaningful learning.

Keywords: online learning, Twitter, higher education, affordances, curriculum and instruction, library and information studies, communication

Twitter as a Pedagogical Tool in Higher Education

When my students first learn that they will have to use Twitter as part of the learning experience, a few are enthusiastic, some are bemused, and some are downright hostile. In resisting my request for students to establish a Twitter account, one student said to me, angrily, “I don’t want to have to talk about Justin Bieber’s haircuts!”

In 2008, I joined Twitter as @renehobbs and sent my first tweet. Since then, I have been experimenting with Twitter as a tool for personal growth and have used it for community outreach, social marketing, research and teaching. It’s not an understatement to say that Twitter has become just as indispensable as *The New York Times* for my own monitoring and surveillance of the social world. Although email continues to be a valuable tool for maintaining my social relationships with colleagues, Twitter’s ease, information value and its reach in helping me connect to new networks of scholars and professionals helps me keep up with the ever-rising tide of research, information, opinions and ideas. Certain individuals with expertise in education, media, technology and information policy including @AudryWatters and @MatthewIngram have become vital and respected thought leaders to me; reading their tweets and learning from the resources they share are part of my professional learning routine. Among my friends and colleagues, Twitter gives me a sense of connection to their daily lives, a feeling that can be surprisingly intimate. Most importantly, interacting with people on Twitter has affected my ongoing understanding of media, culture and technology industries in education. So naturally I have become interested in exploring how to introduce learners to Twitter so they may benefit from it, too.

In this chapter, I explore how the use of Twitter can be valuable particularly in the context of online learning in graduate higher education. As digital media and technologies become essential dimensions of learning and teaching, I'm interested in how educators activate students' learning progression to support the use of Twitter as an information and communication tool. In this chapter, I describe some of the ways that Twitter may support the learning process in higher education, especially in the context of online learning in the graduate education of communication professionals and future school and public librarians. First, however, I contextualize this topic in relation to the theoretical frames that position digital media and technologies as essential dimensions of learning and teaching, considering the rise of online learning in professional programs. Then I share examples of student tweets to illustrate some tentative and provisional ideas about the affordances of Twitter as a teaching tool and the learning progression involved in using Twitter as a learning resource. Finally, I consider some of the gaps and omissions that are evident from an examination of my initial experimentation with Twitter, which provide opportunities for me to reflect on practices that support the process of producing tweets as a form of learning.

Beyond the Walled Garden

Educators at all levels have made effective use of media and communication texts, tools and technologies in both formal and informal contexts (Cuban, 1993; Hobbs, 2010; Jenkins et al, 2006; Mollett, Moran & Dunleavy, 2011). Although social media such as Facebook and Twitter have been widely adopted by students in their personal lives, research on the use of social media in the context of education is still in its infancy.

We know little about how serendipitous, surprising and unexpected dimensions of information exploration and social interaction can lead to meaningful learning (Buchem, 2012). From personal observation, I know that browsing for short updates can be a powerful experience, albeit quite different from using a search engine such as Google. Twitter browsing can be similar to the practice of wandering the stacks of the university library: using Twitter, I have stumbled upon many valuable resources by happenstance. The pleasurable sense of discovering something unexpected can invigorate my intellectual curiosity to open up my thinking in new directions. Moreover, as Thompson (2007) observes, Twitter's constant-contact sensibility creates a form of social proprioception, where granular updates from colleagues may increase our awareness of each other's thoughts, ideas, emotions and experiences. Often the material shared on Twitter is hot off the press and since the people I follow on Twitter come from many different business and academic sectors, the materials they choose to share comes from discourse communities in government, the humanities, engineering, business, non-profit and social service sectors, and civic activism. Through Twitter, I have widened my social network while discovering highly relevant information and participating in social learning experiences.

The rise in interest in the use of digital and social media tools for learning in formal contexts such as higher education are in part a response to the changing economics of higher education. Consider the impossible economics of higher education. Student loan debt has risen 20% to \$1.2 trillion between 2011 and 2013 and now exceeds every other form of non-mortgage debt. The debt load of the average college graduate is about \$30,000 (Berr, 2014). The ripple effects of this debt extend in predictable but

distressing ways: those with high levels of student debt are less likely to start new businesses, buy homes, or seek careers in public service (Korrick, 2014). This evidence will not surprise many privileged professors, including those reading this essay, but we must recognize our culpability in maintaining status quo realities that are having a serious negative social impact on the next generation. For this reason, robust experimentation with online learning is essential as we discover new ways to meet the needs of learners in an educationally robust yet cost-effective way.

Online learning forces learners to assume a highly active position with great levels of personal responsibility and time management. Students move from a culture of dependency on the teacher to a culture of autonomy because they create, share, manage and collaborate on their learning with other learners (Tu, 2014). For educators who are responsible for promoting students' multimedia authorship competencies, online learning has a number of advantages because it enables students to combine written and spoken language, sound, images and interactivity as a way to demonstrate their learning. User-generated content tools now offer students a platform for creative expression and an authentic audience that enables them to experience the social power of information and communication quite directly.

However, many of the typical approaches to online and distance learning are clearly inferior to the rich and dynamic learning experience of the seminar room. Few asynchronous activities promote the kind of collaborative engagements that activate intellectual curiosity. What could be more boring than activities such as reading from a repository of articles posted online, participating in a threaded discussion, viewing pre-recorded webcasts or online lectures, engaging in web quest activities that involve

reviewing pre-selected information sources to find information, and taking online quizzes? Fortunately, synchronous activities including online text or video chat, whole-class or small group conferencing, multimedia composition, and the use of social media can help support learners by providing a more active, collaborative and emotionally-supportive learning environment.

The educational technology research literature is rife with studies that find no differences between learning experiences that use technology and those that do not. A meta-analysis review of more than 1,000 studies of online and distance learning revealed that learning effects are larger when online and face-to-face instruction are blended (Means, Toyama, Murphy, Bakia, & Jones, 2010). Neither the use of online quizzes nor the use of video enhances learning. Instead, it's all about control and metacognition, because "online learning can be enhanced by giving learners control of their interactions with media and prompting learner reflection. Studies indicate that manipulations triggering learner activity or learner reflection and self-monitoring of understanding are effective when students pursue online learning as individuals" (2010, p. xvi).

As a communication scholar with interests in education, I am fascinated by how to promote the transfer of learning so that the online course experience builds knowledge and skills applicable to the world outside the classroom. For this reason, the *open network learning environment* has been most important to me because the Internet and open-source digital tools, such as Twitter, YouTube and WordPress, can be used as a means to escape the walled garden of the learning management system (LMS). "Open network design enables students to build an authentic network learning community through context-rich social interaction rather than focusing on content only" (Tu, 2014, p. 147).

Whereas learning management systems such as Blackboard, Canvas and Sakai enable secure access to informational content, the skills learned in using an LMS for learning have limited transferability to the world outside the classroom. In contrast, the skills learned in using open-source tools, creating user-generated content and participating in knowledge communities using social media tools for learning are immediately generalizable to workplace and community.

Connecting as Learning

Today, learning may be more important than knowing. Indeed, the legacy of early 20th century Russian education scholar Lev Vygotsky helps account for how learning happens in the 21st century. Wertsch (1985) described Vygotsky's conceptualization of human activities as complex, socially situated phenomena, where both the individual subject and the social reality exist in systemic context. As digital media and technology become an increasingly ubiquitous part of our cultural environment, with information and opinions at our fingertips, knowledge seems to exist "out there," in the world, rather than in the mind of an individual (Siemens, 2005). The concept of connectivism has emerged to argue that relationships between people, ideas and information are at the heart of learning practice. As Evans (2014) noted, "technologies that facilitate connections between people and information resources should enhance learning because knowledge is a product of these connections rather than simply what is in the head of the learner" (p. xx). Similarly, building upon the concept of participatory culture (Jenkins et al., 2006), Ito and her colleagues have advanced the concept of connected learning as a type of learning that integrates personal interest, peer relationships, and achievement in

academic, civic, or career-relevant areas (Ito, Gutiérrez, Livingstone, Penuel, Rhodes, Salen et al., 2013).

There is, at present, a slender research literature on the pedagogical uses of Twitter so evidence is mixed about its value. Using Twitter for teaching may help students engage in course-related activities by increasing student engagement (Chen, Lambert & Guidry, 2010; Grossek & Holotscu, 2008). In one case, a field experiment was used to assess how Twitter may affect undergraduate students' engagement in a health course and researchers found that Twitter users report more cultural and community engagement and informal discussion of class topics with peers (Junco, Helbergert & Loken, 2011). Junco, Elavsky and Heiberger (2012) also found that required Twitter usage by students and staff is associated with student engagement. Evans (2013) examined 252 undergraduate students in a business and management class who were encouraged to use Twitter for communicating with the instructor and peers. A factor analysis revealed that students who used Twitter more frequently had higher levels of engagement in university-associated activities and sharing information. When participants of a weeklong professional development conference were asked to tweet about their experiences during the week, content analysis revealed that many participants continued discussions on the topics of the conference. Post-conference evaluations showed that participants valued the ability to engage in immediate communication and share information with others (Costa, Benham, Reinhardt & Sillaots, 2008). However, some research indicates that the novelty of Twitter may interfere with content mastery: for example, undergraduate students who are asked to use Twitter to communicate and

share information appear to only gradually learn to incorporate academic, course-related content (Ebner, Lienhardt, Rohs & Meyer, 2010).

When using Twitter and other social networks for learning, issues of time, technological awareness and structures of authority all contribute to challenge the shift from a focus on platforms focused on delivery to platforms and infrastructures facilitating dialogue, exchange and collaborative participation, and researchers have documented how educational institutions only gradually shift from a ‘closed’ community with a particular focus on teaching and learning to a more ‘open’ community that connected with its wider networks (Clark, Couldry, MacDonald & Stephansen, 2014). Of course, this work can be challenging to teachers and learners alike.

Producing Tweets for Online Learning

For three semesters in 2013 and 2014, I explored Twitter to support my teaching in online graduate-level courses (12-18 students per course) at the University of Rhode Island. During this time, and with permission of my students, I used a digital tool (www.seen.co) to collect and archive samples of tweets produced by students at various times during the semester. I would occasionally display the archive to students and comment on the patterns I was observing. Although I collected and analyzed course-related tweets for teaching purposes, the sample is a representative array from more than 200 tweets generated during the course of three semesters. Below I report tweets from this archive with the user name of the author removed. A number of students commented in their reflective writing that the experience of having to learn to use Twitter was

valuable to them but others described the experience as uncomfortable.¹ The tweets reported in this chapter were created by students who either responded to a specific assignment-related request from the instructor or composed tweets as a freely-chosen activity.

In what follows I focus my attention on *the nature of the learning curve* in using Twitter. Such a focus supports the generation of reflective thinking about teaching and learning and potential areas of inquiry for future exploration. As digital media and technologies become essential dimensions of learning and teaching, educators must consider the learning progression involved in the effective use of Twitter as an information and communication tool. In the section below, I examine students' ability to use Twitter to summarize and analyze the course content, including readings and videos. I explore how Twitter supports peer-to-peer interaction and collaboration and how students may develop professional relationships with individuals beyond the classroom. I look at students' ability to share information content and other relevant resources and engage in self-promotion and self-advocacy and reflect on my own use of Twitter to call attention to exemplary work.

Summarize and analyze new ideas. Twitter's mode of expression mandates that messages be crisp and concise. When first beginning to use Twitter, students were challenged by the forced concision of 140 characters that is required. For this reason, learners were encouraged to practice concision by summarizing ideas from the course reading, viewing and listening activities. Sometimes I would model the elements of a

¹ Tweets documented in this paper are from students who gave permission for their tweets to be used. User names have been removed to respect the privacy of learners. Because this was not designed as a research inquiry, I did not seek IRB approval for the use of learning artifacts for this class-related activity.

concise Tweet, as in this summary of a key idea from the work of David Lankes whose work we were reading that semester:

Lankes: The shift against hierarchy on the Internet is perfectly matched to teens' own internal shift against authority [#LSC531](#)

Some learners struggled to move from beginner to intermediate stages in one semester, finding it difficult to express themselves concisely and coherently. For example:

[#LSC530](#) YALSA says-literacy=more than cognitive ability to read&write but=social act that involves basic modes of participating in world!!!

It's possible that this tweet was comprehensible to the members of the class who read it, but does not represent effective skills of summarizing or sharing ideas. Students' tweets sometimes demonstrated their capacity to use concision in ways that, while capturing key ideas, in some cases compromised readability. For example:

Lankes said library should be a platform for innovation and new librarianship is about being active. Key words - platform & active! [#LSC531](#)

Halo effects of authority/reliability: authority in one area presumed authority in others, automatically. Assessing info is harder! [#LSC531](#)

In general, over time, students were able to capture the ideas of authors by summarizing effectively. Some students even took a special thrill in finding the author's Twitter handle and including it in the summary:

For young people, the Internet may provide the resources for negotiating the balance between conformity & rebellion [#LSC530](#) [@NAME10](#)

A few students were even able to use tweets to share critical reflection on the reading, building argument chains. This student acknowledged a key argument presented in the reading while offering a practical critique:

I have conflicted feelings about the YALSA piece. I'm drawn to a welcoming community where teens can be themselves #LSC530 #media #children

BUT the realistic side of me keeps screaming BUDGET! MONEY! I think you could implement some of these practices & build later #LSC530 #media

Engage in peer social interaction. Twitter is a powerful tool for peer-to-peer relationship development. After students had mastered the practice of summarizing with concision, I encouraged students to respond to the ideas of their peers. While some used Twitter for interpersonal dialogue, many students chose to make some forms of their social interaction more accessible to the whole class by including the course hashtag (#LSC531, #LSC531) that enabled students to easily monitor whole-class activity. Some tweets were requests for information or clarification:

@reenehobbs and #LSC531, I'm in search of some data-driven studies re: why school libraries matter, to share with admins. Suggestions?

#LSC530 Need help! Does anyone know how to access LibGuide thru URI so I can start my final project.

Another common use of Twitter was in the provision of warm feedback to support the learning process:

@NAME1 @NAME2 @nytimesbooks Nice job ladies! Beautiful layout & I liked how you included how the editor connects via SM. #LSC530

@NAME3 @NAME4 I hadn't ever thought to read the @nytimesbooks for children/YA reviews. Thanks, and nice @padlet! #LSC530

These forms of emotional support were common features among the students in my class; this reflects an appreciation of peer-to-peer learning as a form of cultivating lifelong learning through the development of professional relationships.

Develop professional relationships beyond the classroom. Twitter enables people to use the power of personal learning networks for learning as users select people to follow as individuals who offer perspectives and insights that are perceived to have value. As they developed confidence in using Twitter, I required students to develop a network of at least 100 people to follow. However, most students did not engage with or actively reach out to unknown professionals on Twitter, preferring instead to interact with peers enrolled in the course. But a few students discovered that they could develop relationships with professionals by using their names in their tweets. For example, some students tweeted thanks to guest speakers as in this case :

Watching class now, @NAME5 thank you for joining our #LSC531 and talking about the NARA project you and many others are hard at work on!!

I may not be able to fully understand whether and how students developed professional relationships beyond the classroom because of the limitations of my research method; only posts tagged with the course number (#LSC530, #LSC531) were used in this study. Students may have engaged in dialogue with other Twitter users without marking these interactions as class-related through hashtagging.

For communication, media, library and information studies students, in particular, a deeper understanding of hashtags was an essential dimension of the course experience. Hashtags have been formally part of Twitter since 2009, serving as a self-organizing taxonomy that enables content creators to label their tweets and posts so that others can easily search for related posts on the same topic. Thus, #medialiteracy will retrieve tweets about media literacy and #publiclibrary will find the tweets about public libraries.

Hashtags also link people together and serve as a sort of unmoderated discussion forum. For example a group of educators use the hashtag #digicit to hold regular synchronous conversations on digital citizenship at a designated time period. Although hashtags are neither registered nor controlled by any one user or group of users and do not contain any set definitions, hashtags supports engagement by groups of people who participate in conferences or special events. Through hashtags, people can connect with particular special interest groups or members of a discourse community.

In my class, some students used hashtags skillfully for communicating with professional networks by recognizing and using terms like #yalsa (the Young Adult Library Services Association) to signal their interest in addressing adolescent or young adult library service issues. But for other students, the process of learning to recognize the discourse communities associated with different hashtags was accomplished through a process of trial-and-error. For example, without prompting, one student began using the hashtag #kidlit in his tweets. He responded to a class discussion exploring dystopic themes in young adult literature and current films. He wrote:

#kidlit has always prepared kids for the future. Why is the current strategy to rattle them with the threat of dystopia? #lsc530 #hungergames

As a new entrant into the discourse community, this student was unaware that the #kidlit hashtag is used by publishers, authors, librarians and readers of contemporary children's literature, with special attention to children ages 5 – 11. Had the student used the #yalit hashtag, he would have found a more targeted audience of young adult librarians and authors including many with specific interest and expertise in dystopic themes in young adult literature targeting adolescents. But the student was less likely to find these users with the #kidlit hashtag. Fortunately, the use of the #hungergames hashtag did connect the student to the fan community of the Suzanne Collins adventure series and the film adaptations which were released beginning in 2012. Over time, and with sufficient opportunity for exploration, students did gain familiarity with the nuances of hashtags associated with the most relevant interest-driven communities on Twitter.

Share informational content or other relevant resources. Twitter is a powerful tool for information discovery, access and sharing. Students experienced a sense of wonder about the variety of resources they discovered using Twitter, sharing resources that were valuable and relevant and learning to construct meaningful tweets that had value to others. They composed tweets intentionally to share and interpret the resources that they found. For example:

Here's the @CNN article on HOMAGO: Making the library cool for teens http://us.cnn.com/2014/06/02/living/library-learning-labs-connected-learning/index.html?sr=sharebar_twitter ... #LSC531

Mass media criticism in the 1800s! "The content of popular novels was wrecking the values of the masses" arenastage.org/shows-tickets/... #LSC530

In the former example, the student shared a mass media resource that addressed a topic discussed in the class. The latter reflects an explicit connection between the student's

experience of a local theater production as it relate to some course themes. Another student shared a YouTube video link:

It's amazing how creative people can be when adapting their favorite series for mass production #lsc530 <https://t.co/uoElfm8Hjz>

This student discovered this video by exploring the work of the youth adult author, Marissa Meyer, and tweeted a link to a YouTube video series, *Cinder*, based on Meyer's young adult series of the same name. However, this student did not interrogate the authorship of the video. If he had, he would have discovered that it was made by a 16-year girl.

However, mastering the norms of Twitter for information sharing involves a learning process in itself. Analysis of less effective tweets helps me explore and understand dimensions of that learning progression. For example, some students seemed initially confused by the distinction between the #hashtag and the @username. For example, one student summarized an idea from a course reading (in this case, the work of the teacher-librarian author Amy Pattee) by composing this tweet:

#Pattee collection dev. represents the mission and goals of the institution, take a look at ALA's guidelines:ala.org/tools/atoz/Col... #LSC531

Here the student used a hashtag for the author's name instead of using Amy Pattee's username, @bapattee. The student also linked to a page of resources that was so broad and general as to be of very little value to someone looking for specific quality resources. This student was challenged to identify a relevant resource associated with this topic. In another example, a student clearly intended to share information with her peers but did not include the hyperlink to the readily available online resource:

#LSC530 Voya Vol. 36, #6, Feb 2014 is all about Teens & Technology

Errors of this type may simply be normative for users, reflecting the speed and ease of using Twitter, or it may suggest that learning progression could be aided by explicit instruction.

Engage in promotion and advocacy. Twitter offers a way for people to exercise their voice as community-engaged professionals and to advocate for their own needs and goals. As one who bridges the worlds of theory and praxis, I modeled the use of Twitter for self-promotion during the semester as I shared news about upcoming publications, presentations, workshops and curricular innovations. As part of course assignments, I also asked students to tweet links to their completed assignments, given that all work was published online. This served to encourage peers to read and respond to each others' work and it also cultivated a sense of public authorship among students who may have perceived that only the instructor was reading their writing.

Learners need confidence and high levels of self-esteem in order to speak with a public voice. But some learners did not feel comfortable or confident about expressing ideas in a public forum. In fact, not all students even complied with my request to share URLs to their work using Twitter. For some, the idea of sharing their work may be intimidating. For those who participated in sharing their work, these tweets generally took a form such as this:

Informing and the Digital World <http://t.co/Jsn3VJlo4u> via @NAME6
final creative project for #LSC530

In general, students provided warm feedback to their peers, suggestive of the development of a supportive and respectful community. Some students even used Twitter more actively to solicit peer feedback for their work:

Anyone from #LSC530 watched my ignite presentation on #yabookreviews please let me know what you think via tweet. Feedback is appreciated

Because of its public nature, Twitter may support the development of a professional identity that enhances student confidence and supports creative expression. As evidence to support this, I observed that occasionally students would share personal projects they developed outside of a class assignment, if these were perceived to be relevant to the interests of the class members:

Need ideas for children or teen programming? Take a look at my boards on Pinterest at: [pinterest.com/NAME7/](https://www.pinterest.com/NAME7/). #LSC530 #children #library

My YouTube multimedia playlist to promote literature to students: [youtube.com/playlist?list=...](https://www.youtube.com/playlist?list=...) #LSC530

In the first case, the student shared a well-curated collection of mostly arts and crafts projects that may be suitable for home or library activities. In the second case, the student curated YouTube videos, some which were personally collected, but others that were used in the graduate course. In doing so, the student demonstrated the effective use of the YouTube Playlist for curation.

Sometimes students used Twitter for self-advocacy to address their needs as learners in the course, as in the case of a student who used Twitter to gauge student opinion about the merits of adjusting the deadlines for a particular assignment. In this

case, the student created a digital poll and embedded it in her tweet to gather data on student opinion:

Are you in favor of flip-flopping the next two assignments for #LSC530? polleverywhere.com/multiple_choic... via@polleverywhere

Of course I was thrilled to see this example of using Twitter to inspire advocacy. So I changed the deadline as students requested, with my general message of “Ask and you shall receive.”

Provide attention as a reward. Twitter offers a way for instructors to showcase and celebrate exemplary work and to offer public feedback in a way that can inspire and motivate learners. As an instructor, I struggled with how to provide feedback to advance student engagement in the fully-online course. Students received private feedback on their performance in course assignments through email. But how could I offer feedback in a more public way to identify the highest caliber of student performance and help members of the class to recognize excellence? I began by signaling my appreciation of student tweets by using the “favorite” button, which indicates to students that I had viewed the tweet. Over time, I began to use Twitter to showcase exemplary examples of student sharing and participation:

"Collection development in YA is a political act." #LSC531 #libraries @janery8 VIDEO: flipgrid.com/#4924d2b0

Here I tweeted a student video comment from an online discussion about the controversies associated with collection development in public and school libraries, sharing a video link to a classroom discussion where we were using Flipgrid, which is a

digital discussion tool that enables participants to contribute 90-second video comments in an online discussion. Some examples of my feedback to students includes these tweets:

The security of books & the risks of online exploration: a fascinating essay by @NAME 8 bit.ly/1ece3pz #LSC530 #mystudentsareamazing

Children's literature has a long tradition of being subversive says @NAME9 #LSC530 #mystudentsareamazing VIDEO: <http://bit.ly/1AntOr6>

Celebration of exemplary student work serves to set the bar for all students and offer models of writing and creative work that may inspire others. At various points in the semester, I described and shared a link to a piece of student writing and video production, using the hashtag #mystudentsareamazing, which came to be my approach to using attention as a reward.

The Challenge of Leaping from Classroom to Community

In 1965, while describing the process of curriculum design, Jerome Bruner wrote, “As for stimulating self-consciousness about thinking, we feel that the best approach is through stimulating the art of getting and using information – what is involved in going beyond the information given and what makes it possible to take such leaps” (Bruner, 1965, p. 21). This key idea continues to be a key dimension of my work in supporting learners of all ages. By exploring how Twitter can be used to stimulate the art of getting and using information to go beyond the information given in the context of a fully-online graduate level course, I discovered that graduate students appreciated the chance to deeply engage with Twitter and learn how to use it. As they summarized and analyzed the course content and engaged in peer interaction and collaboration, they deepened both

their understanding of the material and their sense of community with their peers. Considering the challenges of online learning, with its often faceless and joyless characteristics, Twitter was useful in advancing authentic learning by creating a warm and supportive learning environment for busy adult learners who were juggling school, careers and family lives.

But in reflecting on three semesters of exploring the use of Twitter as a pedagogical tool, there is plenty of room for future development. Below I consider how I may use modeling and scaffolding to demonstrate the use of Twitter to participate in civic culture beyond the classroom. I wonder how to challenge the authority structures of school, which may combine with the public nature of Twitter to sometimes discourage students from playful or genuinely dialogic experimentation with Twitter. And I consider how to counteract the potentially negative use of Twitter as it creates narrow interest-driven communities that limit exposure and discourage awareness of social and political concerns and controversies.

Twitter in formal and informal learning. Twitter is a powerful tool for informal, self-directed learning and, as this paper has shown, it has considerable value in online formal learning contexts. Students were able to use Twitter as required to fulfill course expectations. But under some circumstances, for some learners, the authority structures of school may combine with the public nature of Twitter to discourage students from' willingness to engage in playful or genuinely dialogic experimentation with ideas. In an open network learning environment, students concerned about issues of reputation and privacy may feel reticent to enact the same kind of healthy risk-taking that happens around the university seminar table (a more private space, in which students explore ideas

they may not have yet fully formulated). Perhaps because of the public nature of the online space, norms of politeness were present among my students who generally offered little feedback that was not cheerful, positive and supportive to their peers. Generally speaking this is a good thing. But although it is a little uncomfortable to admit this, the lack of interpersonal conflict was disappointing to me, because of my general belief that the frisson of intellectual tension is generally good for provoking people to re-think and question ideas. It's also the case that the student population —graduate students enrolled in either a Masters program in communication studies or library and information studies, were—were a rather homogeneous group of people who perhaps share a common world view and have similar life experiences. This may naturally have limited differences of opinion. It's important to note that arguing in a seminar room is different from arguing in public, and further reflection will be necessary to understand how Twitter shapes or limits academic argument in the context of online learning.

Twitter for civic engagement. Although Twitter is widely recognized as a tool for mobilizing public action and advocacy, I did not consciously model the use of Twitter for civic engagement as part of the course. As this chapter shows, I used Twitter as a pedagogical tool to support mastery of course content and to build a deeper sense of peer-to-peer connectedness. In future work, I will explore how to introduce students to the power of Twitter for civic activism. Although we accessed and analyzed a considerable range of issues related to the professional library and information studies community, I did not require students to participate in advocacy related to controversial topics of public interest with relevance to both the course and the larger society. This is not because there were no such controversies. During the time in which I was teaching with Twitter,

concerns about surveillance and monitoring of school Internet, discussions of net neutrality, gender stereotypes in children's media, increased funding cuts for school libraries, parental support for children under age 14 using Facebook and social media, cyberbullying and online stalking, the rise of open-access publishing models and their impact on the publishing industry, and the popularity of children's literature written (or ghostwritten) by celebrities were some of the many controversies that were part of the public sphere. As an active Twitter user, I contributed to dialogue about these (and other) issues, but I did not explicitly link this practice to the graduate courses I was teaching. Perhaps these issues did not enter the course's Twittersphere in part because I did not provide the explicit scaffolding to support it. The practice of scaffolding involves more experienced users modeling behaviors to introduce them to less-experienced users. In scaffolding, the mentor enables "the performance of a more complicated act than would otherwise be possible" only until the learner is able to accomplish the activity independently (Pea, 2004, p. 425). By consciously modeling engagement in larger social and political issues with Twitter, educators may help students activate practices of authentic civic engagement. This is a key concept of digital and media literacy, which includes the practice of *action* as a key part of the literacy spiral that also includes access, analysis, creation and reflection (Hobbs, 2010).

I am also interested in how Twitter may be used to increase reflection and metacognition among learners. Pedagogies that support reflexive process of critical inquiry about the use of Twitter will be important to advance this goal. For example, students could be invited to analyze the characteristics of the individuals they have selected to follow. Since users are responsible for selecting whom they follow, they

themselves may inadvertently create filter bubbles, those narrow niche communities that provide little opportunity to encounter the diverse and sometimes challenging perspectives of others (Pariser, 2011). This is a topic of special relevance to future librarians and information professionals who have sometimes been accused of insularity and navel-gazing that is not sufficiently connected to larger communities and networks (Dupuis, 2010; Kim, 2010).

In exploring the public nature of Twitter as a resource to advance lifelong learning, it will be important for educators to understand how Twitter may *help people see themselves as lifelong learners, social actors and narrators of their individual lives*. Although beginners, my students were participating in civic culture, even if rather narrowly defined within the context of our small classroom. Civic culture is an analytic construct that seeks to identify the possibilities of people acting in the role of citizens, where values, affinity, knowledge, practices, identities, discussion all play a part (Dahlgren, 2005). It will be important to help students recognize the usefulness of small acts of expression and communication that contribute to building a civic culture. Other researchers have recognized the gradual way in which this process occurs in the context of online learning with Twitter. In a qualitative study of the use of digital storytelling for civic engagement, British students who were encouraged to use Twitter first conceptualized its value solely in terms of marketing and promotion. Researchers write, “Students’ apparent inability to comprehend the Twitter event in terms other than promotion makes sense given an absence of shared spaces for dialogue beyond the classroom and curriculum: students lacked familiarity with the idea that such dialogue might be encouraged” (Couldry Stephansen, Fotopoulou et al, 2014, p. 624). Although

the classroom space includes opportunity for resistance, learners can experiment with “a digitally enabled circuit of civic culture” (p. 628) even when extending beyond the purely local can be challenging. As the old saying goes, the personal is the political. As a powerful digital tool for cementing social relationships built on respect and trust, the use of Twitter helps create and maintain social ties within and beyond the classroom community that enable meaningful learning.

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