



Scholars in an increasingly open and digital world: How do education professors and students use Twitter?



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ABSTRACT

There has been a lack of large-scale research examining education scholars' (professors' and doctoral students') social media participation. We address this weakness in the literature by using data mining methods to capture a large data set of scholars' participation on Twitter (232 students, 237 professors, 74,814 unique hashtags, and 645,579 tweets). We report how education scholars use Twitter, which hashtags they contribute to, and what factors predict Twitter follower counts. We also examine differences between professors and graduate students. Results (a) reveal significant variation in how education scholars participate on Twitter, (b) question purported egalitarian structures of social media use for scholarship, and (c) suggest that by focusing on the use of social media for scholarship researchers have only examined a fragment of scholars' online activities, possibly ignoring other areas of online presence. Implications of this study lead us to consider (a) the meaningfulness of alternative metrics for determining scholarly impact, (b) the impact that power structures have upon role-based differences in use (e.g. professor vs. student), and (c) the richness of scholarly identity as a construct that extends beyond formal research agendas.

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1. Introduction

Research on emergent forms of technology-infused scholarship and social media use by scholars has explored the relationship between technology and scholarly practice and the impact and implications of technology in the work and life of scholars. Such research, however, has rarely focused on scholars in the field of education or differentiated between faculty members and doctoral students and typically has depended on surveys, interviews, or small-scale naturalistic observations of social media practices. In other words, while existing empirical research from a variety of disciplines may yield some insights into education scholars' activities online, there has been a lack of large-scale research examining social media participation. Research in this area is necessary because many researchers have claimed that digital practices in general, and social media activities in particular, have the potential to transform the ways in which education scholarship is conducted and disseminated (Burbules & Bruce, 1995; Fetterman, 1998; Greenhow, Robelia, & Hughes, 2009; Yettick, 2015). For instance, social media may foster participatory learning and expand the reach of research. Yet, such advocacy often rests on claims rather than empirical evidence (Kimmons, 2014) and uses of social media have led to tensions and conundrums in scholars' professional lives (Veletsianos, 2016; Veletsianos & Kimmons, 2013). This dichotomy suggests that we need to better understand how social media are being used in scholarship as well as the implications of their use. To help fill that gap, this study analyzes a large data set of education scholars'

activities on Twitter, one of the most popular social media platforms among academics (Lupton, 2014). Using these data, we examine the ways in which doctoral students and professors in education use Twitter, the hashtags that they contribute to, and the factors that predict their follower counts. By doing so, we hope to provide greater insight into education scholars' online participation.

2. Literature review

Proponents of open, digital, and social scholarship have argued that scholarly use of social media can “enhance the impact and reach of scholarship” and “foster the development of more equitable, effective, efficient, and transparent scholarly and educational processes” (Veletsianos & Kimmons, 2012, pp. 166). As a result, universities are increasingly encouraging researchers and educators to expand their online presence (Mewburn & Thomson, 2013). Advocates for greater incorporation of digital technology into scholarly practice have focused on the societal benefits of these emergent forms of scholarship (e.g., broadening access to education and scholarship for the common good), but Scheliga and Friesike (2014) have found that scholars face both individual and systemic barriers that may prevent them from engaging in these practices despite understanding their potential at a systemic level. Similarly, Esposito (2013) found that scholars' use of digital and open practices may largely serve functional purposes and be driven by a desire to achieve efficiencies instead of an aspiration to re-imagine scholarly practices.

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Twitter is a popular social media platform for scholars (Lupton, 2014; Van Noorden, 2014), and prior research on Twitter has found that scholars use it to share information, resources, and media pertaining to their teaching and research practice. For instance, scholars have been shown to use Twitter to request and offer assistance to others (Veletsianos, 2012), critique the work of other scholars (Mandavilli, 2011), contribute to conferences via hashtags (Li & Greenhow, 2015; Mahrt, Weller, & Peters, 2014; Ross, Terras, Warwick, & Welsh, 2011), implement engaging pedagogies (Junco, Heiberger, & Loken, 2011), and share and comment upon preprint and published articles (Eysenbach, 2011). Although several studies have examined disciplinary differences in the use of Twitter (Holmberg & Thelwall, 2014; Rowlands, Nicholas, Russell, Canty, & Watkinson, 2011), other than the research reported by Li and Greenhow, we were unable to identify studies that specifically examined its use by education scholars.

Researchers have also argued that attending to alternative metrics, such as examining references to the scholarly literature in tweets, can extend scholars' impact beyond citations in peer-reviewed journals (Priem & Hemminger, 2010). For instance, some have found that the frequency of article mentions via Twitter appears to correlate with subsequent downloads and citations (Shuai, Pepe, & Bollen, 2012; Thelwall, Haustein, Larivière, & Sugimoto, 2013), although the correlation between tweets and citations in all fields is unclear (Haustein, Peters, Sugimoto, Thelwall, & Larivière, 2013) and in some cases appears to be weakly associated (de Winter, 2014). On the other hand, Hall (2014) warns that researchers may lose sight of valuable scholarly metrics (e.g., citation indices) in favor of popularity metrics like Twitter followers. By examining a large sample of education scholars' online practices, we can begin to better understand social media metrics and thus contribute to the conversation of whether social media metrics can be used to better understand a scholar's impact.

While researchers are able to say with increasing confidence *what* scholars do on social media, it is somewhat unclear *how* scholars participate on Twitter and how online activities relate to academic identity. Greenhow et al. (2009) argued that social media support the development of scholars' digital identities, and others found that both professors (Veletsianos & Kimmons, 2013) and students (Kimmons & Veletsianos, 2014) intentionally refine or limit their online participation so that it can be scrutinized by others. One study examined education scholars' Twitter participation during the American Educational Research Association (AERA) 2014 conference and described commonalities and differences between faculty members and students (Li & Greenhow, 2015). In that study, faculty members reported that Twitter supported their professional digital identity, while students reported that Twitter served other purposes for them that were unrelated to identity (e.g., access to the research community). Li and Greenhow's study supports findings from other literature that showed that faculty and student perceptions of popular social media deviate (e.g., Roblyer, McDaniel, Webb, Herman, & Witty, 2010).

The existing research suffers from three weaknesses that this study attempts to remedy. First, very little research has examined education scholars' activities on social media, and even less has compared education professors' activities with students' activities. Second, while education student and faculty use of social media has been examined via self-reported means (e.g., Kimmons & Veletsianos, 2014; Li & Greenhow, 2015), no research has examined such differences by examining naturalistic data trails at any scale. Third, current research on what mediates education scholars' participation on social media has been mostly exploratory, thus preventing scholars from developing inferential models. This study addresses all these weaknesses by using data mining methods to capture and analyze a large data set to illuminate scholars' participation on Twitter.

3. Theoretical framework

This study is situated in the digital networked practices of scholars, and in particular on *Networked Participatory Scholarship* (NPS). NPS

refers to scholars' use of "online social networks to share, reflect upon, critique, improve, validate, and otherwise develop their scholarship" (Veletsianos & Kimmons, 2012, p. 768). The networked spaces that scholars use (e.g., Twitter, blogs) can be described as fluid organizational structures that impose little restrictions on membership and enable loosely-connected and tightly-knit distributed individuals to connect with one another (Dron & Anderson, 2009). Social learning theory underpins networked participation on social media. In this perspective, learning and knowledge in networked spaces are facilitated, negotiated, and co-constructed individually as well as socially (cf. Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Wenger, 1998). Thus, learning in online networks becomes a situated activity that takes the form of participation in the socio-cultural practice of scholarship, and as Veletsianos (2012, p. 337) argues, online social networks serve as "emerging and evolving network[s] of scholar-learners where scholarly practices may be created, refined, performed, shared, discussed, and negotiated."

4. Methods

The research focuses on Twitter as a platform for scholarly purposes, because it is widely used for scholarship (Lupton, 2014). Twitter is a free microblogging platform that allows users to post content in the form of "tweets" that may also contain links to online content. Tweets are limited to 140 characters of text and may be hashtagged with keywords (e.g., #education) or may mention other users by username (e.g., @BarackObama). A hashtag refers to a "#" symbol followed by a short phrase. Through hashtags and mentions, users can find others that are tweeting on similar topics, share information in an organized manner, and form networks around shared interests. About one-third of tweets include mentions (boyd, Golder, & Lotan, 2010), most of which may be conversational in nature (Honeycutt & Herring, 2009). Users can also retweet a tweet to share content posted by someone else with all of their followers. By default, all sharing on Twitter is publicly visible, meaning each user can go to another user's profile page, see all of that user's tweets, and "follow" that user to have new tweets provided directly to them. Each user's profile page also provides some general metrics about use and popularity, including that user's number of tweets and followers.

This study collected the most recent 3500 tweets for each user who used the official hashtag of the 2014 American Educational Research Association conference (#aera14). Contributors to the hashtag were a subsection of education scholars, and by gathering a list of contributors we were able to examine education scholars' Twitter participation. We selected this particular hashtag as a way to identify education scholars because the AERA annual meeting is one of the largest gatherings of education scholars worldwide, includes a broad array of education researchers (as opposed to a content- or methods-focused conference), and the 2014 conference was the latest AERA conference at the time of writing. Thus, the #aera14 hashtag served as a *vehicle* to locate a large and diverse sample of education scholars. In other words, the data in our sample are not limited to the AERA conference – the conference only served as a way to identify education scholars. While some users may have used other hashtags in relation to this conference (e.g., #aera2014), we limited our identification of scholars by examining the profiles of those who posted using the official hashtag. As a result, our sample excludes scholars who did not use the official hashtag.

4.1. Research questions

To better understand education scholars' uses of Twitter, we asked the following three research questions:

- RQ1 How do scholars in the education field use Twitter?
- RQ2 Which hashtags do education scholars contribute to?
- RQ3 What factors predict participants' follower counts?

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