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'Follow' Me: Networked Professional Learning for Teachers

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Abstract: Effective professional learning for teachers is fundamental for any school system aiming to make transformative and sustainable change to teacher practice. This paper investigates the efficacy of Twitter as a medium for teachers to participate in professional learning by analysing the tweets of 30 influential users of the popular medium. We find that Twitter primarily acts as a valuable conduit for accessing new and relevant educational resources on the internet and also as a viable means of social support for like-minded educators. The cost effective nature of the microblogging platform ensures that it can act as a medium for sustained professional development, while leaving the individual participants to control and take ownership of the learning. These features align with the current literature associated with the characteristics of effective professional learning.

Introduction

Access to connected technologies is increasingly ubiquitous, leading many to argue that the nature of education will fundamentally change as a result (Thomas & Brown, 2011). The transmission model of teaching, common throughout the 20th century, is rapidly becoming archaic. With information easily accessible to all via the internet, the teacher’s traditional role as the provider of specialised discipline knowledge has passed. What is the role of the teacher in this new environment? How can teacher education institutions prepare new teachers for this uncertain future? How can in-service teachers keep up to date with the rapidly changing nature of educational technology? Clearly, ongoing professional development will be required for all teachers as change becomes the status quo. However, even in less unsettling times, the effective professional development of teachers has been recognised as the key to unlocking effective educational improvements and reforms (Hawley & Valli, 1999). The importance of teacher professional development is not disputed; however, the best means of achieving teacher learning that is effective, transformative and enduring provides ongoing fodder for educational researchers, policymakers and the wider teaching profession.

Learning is often constructed as a social activity and professional learning for teachers has similarly been viewed as best conducted in a community of practice (Wenger, 1998). Teaching has traditionally been carried out in isolation with little time for collaboration or the sharing of effective practice. Online tools are now enabling collaborations between teachers in diverse locations and time zones, facilitating connections based on common interests rather than proximity. There are many that advocate the use of Twitter as a social media platform for teachers to engage in meaningful, up to date, just in time, professional learning (Pluss, 2008; Wright, 2010). Twitter is a free micro blogging tool, founded in 2006, that allows

participants to correspond with others via short (140 character) exchanges (called tweets). Many teachers are using the service to gain knowledge about teaching and to connect with a supportive network of like minded professionals (E. Brown, 2012).

So, what is to be gained when a teacher signs up to Twitter? Initially, such a teacher will undoubtedly begin to 'follow' those participants who are most active in using the service. This paper identifies 30 leading educators (with an interest in educational technology) who are currently using Twitter and analyses samples of their tweets in order to determine their purpose and the possible benefits of the tweets to their followers. In addition to 'following' educators, twitter participants can also follow discussions related to particular topics or to particular events. These discussions are facilitated through the use of hashtags, such as #edchat, #mathchat, #teacher, and allow any observer to follow the discussion regardless of whether they are following all of the participants contributing to that discussion. This study will examine a sample of tweets from the twitter streams of two popular educational hashtags: #edchat and #edtech, in order to determine what 'followers' may gain from their contents and if teachers' regular involvement in social media is time well spent.

Professional Development Using Online Networks

Research on the professional development of teachers, while often fragmented, conceptually and methodologically, is starting to yield a consensus concerning the characteristics of effective practice (Opfer & Pedder, 2011). Professional development is most effective when it is sustained over a period of time (Guskey, 2000), is practical and contextual and directly related to student learning, is collaborative and involves the sharing of knowledge and is devolved so that the participants have some element of control and ownership (Borko, 2004; Darling-Hammond & McLaughlin, 1995; Wei, Darling-Hammond, Andree, Richardson & Orphanus, 2009; Desimone, 2009; Rutherford, 2010). There is, however, some doubt over the veracity of claims of effectiveness as there is evidence that professional development programs tend to be evaluated too soon after delivery, so that the long term impact on the teachers and their students cannot be determined (Dede, Jass Ketelhut, Whitehouse, Breit, & McCloskey, 2008).

Prior to the development of online technologies professional development usually took the form of face to face workshops, often with limited time available for effective follow up or consolidation. With the rapid uptake of web 2.0 technologies and social media, time and distance are no longer prohibitive concerns for the delivery and design of professional learning opportunities (Graham & Ferriter, 2010). Online professional learning is a growing field of study for educational researchers, particularly with regard to the social and collaborative nature of the learning that occurs and the opportunities it provides for teachers to integrate their learning with practice (Mackey & Evans, 2011).

While the importance of professional development is not disputed there is also a growing body of evidence that points to the effectiveness of professional development which is initiated and controlled personally, in the form of personal learning networks (Maloney & Konza, 2011) and also that which involves collaboration (DuFour & Eaker, 1998). The value of personal learning networks is being recognised as a means of transforming education through self-paced and self-directed professional learning activities in a connected environment (Forte, Humphreys & Park, 2012; Richardson & Mancabelli, 2011). Twitter is one social media platform that can provide such an environment and it has been found useful in supporting the reflective practice of pre-service teachers during their professional placements. In this case study the sense of community developed using Twitter helped to reduce the feelings of isolation felt by the student teachers (Wright, 2010). Using Twitter in

order to minimise professional isolation has also been expressed by inservice teachers, as they recognise it as an invaluable means of finding like-minded professionals (Meyer, 2012). In addition, it acts as an educational news supply, enabling users to stay up to date with new developments and links to useful resources (Richardson & Mancabelli, 2011).

If Twitter has the potential to enable teachers to develop their own professional learning networks as a means of professional development, then teachers need to be persuaded of its possible benefits. There is ample anecdotal evidence that, on first glance, many professionals dismiss it as a superficial and tedious time waster (Richardson & Mancabelli, 2011; Robinson & Marr, 2012), although it should be noted that many teachers may describe face to face professional development sessions in the same manner. How then could teachers be persuaded to spend time with a relatively new, somewhat unproven social media technology?

The professional development literature is inconclusive as to how best to change teachers' entrenched practices and beliefs. One school of thought is that teachers' beliefs must be changed in order for any change in their practice to occur, which may then result in a change to their students' learning outcomes (Desimone, 2009). Conversely, it can be construed that it is only when teachers change their practice and subsequently observe an improvement in student learning that they will change their underlying beliefs (Guskey, 2000). More recently, using complexity theory, it has been suggested that the change process is not necessarily linear in any one direction. Rather it may be a constant cyclical process where beliefs may inform practice or practice may inform beliefs, but that the initial change can begin in any part of the cycle (Opfer & Pedder, 2011). So, in order to convince teachers of the possible benefits of using a new technology, such as Twitter, they could either be persuaded to jump in and try it (Ferguson, 2010) or they could be convinced by viewing evidence of its qualities. This paper will examine such evidence by analysing samples of tweets of those that embrace this collaborative platform in order to determine what Twitter actually does offer to those that participate, with a view to making its potential benefits or drawbacks more transparent for those yet to become involved.

Method

In order to evaluate the utility of Twitter as a professional development tool for educators, particularly with regard to the impact of new technologies, a global search for the keywords 'education' and 'technology' was conducted using the Twitter search tool in order to identify the ten 'top' educators to follow. So that differential local effects could be examined, this search was followed by a second search adding a second keyword identifying the country so that the ten 'top' educators in the country were found and a third search included the local state so that the ten 'top' educators in the local educational jurisdiction could be determined. For each of the thirty educators identified, a sample of 20 consecutive tweets was collected at random times over a one week period and categorised according to their purpose, producing a total corpus of 600 tweets. The following categories emerged as the tweets were analysed: an invitation to participate in event, online discussion or poll (I); a link to an educational newspaper article (N); a link to an educational website or blog (WE); a reply to another user's tweet with an educational focus (RE); a personal reply to another user's tweet (PR); a comment on an educational topic (CE); a personal comment (PC); or a technical question or a response to a technical question(TQ). These categories are similar to those used by Forte, Humphreys and Park (2012) who used the following coding for individual tweets: Information, Philosophy, Policy, Personal, Events, Networking/Self Promotion.

In addition to examining the tweets of popular educators, a sample of 20 tweets were examined from two popular hashtags in order to determine the purpose of the tweets. The hashtags examined were #edchat and #edtech. The tweets were categorised using the same categories as for the tweets in the sample taken for individual educators.

Results

As described in the method section an initial search using the Twitter search engine (searching for @people) revealed the top ten educators on a global, national and local scale. Educators that appeared in more than one of these searches appear in the first search where they became evident and were replaced in each subsequent search. Table 1 displays the top ranked twitter educators along with the number of other twitter users that they are following, the number of followers and the number of tweets that they have made. The final column in Table 1 provides an indication of the influence or impact of these leading educators according to tweetgrader, a social media analytic.

Tweetgrader is a measure of the power, reach and authority of a twitter account. The ranking (from 1 to 100, with 100 indicating the greatest impact), is calculated from a combination of the number of followers that a person has, the power of their followers (as measured by Tweetgrader), the number of tweets and the recency of those tweets, the following/follower ratio (the higher the better) and the level of engagement (which measures retweets and mentions by other account holders) (Keller, 2009). The results in Table 1 indicate that all of the educators chosen for this study via the Twitter search engine were rated at 95.3 or above. This indicates that Tweetgrader rates them more highly than 95.3% of all Twitter users, which is an impressive statistic when it is recognised that there are currently approximately 500 million Twitter users worldwide (Pan, 2012).

	ID	Tweets	Following/ Followers	Tweetgrader
Global	G1	34629	1753/15738	100
	G2	22561	7105/29092	100
	G3	67834	6600/16238	100
	G4	18514	1946/12435	100
	G5	23398	13962/18781	100
	G6	10239	1869/2948	97.6
	G7	10705	3678/10185	100
	G8	54060	1377/37780	100
	G9	7633	2762/5700	100
	G10	2156	1775/3267	97.6
National	N1	9029	3294/5419	100
	N2	20914	858/5459	100
	N3	9641	6479/13901	100
	N4	14093	2437/4330	100
	N5	33525	6347/9386	100
	N6	11134	1607/2175	97.6
	N7	26340	3142/8093	100
	N8	9433	1519/3770	100
	N9	4630	975/2450	97.6
	N10	9740	1367/3915	100
Local	L1	19502	1222/1437	96.6
	L2	21366	2831/4208	100
	L3	16110	754/1849	97.3
	L4	5604	1430/1536	96
	L5	4721	1993/2551	97.6
	L6	6367	1734/1415	95.3
	L7	40478	939/3064	97.6
	L8	14395	192/1431	97.3
	L9	19228	1217/1795	97
	L10	5811	407/955	96

Note. Data collected on 13/1/2012.

Table 1: Top twitter users searched by keywords 'education' and 'technology' by global, national and local locations

For each user a sample of 20 consecutive tweets was collected and categorised according to the purpose of the tweet. These results are reported in Table 2. All tweets fell into one of the following categories, which emerged as the tweets were examined for their purpose and content: an invitation to participate in event, online discussion or poll (I); a link to an educational newspaper article (N); a link to an educational website or blog (WE); a reply to another user's tweet with an educational focus (RE); a personal reply to another user's tweet (PR); a comment on an educational topic (CE); a personal comment (PC); or a technical question or a response to a technical question(TQ).

Educator ID	Invitation to event/ comment/ poll (I)	Link to newspaper article (N)	Link to external website/video (W)	Reply to tweet – education focus (RE)	Reply to tweet – personal (RP)	Comment on educational topic (CE)	Personal comment (PC)	Technical Question (TQ)	Response to technical question (RT)
G1	4	4	8	2	2	0	0	0	0
G2	3	0	9	2	4	2	0	0	0
G3	1	0	2	1	4	1	4	6	1
G4	1	0	10	0	2	4	0	0	3
G5	1	0	6	0	10	1	2	0	0
G6	0	2	5	2	3	6	2	0	0
G7	1	1	3	2	3	5	3	0	2
G8	1	0	11	1	3	0	2	1	1
G9	4	0	10	0	3	2	0	0	1
G10	0	1	6	0	0	0	13	0	0
Int. totals	16 8%	8 4%	70 35%	10 5%	34 17%	21 11%	26 13%	7 4%	8 4%
N1	1	0	6	0	9	1	1	1	1
N2	3	0	2	0	8	1	4	0	2
N3	1	10	3	0	5	0	0	0	1
N4	1	1	6	0	10	1	0	1	0
N5	0	0	0	0	20	0	0	0	0
N6	0	2	14	0	3	0	0	0	1
N7	2	0	5	0	7	3	2	0	1
N8	0	1	9	0	1	1	3	1	4
N9	1	0	12	0	3	0	3	0	1
N10	0	2	7	1	2	3	4	1	0
Nat. Totals	9 5%	16 8%	64 32%	1 1%	68 34%	10 5%	17 9%	4 2%	11 6%
L1	0	0	13	0	2	4	0	0	1
L2	1	2	5	0	7	1	2	1	1
L3	0	2	1	0	6	2	2	0	7
L4	1	1	8	0	5	0	4	0	1
L5	1	0	9	1	3	0	3	1	2
L6	0	8	12	0	0	0	0	0	0
L7	0	0	0	0	14	2	2	0	2
L8	0	2	11	0	4	3	0	0	0
L9	1	0	8	0	4	7	0	0	0
L10	0	1	3	0	6	6	1	0	3
Local Totals	4 2%	16 8%	70 35%	1 1%	51 26%	25 23%	14 7%	2 1%	17 9%
Total %(0dp)	29 5%	40 7%	204 34%	12 2%	153 25%	56 9%	57 10%	13 2%	36 6%

Note. Data collected for each user at random times between 16/01/12 and 20/01/12

Table 2: Categorisation of 20 consecutive tweets by 30 educators

When the tweets of all thirty educators are collated, a picture begins to emerge in relation to the ways in which Twitter is being used as a communication medium. The relative proportions of the purposes of the tweets are displayed in Figure 1. It can be seen that 34% of all tweets in the sample contained links to other educationally focussed websites or blogs. In this sense the users of Twitter are acting as a filter for educational content that is available on the internet. Indeed, it was often the case that multiple users in the sample posted the same

links, thereby indirectly reinforcing the quality and import of the links in question. Generally, the links were accompanied by a personal recommendation, expressing either positive or negative opinion in relation to the content of the link.

The second highest ranking category was that of a personal reply to another Twitter user (25%). In many cases these replies were personal thanks to another user for a previous tweet which was deemed particularly useful. However, in some cases, the personal replies formed part of an ongoing conversation, in real time, between two or more participants. Almost invariably tweets in this category were of a positive supportive nature, but in most cases the replies did not have an education focus, with only 1% of all tweets in the sample falling into this category. This finding may indicate the unsuitability of this microblogging medium for fostering sustained educational conversations; as such interactions would generally require more space and time so that developed arguments can be fully explained. It was observed, however, that many of the links to other websites and blogs do then allow for elaborated discussion on a variety of educational issues. Increasingly, specific Twitter hashtags are being used for a 'backchannel' conversation during educational conferences (see, for example #TTF_NSN, from the Teaching Teachers for the Future National Support Network conference, Sydney, March 15-16, 2012).

Interestingly, only 9% of the 600 tweets examined consisted of personal comments, unrelated to educational topics. These comments were usually in relation to the user's location or were descriptive about their activities for the day. This finding is of note, given that an oft-repeated, anecdotal criticism of Twitter is that it consists only of inane, meaningless and somewhat narcissistic personal comments.

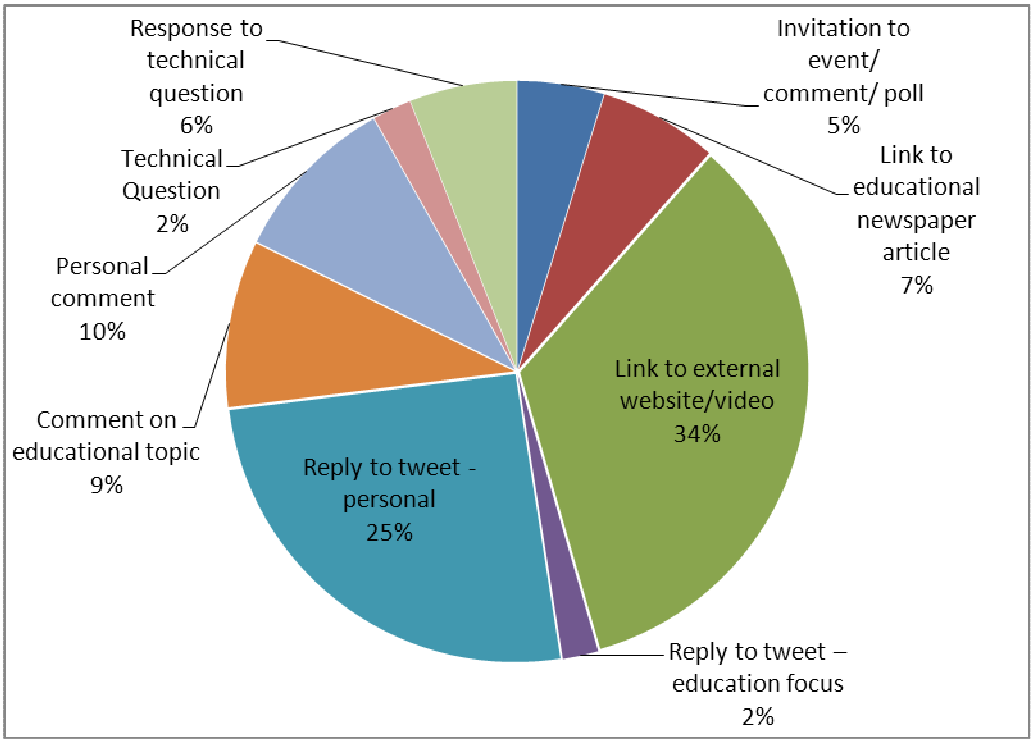

Figure 1: The percentage of tweets by tweet purpose for full sample of educators.

In terms of the differences between the leading global educators and the national and/or local educators, it can be seen from Table 1, that the global leaders are more consistently rated higher in terms of influence by Tweetgrader. When the nature of the tweets made are considered, there are proportionally more tweets of a personal nature made by the national (34%) and local educators (26%) in comparison to the global educators (17%). This

finding possibly indicates that proximity in geographical terms is a factor in influencing the type of interactions that are made via this medium.

Post	#edchat	#edtech
1	Link to how to teach grammar with an app (WE)	Link to free online video editor (WE)
2	Link to website concerned with cyber bullying (WE)	Comment on using QR codes with ipads (CE)
3	Link to video about schools banning best friends (WE)	Link to newspaper article about super telescopes (N)
4	Link to website concerned with 5 things leaders need to know about their clients (WE)	Link to website about how to send video from mobile devices to PCs (WE)
5	Link to blog 'In praise of teachers' (WE)	Link to blog about how to use Twitter effectively(WE)
6	Link to blog explaining the benefits of using twitter for teachers (WE)	Link to online mathematics club (WE)
7	Link to video explaining 60 useful apps in 60 minute (WE)	Link to blog explaining how to use Note-taking app (WE)
8	Link to resource on 'flipped classrooms' (WE)	Link to website about how to send video from mobile devices to PCs (WE)
9	Link to newspaper article about professional coaches (N)	Link to article about an education system employing a social media director (WE)
10	Link to newspaper article about a student being expelled for tweeting profanity (N)	Link to website demonstrating literacy app (WE)
11	Comment relating manufacturing equipment in factory to students' brains (CE)	Link to blog explaining 80 alternatives to youtube (WE)
12	Comment about how to handle diverse students in the classroom (CE)	Link to blog with 39 sites for using ipads in the classroom (WE)
13	Link to newspaper about the benefits of being bilingual (N)	Link to article about the best apps for students and teachers (N)
14	Link to blog about social networking transforming professional development (WE)	Link to blog about the best apps for primary schools (WE)
15	Link to blog about making failure 'fun' (WE)	Link to website about the best apps for teaching science(WE)
16	Link to website with daily poetry prompts for teachers (WE)	Link to Pinterest page with the best twttier resources and apps (WE)
17	Invitation to join a group of educators on Google+ (I)	Link to blog about hybrid professional development (WE)
18	Link to website for school leaders wanting to make school improvements (WE)	Link to newspaper article about how the developing world is using cellphone technology (N)
19	Comment on why teachers should use twitter; Inspiration, ideas, lessons, update subject knowledge. (CE)	Link to teacher blog about the presentations that his students are making (WE)
20	Link to newspaper about the benefits of being bilingual (N)	Link to blog about plagiarism and sharing issues on the internet (WE)

Table 3: Detail of 20 posts for the hashtags #edchat and #edtech

The use of hashtags within tweets is one way that users can collate posts under common streams of interest. Twenty posts were examined from each of the following popular hashtags: #edchat and #edtech. The specific nature of each of these posts is detailed in Table 3 and the analysis reveals that the majority of posts (70%) which were made and included the hashtags #edchat and #edtech, contain links to educational websites or blogs. The remaining posts were either links to educational newspaper articles (19%), comments of an educational nature (10%) or in one case, an invitation to join a group of educators in another online

setting. Using the hashtag as a means of refining tweets, therefore, appears to eliminate many of the posts containing personal comments and replies which were found when 'following' individuals. This quantitative difference in the composition and purpose of tweets depending on whether users follow themes (in the form of hashtags) or individual users potentially allows twitter users to tailor professional learning via this medium to their individual needs. While social connections and interactions can be facilitated by Twitter, as evidenced by the nature of 25% of the posts in Table 2, the hashtag option enables access to a wide variety of web-based resources and news without the need to interact with others or to sift through the personal communications between others. Depending on an individual's professional learning needs, this flexibility could be an important factor to be highlighted when introducing this medium to educators.

Discussion

A key challenge for any education system is to develop the professional knowledge of its teachers. In large jurisdictions this can be an expensive, time-consuming and potentially unfulfilling exercise. The literature reveals that professional learning for teachers is generally most effective when it is sustained over time, of a practical nature in an appropriate context for the learner, related closely to student learning, collaborative, involves the sharing of knowledge and affords the participants some degree of control and ownership. This study provides support for the notion that professional learning with these characteristics could be accomplished through the use of Twitter in order to establish teacher networks or facilitate access to new resources and information. Such online communities of learning could also potentially provide links between pre-service teachers and experienced educators. In this sense, the initial 'education' of teachers, could be enriched through participation in multiple online professional learning communities with practitioners in the field, allowing meaningful interactions beyond the traditional practicum.

Any teacher signing up to Twitter and following the leading educators is potentially exposed to a rich, interconnected network of other like-minded educators and is directed to a wide variety of up-to-date and relevant educational material. Unlike a stand-alone professional development session, Twitter has the advantage that it can be tapped into on any day at any time, leaving open the possibility that it may lead to learning over a sustained period of time, which can be accessed at the most optimal time for each user. The medium also allows for each participant to focus on the particular educational issues that concern them at the time. In this way the Twitter medium does afford the individual user with total control over the level of interaction and the nature of the learning that occurs as a result.

The literature indicates that collaborative professional development is generally recognised as being more effective than that which is carried out in isolation. The collaborative and public nature of the Twitter medium allows for networks of participants to form naturally in response to common interests. Individuals can actively participate by posting their own tweets or can simply follow others to gain links to current educational resources and news. In addition, there is evidence that participants stand to gain a considerable amount of social support through participation in the network. This support, offered in 25% of tweets in the sample, could potentially be a significant boost for teachers who find themselves isolated either geographically or professionally from their colleagues. Alternatively, if desired, users can eliminate many of the personal comments and interactions by filtering their Twitter stream using hashtags into relevant themes that provide information on specific topics.

Twitter is but one mechanism for online collaboration and communication among a growing number of social media sites, however, its current and growing popularity ensures that a critical mass of educators will be available for networking opportunities. These online interactions don't replace the significance of face to face collaborations and discussions with colleagues, but the findings from this study indicate that they can be a valuable alternate means of professional self-development. Further research is needed to evaluate the tangible impact of teacher engagement with social media for professional development. While this study has confirmed the potential of the medium, and while there are plenty of Twitter champions encouraging wider participation, the eventual impact on learning in the classroom is untested.

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