

EDUCATOR COMMUNITIES OF PRACTICE
ON TWITTER

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ABSTRACT

As Twitter became a popular platform for social networking, educators began to utilize the platform for professional networking. Educators began to utilize the hashtag #edchat to denote their ongoing and growing conversations on education subjects. Educational institutions began to require teachers to participate in the platform or granted continuing education credits for their participation. To determine if such sanction is merited, a qualitative exploration of the network of educators on the Twitter platform was performed.

Three primary theories were used as a lens for exploration of the community. The first was social capital, where benefits are accrued by social interactions. Mark Granovetter's strength of weak ties, where a community becomes linked by tangential relations of its members was the second lens for exploration. Finally, Etienne Wenger's concept of the Community of Practice, where a body of collective knowledge and best practices emerge from a community gathered around a specific topic, was used to explore the network.

Posts to Twitter containing the #edchat hashtag were collected and a survey instrument was disseminated with the #edchat hashtag. Collected posts and their linked content were coded according to their content. Demographic qualities of the participants in the #edchat community were addressed as well as questions arising from coding, such as the nature of retweeting and the role of commercial entities in the community. From these codes a set of distinct categories of #edchat Twitter posts were analyzed and discussed. The themes of these posts were determined and related to the literature. The survey instrument allowed exploration of motives and perceived

impact of #edchat participation, and how these perceptions related to the themes of the collected posts.

Participants in the #edchat conversations were found to be generating social capital and binding a community together through the weak ties of brief interactions. A Community of Practice was found to exist in the collected #edchat posts and survey respondents. Further research on methods to cultivate this community as platforms evolve, as well as the demonstrable effect on teaching and learning is recommended.

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CHAPTER I

INTRODUCTION

In 2006, the podcasting software company Odeo attempted to redefine its mission. Feeling that their podcasting products would be incapable of competing with already established players in the market, the company shifted from podcasting to a messaging service allowing users to broadcast text messages to specific groups of friends or associates. The 140-character limit of text messages meant that a user would communicate information in short form communications. As this service moved onto the Web and became a multi-featured social network, the platform became known as Twitter (Sagolla, 2009).

Twitter first broke widely into public consciousness when it became the de facto communication platform of the 2007 South by Southwest (SXSW) festival (Owyang, 2007a), a popular conference focused on emerging technologies. With its use tripling during the event (Douglas, 2007), Twitter had arrived as the new communication medium of Web 2.0 (Rubell, 2007) and won the award for best blog application of the festival (Owyang, 2007b). *The New York Times* characterized Twitter as the “voice of the Internet” (Pontin, 2007) while venture capitalist Fred Wilson saw the platform as a public form of internet chat that could occur outside of the linear time constraints of traditional chat platforms (Wilson, 2007).

The platform expanded greatly over the next year, with traffic to the site increasing by over 400% between August 2007 and August 2008 (Ostrow, 2008). Not only did overall traffic increase, but professional communities began to use Twitter as a platform to connect with other professionals. Journalists began to use Twitter to be on the forefront of online news (Luckie,

2008) and lawyers used the platform to promote their practice and stay abreast of the current events within their specialties (Black, 2008). Likewise, medical doctors used the platform to take their professional dialogues global (Hawn, 2009). Educators also began to centralize their online networking by taking their conversations to Twitter and using the platform for informal professional development (Boss, 2008).

Traditionally teachers have shared their pedagogical and content knowledge with other teachers in face-to-face, real-time interactions, primarily within the teachers' own schools and systems. With the advent of the internet, many of these teachers have turned to online networking to expand the scope of their professional learning networks and embracing the online social networking model for this purpose (Smith-Risser, 2013). On these networks, teachers exchange resources, methods, and techniques, and consult and collaborate with each other to such a degree that networks like Twitter are seen by many as a viable method of professional development and teacher education (Weseley, 2013). It has even been suggested that educators could use these digital networks as an avenue of organization for political activism as teachers not only share professional knowledge via social media, but the networks can become a nexus for teacher voices in the education reform debate (Berry & Herrington, 2013).

As social networking via Twitter is being advocated to educators by academics (Holmes, Preston, Shaw, & Buchanan, 2013), state departments of education (Alabama Learning Exchange, 2014), system administrators (Esposito, 2009), and other educators (Schrock, 2014), it is commonly believed that Twitter and, to a lesser extent other social networks, are a treasure trove of resources and professional knowledge just waiting to be gleaned by educators. Twitter users may "follow" other users, meaning they receive their updates automatically, and by using the at-sign and a user's Twitter username, known as a reply or a mention, one Twitter user may

specifically call the attention of another Twitter user to the tweet containing the mention (“What are @replies and mentions?”, 2014)

Hashtags are a method of specifying subject matter on Twitter, created by the use of the octothorpe, colloquially referred to as the pound or number sign, and a short, subject-specific phrase (Doctor, 2013). These hashtags may reflect events, trends, political causes, or simply be for commentary or humor (Hiscott, 2013). Hashtags are utilized by educators on an incredible breadth of education topics (Baumgarten, 2014a). Many of these hashtags have specific gathering times, with educators from around the globe engaged in discussions, or chats, using the hashtag (Baumgarten, Murray, & Evans, 2014).

The most popular of these hashtags among the educator community on Twitter is #edchat (Bearden, 2013). An active community of teachers posts regularly to the hashtag #edchat, but has two scheduled chat sessions each Tuesday. Beginning in 2009, the #edchat community on Twitter expanded to podcasts (Terrell, 2014a) and its founders were given special recognition for innovation at the 2013 Bammy Awards (Whitby, 2013). The members of the #edchat community are prolific posters on Twitter, with thousands of tweets each day.

Some teachers and observers question the value of #edchat as professional resource for educators (Whitby, 2011). The format of Twitter-based chat is blamed for many issues, creating great lag time between questions and requests and when responses are received and allowing conversation to sprawl through many divergent topics and participants (Whitby, 2015).

Aphorisms and platitudes are common in the #edchat feed and create a layer of noise that obfuscates the signal of useful information (Grabe, 2014). Spam is injected into the feed by marketers adding the #edchat hashtag into their tweets, requiring the difficult process of removing them from the official #edchat archives (Swiatek, 2013). This hashtag spam clutters

the channel with tweets that do not add to the conversation or knowledge base of the community (“The Complete Guide to Twitter Hashtags for Education,” 2013). Further criticism decries #edchat as a conversation among like-minded people, fostering confirmation bias and cliquish behavior (Whitby, 2011). Finally, the sheer volume of traffic on #edchat can be daunting for participants, making the culling of relevant information difficult (Whitby, 2013). With these impediments, #edchat may be of less value than is traditionally believed.

More specialized education communities seemingly reflect a greater focus and less noise than #edchat. Regularly scheduled EdChats in the more specialized communities seem to be a more discussion-based exchange, without much of the corporate- or advertising-based traffic that permeates #edchat. The tweets of the more localized groups indicate more of a social networking support group for educators as well as a knowledge resource. As with #edchat, subject-specific chats such as #sschat (for discussion of Social Studies) and #engchat (for the discussion of English) many times will revolve around specific topics for their weekly chats, addressing pertinent or requested topics (Schulten, 2011). These topics are more focused in the proliferation of pedagogical and content knowledge. For example, recent topics of #sschat included “Teaching History with Primary Sources” and “Historical Thinking and Struggling Readers” (“Archives,” 2014).

Statement of the Problem

With educators encouraged to expand their professional learning networks through social networking and to participate in the education discussions on Twitter, the value of these interactions must be better assessed. While current research shows that teachers who are active on Twitter place great value on their interactions, it should be ascertained if these interactions are merely improving the educators’ morale and sense of community or if they are fostering

improvement of pedagogy and dissemination of techniques. Teachers are seeking pedagogical and content knowledge from other educators, but it seems difficult to find this signal in the stream of 140-character noise. Some teachers thrive in the Twitter community and feel empowered by it while others cannot engage with the community effectively. Those in the educator community that participate, either actively or merely as an observer or “lurker,” in the dialogue on Twitter perceive their participation to have some sort of value, but it is unclear what that value actually is.

Statement of Purpose

The purpose of this qualitative study using content analysis and a survey was to explore the activities and interactions of the community of educators who use Twitter hashtags as a tool to build communities for improving teaching and learning, and discover how participation in this community benefits its members and the education community as a whole. With participation in the Twitter education community being legitimized by various means by administrative bodies, the value of the platform for its participants must be understood to determine if this official sanction is merited. By understanding exactly what is being shared in the community and the perceptions of its members, greater understanding of the community may develop.

Significance of the Problem

As teachers flock to the platform, many using Twitter for the first time, these educators and their administrators require a better understanding of the way this community will effect change in their classrooms and schools. Schools and systems are putting official sanctions on participation on the Twitter community by awarding credits for continuing education and recertification (Carpenter & Krutka, 2014b). This participation in the community should ideally have an effect on teaching and learning if teachers are to receive these types of credits. By

exploring the educator community on Twitter and the types of information that are endemic on the platform for educators, educators and administrators may have a better informed discussion on this official recognition of participation.

Theoretical Frameworks

Twitter may find its strength as a professional development tool in a community of practice. A community of practice is a community built around a common endeavor, where knowledge, custom, and conventions permeate a community and create an arena for social learning (Lave, 1991). The knowledge of the community is an evolving body of knowledge that is spread through the interactions of the group rather than through formal channels (Wenger, McDermott & Snyder, 2002). These communities of practice exist in physical communities and also within virtual communities online, though the online communities have a much less static membership than their physical counterparts (Squire & Johnson, 2000).

Some theorists suggest that online communities resemble communities of practice less than more nuanced theoretical variations of the model. The network of practice is defined by its less formal or physical ties among members, but is mediated through the asynchronous communication methods of electronic platforms. While the connections of the network of practice are more tenuous than the community of practice, the network of practice may have further reach due to its virtual nature (Brown & Duguid, 2000). Another similar model is the Community of Inquiry. This theoretical construct views the virtual community through the lens of its core elements of the depth of the interactions of participants, the personal nature of communications among members, and the presence of learning within the community (Garrison, Anderson, & Archer, 1999).

These theories give insight to the way the Twitter community members interact and how the members find value in the community. By exploring the value of social capital among the participants within the educator community on Twitter, as well as the way the strong and weak ties bond the community, the educator community may be better understood and evaluated. With the frameworks of communities of practice, networks of practice, and communities of inquiry, the way these communities share the social knowledge of the education field may also be analyzed.

Research Question

What are the activities and interactions of teachers participating in the education hashtag communities on Twitter?

Methods

This qualitative research was conducted by exploring posts to Twitter containing the #edchat hashtag as well as a survey distributed through Twitter using the #edchat hashtag. Coding tweets from #edchat at random hours allowed the activity of the community to be categorized and studied. A survey instrument was distributed among educators on Twitter to gauge their level of participation and the perceived effect of community participation on teaching and learning.

Assumptions

There were some assumptions regarding Twitter as a platform for the proliferation of professional and content knowledge that must be considered. The community using commonly used Twitter hashtags connected to education were assumed to be educators, administrators, vendors, and other stakeholders in modern education and were using these education-related hashtags intentionally and purposefully to participate in the public discussion regarding

education on the Twitter platform. It was assumed that the educators taking part in discussions with other educators on Twitter know that the platform is not just for social interactions but a source of information and resources within the profession. Posts to Twitter were assumed to be coherent and easily understood to allow coding and interpretation. Finally, it was assumed that the participants would not only understand what questions were being asked, but would answer truthfully.

Limitations

The subjects of this study were people participating in the public educational discussion on Twitter, denoted by their posts to Twitter containing the #edchat hashtag. This sample was self-selecting. If one merely read educational posts to Twitter and participated in the community as an observer, their posts were not available to be catalogued and coded. If they did not openly participate in the community, they were also less likely to participate in a survey that comes through their Twitter feed.

Just as those not actively participating in the community were outside the scope of this study, those who then abandoned the Twitter platform for educational discourse and their reasons for doing so were difficult to research. Another study may be able to reach out to these former participants through snowball or convenience sampling; they were not a part of this research. While the stories and issues of those who do not see the value of the educator community on Twitter are of value to research into this community, they were not be addressed in this study.

Operational Definitions of Terms

Web 2.0: Interactive websites that allow for contribution of content by site visitors (O'Reilly, 2007).

User-generated content: Website content, including images, text, audio, and video, that is created by visitors to a website and may be shared to other website visitors (Espojo, 2007).

Social Network: A method of forming connections between people, allowing them to form relationships with other people. Currently it is understood that this Social Network may exist in the connected digital environment of the internet (boyd & Ellison, 2007).

Twitter: A social networking platform that allows users to post 140-character messages.

Post or Tweet: The message a user of the Twitter platform creates and shares with other users of the platform. The message may be up to 140 characters (Rubell, 2007).

Follow: When a member of the Twitter community elects to see the posts of another user of their platform by default (Hofer & Aubert, 2013).

Timeline: A series of posts to the Twitter platform that appear in reverse chronological order (“What’s a Twitter timeline?”, 2015).

Hashtag: The pound sign (#) followed by a short word or phrase to denote a subject or inject commentary in a tweet (Doctor, 2013).

Edchat: A conversation on the Twitter platform denoted by use of an education-related hashtag. The conversation may take place at an appointed time or asynchronously over a long period (Whitby, 2010).

Summary

Chapter I of this dissertation described the origin of the educator community on Twitter, and defined the direction of research into the community. Chapter II of this dissertation explores the literature on social capital, the strength of weak ties, Communities of Practice, the migration of these communities online and, specifically, the education community of practice and its migration to Twitter. The methods used to study the education community on Twitter, including

the observations and surveys make up the third chapter. The findings of this research are detailed in Chapter IV. This consists of the collection and coding of posts to Twitter containing the #edchat hashtag. Chapter IV also focuses on the results of the survey element of this research. The survey data were compiled, coded, categorized, and discussed. Chapter V includes analysis and discussion of the collected qualitative data and its emergent themes, as well as an exploration of conclusions that can be drawn about the community from these data. Potential avenues of future research are also explored.

CHAPTER II

REVIEW OF RELATED LITERATURE

Granovetter (1973) outlined the way a social network of loosely related colleagues can have a profound influence on the community at large by using the casual relationships between its members to forge a communal identity. The relationships of these colleagues on a personal and communal level may be casual or even incidental, but form the basis of the evolving mores and customs of the group. Stronger ties between members form more cloistered and smaller groups without integration into the community (Granovetter). Jean Lave (1991) and her situationist cohort of learning theorists advanced the concept of the communities of practice as social learning that both advances the knowledge of members of the community and advances the agenda of learning in their shared endeavors. These communities began to be viewed as an avenue for improved professional learning, both in pedagogical methods and subject content, with goals of creating a reflective community that embraces experimentation (Putnam & Borko, 2000).

As the internet and personal computing technology became more ubiquitous in schools, the internet was seen as a location not only to find information, but to allow teachers to easily publish their own tools and participate in conversation about teaching (Lake, 1995). With the advent of Web 2.0, a term denoting websites allowing for interactive content creation from their communities (Maness, 2006), studies suggested that blogging and other interactive web platforms may be more easily utilized to foster a connected community of like-minded educators.

This builds a more expansive professional community online with which to share techniques and offer encouragement and support (Luehmann & Tinelli, 2008).

Traditionally, a social network has been simply defined as a social structure where individuals are connected by a variety of relationships. As these networks have moved online, not only have they freed social networks from the constraints of shared geographical space but allowed for more robust discovery of members of these networks on the periphery of the networks (Gündüz-Öğüdücü & Etaner-Uyar, 2014). Beginning in the late 1990s with diary sites such as LiveJournal and demographic-based networking sites such as BlackPlanet and AsianAvenue, online social networks proved to be an engaging platform for making connections with other like-minded users. MySpace brought online social networking platforms into the mainstream by allowing users to not only connect with their friends but popular musicians who utilized the platform to connect with their fan base. Facebook, with its simple and minimal interface, became the preferred platform for college and university students before becoming the largest social networking platform. Twitter, a platform built around small text-based updates and simple one-way connections between users (a user may subscribe to another user's updates without reciprocation), quickly rose to be one of the largest online social networks, appealing both to marginalized groups and professional communities (boyd & Ellison, 2007).

The educational possibilities of these networks were first utilized to a large extent by students (Griffith & Liyanage, 2008), as educators remained wary of social networking due to the news focus on inappropriate behavior of educators on the networks (Carter, Foulger & Ewbank, 2008). As educators began to utilize platforms such as MySpace and Facebook, their professional potential became more apparent to education practitioners (Cook, 2007). However, an early and informal study at the University of Bath found that a group of 12 educators had

difficulty determining a professional use for Twitter, beyond basic community building among students (Ramsden, 2008).

As Twitter became embraced by the professional educator community, the value of the platform to teachers has become the subject of debate and research. This research indicated teachers who are active on Twitter find value in their participation in the community (Carpenter & Krutka, 2014a). While pedagogical and content knowledge are often cited as reasons to join Twitter (Boss, 2008), many teachers find value in the community and support from other teachers (Carpenter & Krutka, 2014b).

Strong and Weak Ties

Social networks are built around the connections among the members of their communities. According to Granovetter (1973), the strength of a tie between two members of a community is dependent on the combination of several factors, including the amount of time the parties spend interacting, the intensity of the emotions in those interactions, the willingness to confide in the each other, and the mutual benefits of the relationship. In Granovetter's original work on these social ties, he eschewed empirical measure of these ties and evaluated the strength of ties between individuals subjectively.

Granovetter (1973) first looked at strong ties between individuals and the weaker ties in their respective circles of colleagues, friends, and acquaintances. The individuals with the strong tie act as a link between otherwise unconnected social circles. If relationships were simply between individuals with strong ties, the group would become more socially isolated and cloistered, making the introduction of new information and ideas to the group more difficult. But most times, the strong ties between a few individuals do not exist in a vacuum. These individuals have weaker ties to others whose only connections are the strongly tied individuals. This allows

these individuals to be conduits between the weakly tied colleagues on the periphery of the social network. The strength of the community and its ability to evolve through the introduction and proliferation of new information and ideas resides in these weaker ties rather than in the stronger but more insular ties between individuals (Granovetter, 1973).

Friedkin (1980) tested Granovetter's (1973) theories using a sample of university biology professors. Members of this sample were asked about their interactions with other individuals in the sample. If a professor reported sharing information about their research with another member of the cohort and the other member had reciprocated, Friedkin labeled this a strong tie. If one member shared information and the other professor did not report sharing information, the relationship was labeled as a weak tie. The study tracked the flow of information among the members of the community. The information bridged the cliques of strong ties within the sample through the weakly tied members of the group 100% of the time, even though only 69% of the ties were weak (Friedkin, 1980).

Examining further the way information dissemination is facilitated by strong and weak ties, Friedkin (1982b) studied the way information moved throughout university departments as well as between departments. Friedkin found that within a formalized organizational structure, strong ties move information with great efficiency. Outside an organizational unit however, weak ties facilitate the transfer of information through their greater numbers. Friedkin attributed the great efficiency of weak ties in information flow to the great number of weak ties all individuals have, as opposed to the generally small number of strong ties. These ties between members of community are integral for the creation of social capital.

Social Capital

Loury (1977) coined the term social capital in his 1970s work on racial income disparities to represent the social connections, advantages, and privileges that contributed to the creation and acquisition of advantageous personal resources. Coleman (1988) defined social capital as a combination of a myriad of elements with two common factors: they exist within a social structure and facilitate actions of actors within that structure. Social capital may be acquired by both individuals and organizational entities, though Coleman concentrated on social capital as it related to the individuals rather than organizations. Coleman offered several examples of social capital in action in traditional economic environments, including in diamond markets and Egyptian bazaars where the accumulated trust and collegiality facilitated transactions in the market. Coleman also illustrated non-economic environments where social capital comes into play, such in student activist groups of South Korea and the communities of residential Jerusalem. Social capital exists and is generated within relationships and allows the actors in these relationships to engage in productive activities (Coleman, 1988). While Bourdieu (1977) and his use of the term social capital in his work with critical theories of class has popularized the term in some segments of academia, it is Coleman's work that provides the basis for its use in this study.

Coleman cited his own research on unions in the 1950s where a group of printers formed a social club. As this social club evolved from a meeting of colleagues in a relatively cloistered profession, it became a platform for job recruitment, best practices, and, eventually, political activism (Lipset, Trow, & Coleman, 1956). The social capital bred from the interactions and relations of what began as a club benefitted all of its members and mobilized to positively change the society as a whole. Social capital plays an important role in the development of

community and society as well as education. It is the important role social capital plays in education and child development that facilitates the development of human capital and resources (Coleman, 1988).

Two varieties of social networking are typically identified. Social capital is described as bonding when it facilitates strong ties within the community, usually within a subset of the community as a whole. While bonding social capital reinforces ties and strengthens trust among members of a group, many times it forms an exclusionary solidarity against those outside the clique. Through bridging social capital, however, isolated cliques and pockets of individuals within a community are tied together, allowing information and resources to propagate through the community. Together, these two forms of social capital allow for solidarity within cliques that have rhizomatic connections of weak ties that bring them together as a community (Sajuria, van Heerde-Hudson, Hudson, Dasandi, & Theocharis, 2015).

As internet platforms for online discussions became more ubiquitous and utilized by a greater number of participants worldwide, doubt existed that social capital could propagate in a digital environment (Putnam, 2001). The need for nonverbal communication in the interactions that generate social capital was generally the nexus of this doubt. Because online platforms facilitate the generation of discussions among like-minded individuals, these conversations were thought to increase the factionizing of the internet, sometimes referred to as cyberbalkanization or “Splinternet,” rather than the generation of social capital. The internet was also viewed as a more natural platform for media consumption rather than the facilitation of communication. However, the splintering of internet discussion into groups of similar individuals would involve the generation of bonding social capital (Sajuria et al., 2015). The “filter bubble,” the phenomenon of algorithmic-based filtering content based on user preferences creating an echo

chamber of confirmation bias, does exist on the internet and on social networks, but these groups also facilitate discussion between weak-bonded associates who may disagree, generating a degree of bridging social capital (Pariser, 2011).

According to Hofer and Aubert (2013), the differing platforms of internet discussion allow for the generation of varying proportions of bridging and bonding social capital. Facebook generates almost exclusively bonding social capital, as people add friends almost exclusively from people they already know or have known and the experience of interacting on Facebook tends to strengthen those preexisting bonds. Bridging capital does play a part in Facebook relationships, as members of the network use the platform to find out more about those to whom they have a weak bond. Twitter, where users create large networks with other users with whom they may have only tangential relationship or no relationship at all, finds many more opportunities for the creation of bridging social capital, though bonding social capital does emerge through many of the stronger relationships of the platform (Hofer & Aubert, 2013).

Facebook and Twitter, though they are currently the two of the most popular social media platforms (“Social Media Site Usage 2014,” 2014), are used for vastly different purposes. Facebook is the most popular network for users to connect with friends and family; that is, to generate bonding social capital and strong ties to people they already know. While users of Twitter report that they do use the platform to connect with friends and family, Twitter is the most popular platform to interact with people with common interests, as well as the media (IPG Media Lab, 2014). Twitter’s simple interface and basic feature set is more suited to share small amounts of information and links, whereas Facebook allows posting of an array of media types that may be uploaded and hosted through Facebook. Twitter allows one-way connections, as opposed to Facebook’s mandatory two-way connection. This facilitates more casual conversation

on Twitter, and encourages these casual interactions between participants that have weak ties. Facebook on the other hand is more geared to more formal or cloistered interactions that allow the users to share more diverse information (Kwon, Park, & Kim, 2014).

Social networks allow members of organizations to leverage the social connections and camaraderie of participation in social networks towards work related uses (Cardon & Marshall, 2015). The social uses of the network attract and reinforce utilization of the network for members of the organization and facilitate the use of the network for professional purposes. The bridging social capital of the network brings connection to isolated members of the organization while the bonding social capital strengthens existing relationships. The social interactions on social networks build unity of vision as well as shape the cultural mores and standards of the organization (Sun & Shang, 2014). Twitter is a social networking platform that excels at the dissemination of information. Relationship-based networks such as Facebook see degradation in the quality of posts on the network as users attempt to impress and craft their social media identity to a greater extent on these networks. Users are drawn to the information-sharing aspects of Twitter and once drawn to the platform by the social connections, these users tend to take advantage of the information-sharing environment the platform creates (Yoo, Choi, Choi, & Rho, 2012). Information sharing groups among like-minded professionals may fall under the definition of a community of practice.

Communities of Practice

A Community of Practice (COP) is a group of people united by their shared issues or passions who increase their practical and theoretical knowledge of these problems or interests by working and communicating with each other regularly (Wenger, 1998). These actors share practical knowledge as well as insights and help with shared issues, giving a value to their

interactions. Mores, conventions of interactions, vernacular shorthand, and best practices evolve from their interactions around the community's unifying topics, including new forms of orthodoxy and heresy within the community (Wenger & Snyder, 2000). Besides sharing practical experience and expertise, the community communicates unspoken knowledge among its members. Their knowledge is an evolving body rather than a static knowledge base. This knowledge is communicated via interaction and informal methods, such as the relation of narrative. Knowledge is possessed by the individual members of the group, but knowledge is possessed by the group as well (Wenger et al., 2002).

Structurally, the COP generally consists of three common elements. The community is held together by its domain. This is the central characteristic acting as the attractor of the members of the community. The domain not only brings the community together, but defines its common pursuits (Wenger et al., 2002). This community, made up of the practitioners, theorists, and hobbyists brought together by the domain, is the second common element of a COP. This community transforms the knowledge of its individual members to a collective knowledge base, a dynamic body of evolving perspectives and interactions (Wenger, 1998). The final common element of communities of practice is the commonly accepted methods and standards for the group. These methods and standards include both the explicitly stated and the unspoken practices of the community (Wenger et al., 2002).

The COP has several advantages in the dissemination of knowledge over more formal forms of instruction and knowledge sharing. Knowledge is a dynamic phenomenon in any field, with change occurring at increasing rates. A COP not only facilitates the discovery of new knowledge, but generates discussion about how such knowledge will be assimilated. This social structure surrounding knowledge and information allows for those who need specific knowledge

to acquire and share knowledge needed by members of the community. Isolated practitioners may interact with others in the community, bringing their expertise to novices. Many issues and problems have an expansive base that may not be easily discerned from their discrete manifestations. A COP, through its discussions and shared knowledge may analyze the issues to a degree that would be difficult for a single practitioner (Wenger et al., 2002).

The actions of a COP can manifest in several ways. By creating a large group that constantly reflects upon theory and practice, the community can develop strategic initiatives for more formal organizations. As a group, the community can nurture new talent, keeping talented professionals engaged in the community, developing skills, problem solving, and communicating best practices to new practitioners. The community finds cohesion in its drive and passion, as well as the members' self-identification as members of the group. Not necessarily bound by institutional boundaries or project constraints, a group may encompass many practitioners and the field as a whole, or may consist of a few individuals with a passion for a specific subset of the field (Wenger & Snyder, 2000).

Just as knowledge is distributed in the community, leadership of the community is also rhizomatic (i.e., a network rather than a hierarchy). Different varieties of leadership are seen throughout the community, with roles for those who are recognized as the leaders in thought, organize functions and activities, document activities and exchanges, and facilitate relationships between members of the community as well as institutions and other communities, and those that push the limits of knowledge in the field. The community does not need a management hierarchy to flourish, but leaders naturally emerge into their roles in the community (Wenger, 1998).

Wenger's (1998) work with communities of practice progressed through the 1990s and into the new century, coinciding with the rise of the internet as a cultural phenomenon.

Communities of practice began to migrate online, adapting to the new platforms available on the internet. These virtual communities of practice are less formal and have a more dynamic and fluid membership (Squire & Johnson, 2000). These members may operate outside of physical space, allowing for a greater disparity of views and less adherence to orthodoxy within the community (Palloff & Pratt, 2007). The platform used for the community does not define the COP. It is an emergent system that originates from the platform. The blog, forum, or wiki is not what makes the COP, but the interactions of the people of the community (Nachmias, Mioduser, Oren, & Ram, 2000).

Wenger himself expressed reservations regarding communities of practice online. Members of a COP need to recognize each other as practitioners in their fields and interact as such for a community to exist, so internet based interactions may be the basis of a COP (Wenger & Trayner, 2011b). Web 2.0 platforms may facilitate opportunities to network knowledge and collaborate in new and innovative ways, but may implement an arbitrary hierarchy that impedes the development of a rhizomatic COP (Wenger & Trayner, 2011a). However, Twitter specifically was seen to have great potential as a communication and curation tool for a COP (Wenger & Trayner, 2011c).

Virtual communities of practice have been referred to as Networks of Practice (NOP). These networks of practice are similar to Wenger's communities of practice with emergent groups networking around common goals, methods, and interests. Unlike the COP, the NOP includes community members with more tenuous relationships. The electronic mediation of the community allows members to interact, but the individual members are made aware of each other through the mediation of the electronic platform (Wasco, Teigland, & Faraj, 2009). These networks of practice have a more expansive reach than traditional communities of practice,

without the limitation of shared physical space and asynchronous communication able to bridge differences in local time of the members. These networks do not necessarily generate social knowledge to the extent of the COP, but do have the potential to facilitate the transfer of information, practices, and methods between the members (Brown & Duguid, 2000). Further examination of Usenet communities revealed levels of mutual engagement that would indicate a COP as defined by Wenger rather than the more informal NOP (Murillo, 2008).

An early study of education online by Garrison et al. (2000) began to look at the online learning environment through a different lens than the Community or Network of Practice. In research of text-based communication in education applications, the model of the Community of Inquiry became a standard to evaluate the validity of online communication as an educational platform. The Community of Inquiry (COI) model allows for evaluation of an online community for three core elements of an educational experience: Cognitive Presence, Social Presence, and Teaching Presence. For members of an online community to be seen as participating in a COI, they must exhibit higher levels of learning beyond mere casual conversation. The participants must demonstrate critical thinking and integration of information into current models. Learners must communicate effectively and relate with each other as individual learners rather than virtually anonymous text. Finally, there must exist a teaching presence to facilitate the learning of the participants, to focus their attention and discussions (Garrison et al., 2000).

The wave of Web 2.0 tools that swept the internet in the first years of the 21st century provided new tools to the networks of practice. With hosted blogs and wiki services, as well as image and video repositories such as Flickr and YouTube, becoming part of the infrastructure of the internet, users were able to self-publish content with ease and in many cases for free. This new net of ubiquitous user-generated content, along with widespread use of Creative Commons

licensing, allowed users to not only glean information and knowledge from a variety of media sources, but to edit, remix, and repurpose this content (O'Reilly, 2007). Finally, the way students and teachers conduct research, determine lines of inquiry, and find answers and solutions have shifted and gained new power. With these new resources and platforms at the end of a hyperlink, the way knowledge may be spread on networks of practice enabled communities centered on teaching to have a reach and a power not possible before (Burden, 2010). The power of information dissemination on Web 2.0 platforms has allowed teachers to create a decentralized community of practice.

Twitter as a Community of Practice

Political scientist Benedict Anderson (1991) posited the idea of the imagined community in his work on the origins of nationalism. The community of a nation state is large and expansive, with a vast majority of its population anonymous to individuals. Yet because the members of the population share a trait, however arbitrary, they form a cohesive community (Anderson). Looking at Twitter through this and other anthropological lenses, the structures of communities that mirror communities in physical proximity are evident. Twitter users share a practical vernacular and, while envisioned as an egalitarian group of peers, has emergent leaders of both small and large subsets of the population. Twitter is primarily a community that exists in the present and the immediate past, giving the community an immediacy that is lacking in groups organized around archived information. It serves as a virtual meeting space for a stable cohort to interact, with many voices contributing to the discussion. These voices influence each other in terms of attitudes and practice, as well as provide a structure for professional and emotional support (Gruzd, Wellman, & Takhteyev, 2011).

Within a year of Twitter's launch into public consciousness at SXSW 2007, educators were exploring the platform's educational potential. Some saw Twitter as an effective means to communicate with the cohort of digital natives in high school and college by disseminating articles to students, conducting virtual classroom discussions, and strengthening a classroom community (Skiba, 2012). As teachers were being encouraged to move to models of continuous professional development (Davis, 2009), educators began to explore the Twitter space as a venue for professional communication. Some of these first steps were very tentative, encouraging teachers to use Twitter for professional communication within an already established professional learning network with Twitter accounts switched to private (Braun, 2007).

As Twitter became seen as a platform for building effective professional learning communities (DuFour, DuFour, & Eaker, 2008), education professionals began to migrate to the site to find peers and build ad hoc communities of practice. Practitioner publications for educators began to tout Twitter as a virtual space for teachers to share methods, showcase best practices, and cultivate professional relationships (Walker, 2009). Educators themselves began to use Twitter for resources and virtual discussion channels of conferences and workshops (Yucht, 2009). Some administrators experimented with the platform for school-wide professional development and encouraged their teachers to become part of the community (Demski, 2010).

Early Twitter user Chris Messina had used the octothorpe, colloquially known as the number or pound sign, on Internet Relay Chat (IRC), where it was commonly used to create channels based around subject matter. In a post to Twitter during an open source conference in 2007, Messina suggested using the symbol prefacing the name of the conference as an indicator that a post was pertaining to the conference, allowing a search of Twitter to return results just on the conference (Messina, 2008). Soon the hashtag format was used by journalists to gather posts

to Twitter regarding news events, and the model spread to be used to highlight posts regarding events in news and popular culture, as well as becoming a vehicle for commentary and community (Hiscott, 2013).

As Twitter has become viewed as a platform for networking between educators, its use as a means of communication with students and parents has become relegated to a small minority of users. Teachers use Twitter professionally primarily as a means to connect with other educators. From these educators, they find links to resources and collaborators in the development of lesson plans or pedagogical techniques. Twitter is a two-way channel of communication, making it highly interactive compared to traditional professional development (Greene, 2014). The large number of grade level and subject matter hashtags available gives teachers the ability to customize their Twitter interactions to topics they find relevant (Baumgarten, 2014a). The asynchronous communication allowed by Twitter allows teachers to use the platform in the time and place they find convenient and relevant. Many teachers see the platform as an answer to the problem of classroom isolation and find the community to be more positive than their local school or system community (Carpenter & Krutka, 2014b).

Reflection has long been seen as crucial to the continued improvement of an educator's practice, allowing teachers to ask hard questions regarding their practice and its effectiveness and efficacy (Dewey, 1910). While teachers have used Twitter as a platform for reflection, they also utilize the platform for the dissemination of resources and to seek and provide assistance to their educator peers. Teachers use Twitter to expand their professional network beyond their own school and cultivate relationships with teachers outside their geographic area (Gerstein, 2011). These factors allow the educator who is active on Twitter to be an avenue for new methods and techniques to spread throughout schools and systems. These new ideas many times will put the

teacher who is active on Twitter at the forefront of reforming policies that many times thwart the vision of their classroom that has been shaped by the educator's experience on Twitter (Forte, Humphreys, & Park, 2012). As teachers began to embrace the Twitter platform for their own professional learning, hashtags began to emerge as a way for educators to organize the efforts of the emerging community.

#edchat

A group of educators active on the Twitter platform organized a community of teachers around the hashtag #edchat in 2009 (Terrell, 2014a). Starting with a small group of educators desiring a hashtag with which to highlight their own discussions of education policy and practices, a weekly chat session quickly coalesced around the hashtag. Topics for the weekly chat are determined by online polls organized by the founders and moderators. After the chats are complete, the tweets for each session are archived for review. By 2012, the weekly #edchat sessions had several hundred active participants and thousands of posts each week (Anderson, 2012).

The #edchat community used the hashtag more often than just during the weekly formal chats. Members of the community began to tag educational posts to Twitter with the #edchat hashtag beyond the regularly scheduled chat times, creating a resource of educational posts that grows daily. Membership in the #edchat community is open and fluid, with the conversation open to anyone posting the #edchat hashtag (Whitby, 2010).

While #edchat is the highest profile education hashtag and the hashtag most commonly utilized by educators (Carpenter & Krupka, 2014b), there are over 400 hashtags that have been cataloged for education discussion on Twitter. These hashtags cover a wide range of educational topics. Many are localized versions of #edchat, while others may address a specific subject or

age group. There are many hashtags dedicated to specific learning goals and others that address technology, administration, or library specific topics (Baumgarten, 2014a). These auxiliary discussions may have posts containing their hashtags posted at any time during the week, and many have scheduled weekly chat times similar to #edchat (Baumgarten et al., 2014).

Literature on the #edchat and other hashtag communities has primarily detailed use and anecdotal reports of the benefits of community participation. Teachers are encouraged to participate in the Twitter hashtag communities to find resources for their classrooms and grow their personal learning networks (Holmes et al., 2013). From these networks they can not only glean knowledge to improve their teaching and learning but also find an empathic support community that understands the stresses and victories of educators and lends support and comfort (Forte et al., 2012).

Looking at a small sample of tweets to the #edchat and #edtweet communities, researchers saw a majority of the tweets contained links to web resources and commentaries and news articles with a small percentage containing comments about teaching or invitations to communities. By using the hashtags to pare down tweets, collegial and non-education related tweets were eliminated in the sample. Supportive and purely conversational tweets took place outside the hashtag community, suggesting that the hashtag communities permeated beyond the interactions strictly around the chosen hashtags (Holmes et al., 2013).

Forte and his associates' extensive studies (2012) of the #edchat and related hashtag communities used interviews, surveys, and content analysis of 2,000 tweets to better understand the community. Most of the educators participating in the study made connections primarily outside of their schools and systems, though these educators reported their endeavors to encourage their local colleagues to participate in the community. These teachers used hashtags to

find resources information and resources elsewhere on the internet (Forte et al., 2012). The education community more actively shares links to outside sources than the Twitter community as a whole, as studies have shown URLs generally appear in under half of all tweets (boyd, Golder, & Lotan, 2010). Modeling best practices for students on social media was a recurrent theme in the community discussion, as well as the policy barriers to social media use (Forte et al., 2012).

Summary

Social networks, both online and offline, generate social capital, which in turn creates opportunities and actions for the members of the network. Social capital can be of two varieties: bridging social capital brings together those members of the network with only tangential ties; and bonding social capital which strengthens the existing relationships among members of the network. The ties between members of the network that know each other primarily through other members of the group are known as weak ties and are the mechanism through which information is spread throughout the network. The social capital generated by the relationships and the ties among the members of the network may create tangible results, including the formation of a Community of Practice where the mores, values, and best practices of the network become the part of its language of discourse. Twitter is the location where educators are meeting and interacting online in large numbers, unlocking the potential of the platform as a generator of social capital and an electronic and geographically decentralized Community of Practice.

CHAPTER III

METHODOLOGY

The purpose of this qualitative study was to explore the activities and interactions of the community of educators who use Twitter hashtags such as #edchat as a tool to build communities for improving teaching and learning, and discover how participation in this community benefits its members and the education community as a whole. Special attention was paid to the generation of social capital, the permutation of strong and weak ties and the ways the educator community on Twitter fits the definition of a community of practice. This research used qualitative methods including survey and field observations of posts by educators on Twitter. IRB approval for the collection of Twitter posts and the dissemination and collection of responses to the survey instrument for this study can be found in the Appendices (see Appendix A).

Setting

This study explored interactions of an online community, specifically the education community on Twitter. To observe their interactions, public posts on Twitter containing the education specific hashtag #edchat were studied. The hashtag #edchat is used to denote conversations regarding the practice of education on the Twitter platform and has received as many as 2.5 million posts a week. Six days a week the conversations have no predefined topics beyond that of education. On Tuesdays, predetermined topics are discussed at two different times. So that these predetermined topics did not influence the posts collected for this study, Tuesday posts to #edchat were not considered. An electronic survey was circulated containing

the #edchat hashtag, allowing for the collection of data on the actions in and perceived benefits of participation in the Twitter community for a convenience sample of educators.

Participants

The participants in this study were participants in the education community on Twitter. To participate in the community, Twitter users only need to include one of the commonly used education-based hashtags in their tweets. This signifies that the user is participating in a public discussion of education. For this study, the most popular general education hashtag, #edchat (Carpenter & Krutka, 2014a), was studied. A total of 1,486 posts containing #edchat were collected during the collection window. These posts were either original posts from or retweets of 1,333 individual Twitter accounts. A survey instrument was also circulated within the community. Surveys on Twitter educator stand the potential of being seen by thousands of educators with hundreds of surveys returned (Carpenter & Krutka, 2014b). Despite this potential reach, for this study 27 survey instruments were returned. Generally, these communities consist of education professionals, though these hashtags are also used by other stakeholders like parents, students, and education organizations.

Twenty-seven responses to the survey instrument were collected. These were users of the platform who discovered the survey instrument after it was shared on Twitter with the #edchat hashtag. These respondents provided the data in Table 1 regarding their roles in education, as well as their experience in education and in the Twitter education community.

Instrumentation

A survey instrument was used with a sample group of participants. This instrument asked, in closed response questions, for basic demographic data, the nature of the respondents' professional responsibilities, and basic questions about their experiences on Twitter and

Table 1

Demographic Data of Survey Respondents

What is your current role in education?	How long have you had a Twitter account for networking with other educators?	How many years' teaching experience do you have?	What is your age?
Coach or supplemental instructor	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	6-10 years	30-39 years old
Administrator	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	11-15 years	40-49 years old
Post-Secondary Educator	Greater than two years	11-15 years	30-39 years old
Administrator	Greater than two years	11-15 years	40-49 years old
I teach PreK-8th grade students in a computer lab.	Greater than two years	Greater than 20 years	40-49 years old
Instructional Technology Specialist	Greater than two years	Greater than 20 years	40-49 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Secondary Educator	One to two years	6-10 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	40-49 years old
Secondary Educator	Greater than two years	11-15 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	50-59 years old
Post-Secondary Educator	One to two years	11-15 years	30-39 years old
Edupreneur	One to two years	6-10 years	40-49 years old
Student in educator training program	One to two years	Less than 1 year	20-29 years old
author and facilitator	Greater than two years	Greater than 20 years	Greater than 60 years old
Coach or supplemental instructor	Greater than two years	11-15 years	30-39 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Parent; work for education resource/TA/PD agency	Greater than two years	Less than 1 year	40-49 years old
Elementary Educator	Greater than two years	Greater than 20 years	40-49 years old
Elementary Educator	Greater than two years	1-5 years	20-29 years old
Administrator	Greater than two years	Greater than 20 years	40-49 years old
Coach or supplemental instructor	Greater than two years	Greater than 20 years	50-59 years old
Elementary Educator	Greater than two years	Greater than 20 years	40-49 years old
Elementary Educator	Greater than two years	16-20 years	40-49 years old
Secondary Educator	Less than six months	1-5 years	30-39 years old

specifically within the education community on Twitter. Open-ended questions were used to glean more in-depth and personal responses regarding their perceptions of the education community on Twitter. The survey instrument is found in Appendix B and full responses to the instrument are in Appendix C.

Data Collection

NVivo 10 Qualitative Research Software, produced by QSR International, is capable of saving tweets from Twitter on the basis of several criteria, including by hashtag, search terms, or username. Moderators of #edchat have reported that there are two million posts a week with the #edchat hashtag (Terrell, 2014b). Due to this high volume of traffic, only posts from five 1-hour windows of traffic were saved for analysis. These 1-hour windows were determined with a random number generator, first by randomly selecting a day and then an hour of that day. Tuesdays see the #edchat hashtag used for topic specific discussions for two time periods of the day (Terrell, 2009), therefore generating a more regimented and directed discourse using the #edchat hashtag. Because these Tuesday #edchat posts do not reflect the more typically anarchic nature of the conversation on #edchat, Tuesday was not included in the random days chosen for examination.

To determine if the #edchat community on Twitter met the criteria of Wenger's Community of Practice, observations of #edchat Twitter traffic for 5 random hours during a single week were conducted. On Tuesdays, #edchat participants have a conversation around a set of predetermined topics selected through community input (Terrell, 2009). Because these Tuesday chats shape the conversation of #edchat, no tweets from Tuesday #edchat were included. The numbers 1 through 6 were assigned to the days of the week, with Sunday being assigned the number 1, Saturday assigned the number 6, and Tuesday not receiving a number

assignment. A string of five random numbers was generated by the random number generating website Random.org. These numbers were between 0 and 1 and included 10 decimal places. Each random number was multiplied by 6 and then correlated to the number assignments of the days of the week. The 24 hours of the day were assigned the numbers 1 through 24. Five more random numbers were generated by Random.org and multiplied by 24, with the results determining the hour of each random day. This method determined the 5 random hours of a week where tweets were collected for coding and analysis. The selected hours were Monday, 12:00-1:00 a.m.; Wednesday, 8:00-9:00 p.m.; Thursday, 11:00 a.m.-12:00 p.m.; Friday, 7:00-8:00 a.m.; and Sunday, 4:00-5:00 p.m. Tweets from #edchat were collected during those hours in the week of February 8 through February 14, 2016, and all times were Central Standard Time.

The survey instrument was distributed using the #edchat hashtag. This survey instrument was in a digital form that was easily disseminated and submitted electronically. The instrument was posted to Twitter daily using the #edchat hashtag for the period of 2 months.

Data Analysis—Collected Tweets

NVivo 10 Qualitative Research software allows the collected tweets to be coded and sorted. A set of codes was developed through analysis of a pilot sample of Twitter posts, and the individual tweets coded and categorized. Some of these codes were later collapsed together for discussion, while other topics emerged during coding.

Demographic survey data were compiled, as were closed-ended questions, so that descriptive statistical analysis of the data could be generated. Open-ended responses were coded using a coding schema based on previous studies of Twitter education communities. Interview responses were coded in similar fashion using the NVivo 10 software. NVivo collects and captures tweets through the browser plugin NCapture (“What is NCapture?”, 2015). NCapture

may be installed on Internet Explorer or Google Chrome browsers (“NCapture Help,” 2015). A user must first use Twitter’s built-in search functionality to search for a hashtag within the browser window. After the initial search, the user may then use the NCapture plugin to capture the results of the search to import them into NVivo for coding and analysis. The number of tweets harvested by NCapture is limited by the number of tweets containing the hashtag over the proscribed times and by the constraints of the Twitter Application Programming Interface (API) that controls how third-party programs interact with the Twitter database (“Capture from Twitter,” 2015).

Content analysis of qualitative data is a reflexive process, with definitions of codes, categories, and themes adjusting as more data are analyzed and trends are discerned. As data are constantly compared between sources, in this case data from the #edchat community, the codes and categories morph to include new definitions and narratives. The data may be coded and analyzed within the purview of the original research questions, but as these questions change in light of data analysis, the data may be recoded to reflect shifts in the focus of the study brought about by the ongoing data analysis (Altheide, 1987). Through this content analysis, formalized as constant comparative analysis, the motivations and perceived benefits of the community to its members may be better ascertained and understood.

Coding

The posts were coded so the information the #edchat community shares among its members could be understood. Coding was performed with a descriptive set of codes describing the type of content that was shared within individual tweets (Saldaña, 2009). Codes were determined by collecting 247 tweets over the course of 1 hour in the 2nd week of March, 2015, and coding this pilot sample of tweets according to the type of content within the tweet or to

which the tweet linked. The pilot sample was coded to an evolving group of codes. Each tweet could be coded with multiple codes if the post or the content linked to it merited. After the tweets had been coded, they were then recoded using the developed codes and the two trials of coding compared for consistency. The coding between trials was consistent with four tweets differing in their coding between trials, and those tweets were coded with either an additional tweet from the initial coding pass, or did not include one of the multiple codes. The contextual based codes used for analyzing the tweets collected for this study were Status, Assistance, Chat Promo, Follow Friday, Memes, Question, Recommendation, Resource, Techniques, News, Reflection, Research, Student Work, and Philosophy, as shown in Table 2. A post may be coded with multiple codes, depending on its content.

Table 2

Chart of the Numerical Distribution of Collected Twitter Posts Among Codes for Study

Code	Number of posts
Follow Friday	8
Question	10
Student Work	11
Assistance	17
Chat Promo	22
Status	27
Research	30
Recommendation	59
Reflection	163
Resource	219
Memes	226
News	315
Philosophy	317
Techniques	328

Status

A status update is a simple statement about what the poster is doing at the current moment. These status updates are the variety of Twitter update that labeled the platform as shallow and narcissistic due to the ease of posting minor details about the users' lives (Douglas, 2009). While this sort of post has traditionally been very common on the Twitter platform, it is uncommon in the #edchat community. A typical update coded Status came from @GreatCitySchls: "Our academic team is working in Cleveland today on principal supervisors project. @CLEMetroSchools #Edchat #PrincipalsWhoLead" (CGCS, 2016). In this post, the account merely states that their team is working on a project. An account for Cleveland Metro Schools is tagged and the hashtag #PrincipalsWhoLead is included to draw the attention of Twitter users who participate in discussions on innovative administration in schools.

Another example of a post coded with Status was posted by the account @ShirelandCA: "Year 8 are visitng (sic) the Birmingham Nature Centre today as part of their #science focus day #edchat" (Shireland C Academy, 2016). This post from the account of an English Secondary School announces to the #edchat community that the Year 8 students went on a field trip and also includes the hashtag #science to bring the attention of the science community to the Nature Centre. One further example was posted by @herbertoneiljr: "Great discussion on school culture with our Life School assistant principals! Love the growth with this group! #sharp #impressive #edchat" (O'Neil, n.d.a). This post by a charter school administrator in Texas reports a discussion regarding school culture the administrator had with the assistant principals, as well as lauding the assistant principals with the hashtags #sharp and #impressive. These hashtags follow a Twitter tradition of hashtags being used as a form of parenthetical commentary rather than denoting a topic or subject (Biddle, 2011).

Each of these posts is typical of those coded with Status. They link to no external content and merely describe the actions of the poster or those with whom the poster is interacting. While they may include a variety of hashtags or link to another Twitter account, generally they are self-contained and foster little interaction.

Assistance

Some posts asked other Twitter users for assistance that required the other users to perform tasks of varying kinds. These tweets asked for other Twitter users to complete surveys, nominate colleagues for awards and grants, vote for projects in online competitions, retweet a message for promotional purposes, or contribute advice. An example of these tweets was posted by @jbretzmann (Bretzmann, 2016): “Anybody have a Shark Tank activity blog/template/framework we can use to get started with? Thanks! #tlap #sstlap #ell #flipclass #edchat.” The tweet is seeking examples of an activity modeled on the TV program *Shark Tank* to use in the development of the teacher’s own *Shark Tank*-based activity. Not only does the tweet contain the #edchat hashtag with the request, but the account uses hashtags to include the community that discusses “flipping” the classroom and another that works with English Language Learners. Finally, the hashtags #tlap and #sstlap bring the request for assistance to the attention of the communities on Twitter that have gathered around the “Teach Like a Pirate” philosophy of teacher and author Dave Burgess (Bearden, 2013).

Another type of assistance was requested by @ETCToolkit, the Twitter account of a Welsh website curating lessons and techniques for educators (“Enhancing the Curriculum Toolkit Provided by EEUK,” 2016). The account posted, “We would love to feature your case examples/teaching practice #LTHEchat #edchat <https://t.co/dOgOOeoWsY>” (ETCToolkit, 2016). This post links to a page at the ETCToolkit website asking for teachers to submit lesson

plans and examples of assignments to the website so that other teachers may use them. The post also includes the #LHTEchat hashtag to include those who participate in the Learning and Teaching in Higher Education chat community, a group of mostly European post-secondary educators discussing learning and teaching (Nerantzi, Beckingham, Reed, & Walker, 2016).

Another variety of a post coded Assistance was a retweet, a direct copy of another user's post, posted by @NayiDishaStudio: "RT @kristawelz: Music Educators! Take this 30sec survey on "Music Education" <http://goo.gl/forms/LOcUQuG6V0> ... #musiced @NJMEA #musiceducation @MusicEdUK #edchat RT" (Nayi Disha Studio, 2016). This tweet starts by declaring itself a retweet with the initials "RT" and the user name of the original poster, @kristawelz. The post then copies the original post by asking teachers of music to take a short survey via a Google Form. The hashtags #edchat and #musiced are included to attract the attention of their respective communities. The tweet also tags the accounts for two music education news aggregators.

A third variety of post coded Assistance was posted from the account @kyedvolution: "#kyedchat team seeking well informed participants on both sides of #charterschool fence for upcoming chat-connect if interested #edchat" (KYedvolution, 2016). The account @kyedvolution promotes improvement of student learning in the Commonwealth of Kentucky. In this tweet, the team who manages the discussion around #kyedchat, Kentucky EdChat, is soliciting educators from both sides of the political and educational debate regarding the effectiveness of charter schools to participate in a charter school discussion on the #kyedchat hashtag. In addition to the #edchat hashtag, the post also includes the hashtags for #kyedchat and the discussions around #charterschool.

Chat Promotion

Several posts were used to promote other hashtag-based education conversations. While #edchat is the primary conversation within the educator community, there are dozens of active hashtag conversations that take place at scheduled times and as an asynchronous and continuous discussion (Baumgarten et al., 2014). Those participating in these smaller education conversations will post to the #edchat conversation about their splinter communities in hopes of raising awareness within the greater educator community. For example, the account @jeremyballer posted, “Join me tomorrow night as I lead #mschat and we discuss being a leader for change. #edchat #miched” (Hyler, 2016). This post promoted the conversation #mschat, a discussion among middle school teachers, and provided the subject for the next evening’s discussion. Besides the #edchat hashtag, the user also included the #miched hashtag, used by the community of Michigan educators (“All Aboard and About #michED,” 2016).

Another post coded with Chat Promotion came from the account of @EGHSPrincipalRI, a high school principal from Rhode Island. This post stated, “Thank you to everyone at #1to1techat. Always an honor to GM the most helpful #edchat going! Thanks for sharing your insights!” (Podraza, 2016). This post thanked the participants in #1to1techat, a chat discussing topics related to the implementation of a mobile device or a computer for every student in a school or a system (McCusker & Farnsworth, 2012), for the engaging discussion the group offered. By adding the hashtag #edchat, the post was essentially advertising the quality of the chat around the hashtag #1to1techat to the members of the #edchat community.

Follow Friday

In 2009, blogger Micah Baldwin suggested that Twitter users start a tradition known as #FollowFriday, often abbreviated as #FF. On Fridays, users would post with the #FollowFriday

or #FF hashtag and suggest Twitter accounts that may be of interest to other Twitter users in their network. Educators embraced this tradition within the #edchat community and #FollowFriday posts appear in the collected posts for this study. An example of this form post came from the account of @mckinneysk: “#FF Check out @edpolicyford for the latest in applied #education policy research #edchat @TEACHheartSOUL @EdCampPSWA @teachwithsoul.” This post recommends following the account @edpolicyford for news about education policy research and tags other accounts, presumably to draw their attention to the recommendation.

Follow Friday posts can also take the form of a simple list of Twitter usernames accompanied by the hashtag #followfriday or #FF. An example of this was posted by the account @Javan_Booker, an eighth grade science teacher: “RT @Mann4Edu: More #FF @alexanderedtech @jenelisarhea @McwhorterElaine @KiddAMCMS @msstephsams @Javan_Booker @gdiane628 @mjones_melissa @WMiles15 #edchat” (Booker, 2016a). This tweet opens with the signifier “RT” denoting that this is a Retweet and then cites the original poster of this tweet, @Mann4Edu, a Texas principal. After supplying the #FF hashtag, preceded by the word “More” implying that this is one of multiple Follow Friday posts, the post moves onto a list of eight account user names that @Mann4Edu is recommending to his Followers as accounts that may be of interest. One of these accounts is that of the retweeting account, @Javan_Booker.

Memes

The concept of a meme was first posited by biologist Richard Dawkins in his book *The Selfish Gene*. Dawkins used the term to describe a small unit of cultural knowledge that lends itself to replication and repetition, a format that finds itself in vogue on many social media platforms (Zappavigna, 2012). This could be a melody, an idiom, fashion, or technical

knowledge. Because of its concise nature and perceived relevance or insight, the information in a meme quickly spreads among the members of a community (Dawkins, 1976). In modern Internet parlance, the meme is usually a short, often humorous, statement paired with an image and meant to spread rapidly, referred to as going “viral” (Solon, 2013). In the #edchat community, these memes, both as part of an image and within the text of a post, are a common way for teachers to disseminate maxims, aphorisms, and apigrams. An example of one of these posts comes from @crystaslaughter: “Start with questions instead of answers and see where that leads #edchat” (Slaughter, 2016). This post communicates a short statement regarding the mindset of an educator, but offers little else in terms of pedagogy, content, or methodology, as is typical of the posts coded Meme.

Twitter has allowed for image attachments to posts since 2011 (Milian, 2011), and many of these short aphorisms are included in the form of an image with the text displayed in a stylish or artistic manner. For example, the account @KelleyGessner posted, “My students are the most resilient people I know. #edchat #proudteacher.” This post had the image meme shown in Figure 1 attached. In addition to the image post, the tweet includes a related statement in the post itself as well as the hashtag for the #edchat discussion and a hashtag of #proudteacher included as a commentary. This post primarily propagates the maxim in the text of the image and is an example of the image memes that were coded as Meme.

Question

Some Twitter users asked their Twitter followers to provide answers to a question. These questions varied in subject and scope. For example, the account @Steph_Wilson03 posted, “What platform do you use to blog and why do you like it? #edchat #iaedchat #edtech



Figure 1. Meme containing an aphorism. Taken from Gessner (2016). My students are the most resilient people I know. #edchat #proudteacher <https://t.co/baHu8AX3X8> [Tweet]. Retrieved from <https://twitter.com/KelleyGessner/status/698143560227377152/photo/1>

#WeLeadEd” in hope of soliciting opinions on the different blogging platforms from the #edchat community as well as those discussing educational technology, #edtech, the Iowa educator community on Twitter, #iaedchat (Pickering, 2013), and the community promoting education leadership online, #WeLeadEd (“About Us,” 2013).

Others posted more philosophical questions or proposed hypothetical scenarios, such as the post by @DaringEnglish that asked, “Would you ever feel comfortable carrying a gun with you to school? #edchat #teachersfollowteachers <https://t.co/PjzHOwTE2J>” (The Daring English T, 2016). This post linked to a Huffington Post article about teachers being encouraged to bring firearms to school and asked #edchat and another community, #teachersfollowteachers, about their thoughts on being an armed teacher on campus. These interrogative tweets were coded as a Question. Posts asking for assistance were sometimes phrased as a question; these tweets coded as a question were conversation prompts rather than calls to action.

Technology Recommendation

The code Technology Recommendation was used when a post suggested the use of a piece of software, hardware, or web application. An example of this variety of post comes from the account @ICTmagic: “Superb game - kids use knowledge of coding to progress through the levels. #ukedchat #edchat <https://t.co/6L51QKEuu0> <https://t.co/DHvJW6OfUq>.” This post contains a link to a page at ukedchat.com giving a brief description of the game CodeHunt and a link to the website where the game may be played. The game requires the player to work with either Csharp or Java code to progress to the next level (Burrett, 2014). A second link attaches a screenshot of the game to the original post. The hashtag #ukedchat is included in the post to bring in the discussion among educators in the United Kingdom in addition to the conversation around #edchat.

While the post from @ICTmagic recommended a web application for classroom use, other posts recommended standalone applications for a desktop or mobile computing device. For example, @RaisethePride posted, “WeAreTeachers: 6 Ways the LivingTree App Increases Parent Engagement <https://t.co/NKs4E5yLo9> #edtech #edchat <https://t.co/IwIeXsI5Nj>” (LivingTree, 2016) This tweet links to a screenshot of the LivingTree app, as well as an article at weareteachers.com, cited within the post, describing the ways that the LivingTree app streamlines aspects of classroom communication (McFadden, 2016). The post also includes the #edtech hashtag in addition to the #edchat hashtag. The account @RaisethePride is the Twitter account of the company that creates the LivingTree app, making this recommendation a form of advertising for the application.

Resource

The Resource code was used for Twitter posts linking to online content that provided digital media or manipulables for use inside a classroom in conjunction with a lesson. This content does not necessarily provide instruction or guidance in the use of the resources, rather links to the content itself. While many of the posts that received the code of Resource were also coded with Technique because the linked content both provided a Resource and guidance on its use, the Resource code itself did not require explanation or instruction of the use of the linked resources.

For example, this tweet from the account @AusLessons (Aus Curric Lessons, 2016a) tweeted, “Social Responsibility Lesson - Paying it Forward (Film) <http://bit.ly/1844b3s> #edchat #learning #education #ausvels.” The account identifies itself as an automated feed of resources and ideas for teachers. This tweet identifies the resource as a lesson to be used to illustrate social responsibility in conjunction with the viewing of the film *Pay It Forward* (Cooke, 2013), then provides a link to the resource in the form of a Bit.ly link. Bit.ly is one of many services that evolved from the Twitter platform, allowing a URL to be shared via a tweet while using as little of the platform’s 140 character limit for posts as possible, as well as track the how the link is disseminated through social media platforms (Gupta, Aggarwal, & Kumaraguru, 2014). Finally, the tweet is tagged with four hashtags: The #edchat marking the tweet as part of the larger #edchat community conversation, as well as two more general subject hashtags tying the tweet to the subjects of education and learning. The final hashtag, #AusVELS, links the tweet to the education standards in the Australian state of Victoria [“AusVELS (the Australian Curriculum in Victoria),” 2015].

Another example of a Resource post came from @edtechnerd, the account of a Florida educator and education speaker: “18 Resources to Engage Students in Current Events – From Jen Carey <http://buff.ly/1UXKsI5> #edtech #edchat.” This post links to and cites an article by Jen Carey and provides a link shortened through buff.ly, another link shortening service (“What Does Buffer Do?”, 2016). The article provides links to resources to better engage students in a Current Events curriculum (Carey, 2016).

Technique

The code Technique was for tweets that linked to a method or strategy to be used within the classroom. One tweet coded as a Technique was from the account @studysync: “28 Reading Incentives That Really Work (via @WeAreTeachers): <http://ow.ly/Yb9Zf> #edchat” (StudySync, 2016). This tweet linked to a list of techniques a teacher could use in the classroom to motivate students to read (Tornio, 2016). The Twitter account of the website weareteachers.com was cited within the tweet before the link and the inclusion of the #edchat hashtag.

Another example of a post coded as Technique was posted by @PaulEnderle: “Teaching Students How to Justify Answers in Math <https://t.co/mYLKAA8yJe> via @TeachToInspire5 #D123 #edchat #mathchat @SheilaLettiere #STEM” (Enderle, 2016). This tweet links to an article discussing strategies for math instruction at teachtoinspire.com, a teacher resource site whose Twitter account is cited within the body of the post (Findley, 2016). The post links to the discussions around #edchat and #mathchat as well around the hashtag for #STEM, a common shorthand for education topics revolving around the fields of science, technology, engineering, and mathematics (Bybee, 2010). The post also tags another account, @SheilaLettiere, to direct the attention of that user to the post. Finally, the post includes the hashtag #D123, an

abbreviation for the Oak Lawn-Hometown District 123 (“About D123,” 2016), presumably to attract those accounts affiliated with the district.

A third example of a post coded with Technique comes from the account @BookCreatorTeam (Book Creator Team, 2016): “Digital Portfolios: Assessment in the iPad Classroom <https://t.co/63dXeNAySv> @mrsbmusicroom #ipaded #edtech #edchat.” This post links to an article at mrsbmusicroom.com, the website of a music teacher in the United Kingdom who creates content about music education and education technology that discusses methods of evaluation of digital portfolios in an iPad-centric classroom (Burgemeister, 2016). The tweet also cites the Twitter account of the article’s writer, @mrsbmusicroom as well as including the hashtags for the conversation #ipaded, a Twitter conversation regarding the uses of iPads in the classroom, and #edtech, the conversation regarding educational technology, and the hashtag for #edchat.

These examples are typical of the posts coded with Technique. All provide details on some method or procedure that takes place in the classroom or school. These techniques may outline a specific procedure or a series of best practices for an implementation.

News

News was the code used for tweets that contained links to material regarding current events in education. This material originated both at traditional sources of news and from user generated sources such as blogs. An example of the variety of tweet coded News was from the account @LuvEdTech, a middle school technology teacher, which read, “These parents are interviewing teachers for a new D.C. charter school <https://t.co/08Wj1EfiGe> #edtech #edchat” (Stiles, 2016). This tweet linked to an entry in the RSS feed from the *Washington Post* website about the founding of a new charter school in Washington, D.C. The charter was part of a

nationwide chain of charter schools with a heavy emphasis on technology integration into the curriculum and the story focused on the relationship of the school under construction with the neighborhoods it would service (Stein, 2016).

Another example of a post coded as News was posted by the account @DrHenfield: “Court Gives Deadline to Fix Kansas School Financing - <https://t.co/6Mx48k4S0B> // #edchat #scchat <https://t.co/K917TaXz2B>” (Henfield, 2016). The post links to a story at the *New York Times*, whose home page is also linked, discussing the most recent court decision regarding state financing of Kansas schools (Bosman, 2016). Not only is the #edchat hashtag included in the tweet, but the post includes the hashtag #scchat which is commonly used in conversations among school counselors (Mason, 2015).

There are several ancillary services that have grown up around the Twitter platform that allows users to curate groups of tweets. Paper.li is one of the most popular of these services, allowing users to create an automatically aggregated set of Twitter posts published online in a format meant to resemble a newspaper (Hane, 2011). Tweets publicizing this aggregated collection of tweets are also generated by this service and those tweets were coded as News. Twitter account @ILearnConnected posted an example of this variety of Tweet: “The iLearnDifferent Daily is here! <http://ift.tt/10m9sO6> #edtech #edchat #digitallearning” (Brown, 2016). The link in this tweet is generated by the service IFTTT, formerly If Then, Then That. This service allows users to connect various social media and cloud services for automatic publishing, archiving, and triggering of services (“About IFTTT”, 2015). The tweet is tagged with hashtags that indicate the collected articles are of interest to the #edchat community, as well as the ongoing Twitter conversations on educational technology and digital learning, #edchat and #digitallearning, respectively. The paper.li links were coded as News as they aggregate links

from the current day or week on the curators' Twitter feeds, becoming a Twitter equivalent to a newspaper or newsletter for their curators and readers (Robertson, 2012).

Philosophy

The code Philosophy covered tweets containing links to discussions of educational philosophy and its implementation in teaching and learning. While much of the content linked from posts to #edchat contained cursory mentions of educational philosophy, content coded Philosophy focused on the linked contents' creators' philosophies of teaching and learning. An example of this sort of content was linked to by the Twitter account @EdTech_UTB, which tweeted, "4 Things Innovative Schools Have In Common. <https://t.co/7MEAODX8bP> #edtech #edchat #utravedtech <https://t.co/1ym1hdoi49>" (EDTECH@UTRGV, 2016). The linked article at TeachThought.com was an exploration of characteristics the author saw as shared by schools on a list of 13 innovative schools published by TechInsider, as well as schools he had observed personally and defined as innovative (Wheeler, 2016). The hashtags in the tweet attach the tweet to the #edchat conversation as well as the conversation regarding education technology on Twitter, #edtech, and indicate it is part of the discussion of education technology at the University of Texas-Rio Grande Valley with the hashtag #utravedtech.

Another example of a post coded with Philosophy comes from the account @richardschwarz: "Literacy,Families&Learning: Is School Homework Useful? Or is it a Waste of Time? <https://t.co/v1Hz6VC3qH> #blogsIfollow #newpost #edchat" (Thegeekteacher, 2016).. This tweet links to a blog post on the blog Literacy, Families and Learning discussing the merits of homework (Cairney, 2016). The post contains the hashtag #edchat as well as the hashtag #newpost and #blogsIfollow included as an indicator that this article is the latest post on one of the blogs that the Twitter account user frequents.

A third example comes from the account @TechChallengeSV: “How special needs students can benefit from STEM education <https://t.co/QaI6sOSplW> #edchat” (The Tech Challenge, 2016). The post links to an article at the website of *The Christian Science Monitor* discussing the value of STEM education (i.e., science, technology, engineering, and mathematics) for special needs students. The article discusses STEM education and special needs; it neither provides resources for such instruction nor goes into detail about the techniques involved in STEM education for special needs students. The article discusses the topic in the abstract and cites the need for further research and is thus coded with the Philosophy code (Chen, 2016).

Reflection

Tweets containing links to content that involved the author reflecting on experiences in the classroom or school were tagged with Reflection. While many times these articles linked by the tweet mentioned the use of a resource or technique or cited research, the focus of the content was reflection and contemplation of the success or failure of endeavors in the classroom or school. An example of this kind of post comes from the account @eschools: “6 Assumptions That Were Killing #Reading In My Classroom <https://t.co/JplucPnotB> #edchat” (eSchools, 2016). This tweet linked to a blog post in which a secondary English and Literature teacher ruminated on the effectiveness of the way she had traditionally taught Literature (Dlugosh, 2016).

Another example of a post coded as Reflection was tweeted by the account @JandCAcademy: “Is #Teaching a #Vocation or a #Career? By Ben Aston #edchat #ukedchat @schoolsimplify <https://t.co/rojFjU83oa>” (J and C Academy, 2016). This post links to an article by Ben Aston, cited in the tweet, where he reflects on the nature of teaching as a profession

(Aston, 2016). Not only is the #edchat hashtag included, but the tweet also includes the hashtag #ukedchat, a conversation similar to #edchat but focused on United Kingdom education (“About,” 2016). The words “teaching,” “vocation,” and “career” are made into hashtags so that Twitter users searching for conversations about teaching careers would also find the link to the article. Finally, the tweet tags the account of @schoolsimprove, an account that aggregates news regarding UK education.

Research

The #edchat community also disseminates research via the Twitter platform. Many times, this research comes in the form of action research done within the classroom by teachers attempting to use a new technique or resource. Teachers do share formal research via #edchat, either summarized in other content or by linking to a journal article, and these posts were coded Research. For example, the account @DMLResearchHub posted, ““Wikipedia is more than an encyclopedia, it’s an access point.” How #collegestudents really do research <https://t.co/Bvrm9rHfOS> #edchat” (DML Research Hub, 2016). The account aggregates research regarding digital media and learning and this tweet links to an article that summarizes seven articles published in the last 3 years regarding the way undergraduate college students actually do research (Singley, 2014). Besides the #edchat hashtag, the link also includes the hashtag #collegestudents to allow those studying undergraduate education to find the link.

Another example of a tweet coded as Research was posted by the account @Refthinking: “Research papers on how tech can support collaborative learning and thinking skills. <https://t.co/7RfM0L7UQh> #research #edtech #edchat” (Reflective Thinking, 2016). This post links to a page at reflectivethinking.com, the website of the posting account, where academic literature on the use of technology facilitated collaboration is aggregated (“Research and

Development,” 2016). The post includes the hashtag #edchat as well as hashtags for #edtech and #research.

A third example of a post coded with the Research was from the account @ziegeran: “Making Action Research Work <https://t.co/CZLVYT5mCx> #leadupchat #edchat #suptchat <https://t.co/xLIgr5lydq>.” This post links to an article by the account owner on the topic of performing action research, complete with citations from the literature regarding action research (Ziegenfuss, 2015). While the topic of the post was action research, this post was coded as Research due to the summarization of the literature included in the linked article.

Student Work

Several teachers used #edchat to share work of their students and these posts were coded Student Work. A post from @BMSGator reads, “STEAM Drone Takes Flight <http://goo.gl/fIz1mM> @brimmerandmay @BrimmerArts #STEAM16 #edchat #scichat” (The Gator, 2016). This tweet links to video showing a school club launching a drone to film school events. The tweet tags two other accounts used by the school as well as utilizing the hashtags for #edchat, #scichat, a hashtag used by science educators, and #STEAM16, denoting STEAM curriculum (Science, Technology, Engineering, Arts, and Mathematics) in the year 2016.

Another example of a post coded as Student Work was posted from the account @Sbrnwg: “RT @dayankee: Getting ready for the Idea Showcase on Tuesday! #geniushour #tlap #wgsdchat #edchat #moedchat <https://t.co/O8xOcfNuEH>” (Sbrnwg, 2016). This post starts with the identifier “RT” signifying that the post is a retweet, or a verbatim reposting of another tweet, and the post cites the account of the original post, @dayankee. Included in the post is a picture of a student project on a tri-fold board and the post states that the school is preparing for an upcoming Idea Showcase. Multiple hashtags are included besides #edchat, including the hashtag

for Missouri EdChat, #moedchat (“#MOedchat Home,” 2016), the aforementioned hashtag for the community that embraces Dave Burgess’ *Teach Like a Pirate* book series, #tlap, and the hashtag for the Webster Groves School District in Missouri (“Our First #WGSDchat,” 2015). The post also includes the hashtag #geniushour, referencing the educational trend of giving students time to pursue their own ideas, interests and passions (Juliani, 2014).

Retweet

The most commonly used code was that signifying the post was a retweet. Retweeting, a verbatim reposting of a tweet by another Twitter account, is common in most Twitter-based conversations. The act of retweeting gives a sense of community to the asynchronous conversation of Twitter (boyd et al., 2010), and #edchat has embraced this convention. An example of a post coded Retweet comes from the account of @govs70: “RT @curriculumblog: Carol Ann Tomlinson on Formative Assessment #edchat <https://t.co/ZyVaCAVw95>” (McGovern, 2016). This post begins with the signifier “RT.” This is an informal way of signifying the post is a retweet and is a user convention to indicate the entire post is a quote of another post (“FAQs About Retweet (RT), 2016). The original poster, @curriculumblog, is cited before the text, hashtag, and link from the original post. A total of 788 accounts retweeted posts in the time frame of the study, and these posts were originally posted by 293 different user accounts. Of the sample of 1,486 tweets, 931 were retweets.

None of these posts were coded exclusively with the Retweet code, but were also coded into the codes that matched the original tweet. For example, user @BAMRadioNetwork posted, “Project-Based Learning: Underestimated or Overvalued <https://t.co/qXaCl8LyLi> #edchat @tomwhitby @MsAmberChandle” (Education Radio, 2016). This tweet linked to an internet audio interview with Tom Whitby and Amber Chandler, both tagged in the post with their

account name, where they discussed Project Based Learning and its value as an instructional method. The tweet was coded with the codes Online Content Promo since it was promoting content found on the internet, Philosophy due to the inclusion of discussion on the classroom philosophies of the hosts and how Project Based Learning fit into their philosophies, and finally Techniques, because the conversation touched on methods of implementation of Project Based Learning effectively. The account @ACEPatterson (Patterson, 2016) retweeted the post 11 minutes later and this post was also coded with the Online Content Promo, Philosophy, and Techniques codes, as well as coded as a Retweet.

Multiple Codes

Many tweets were coded with multiple codes as was the post from @BAMRadioNetwork. These posts linked to online content that fell within the parameters of more than one of the defined codes. Another example of a post that received multiple codes was from @ortagisd, which said, “Technology (and Its Implementation in Schools) Is Widening the Opportunity Gap <https://t.co/U9RZ9WarVy> #gislearning #edchat.” This post linked to a story on the EdSurge website about how Technology and the Digital Divide as seen in schools is depriving students in poorer schools and systems of opportunities for college and career. This article broached some current events and opinions reporting regarding some poorer schools and systems, as well as explored some of the philosophy of teaching and learning embraced by the author. These factors caused the original tweet to be coded with both the News and Philosophy codes. This multiple coding was common among posts that linked to external content, as many of the online media entries linked to by tweets were more expansive in scope than coding by a single code would allow.

Another example of a post that received multiple codes was posted by the account @TeacherToolkit (<https://twitter.com/TeacherToolkit>), but collected for this study as a retweet from the account @PearlOchreRose: “RT @TeacherToolkit: Verbal Feedback Stamp Madness! <https://t.co/5Hc52gbSTn> > Do you do it? #edchat #ukedchat <https://t.co/FPIY276eAZ>” (Schofield, 2016). This post was coded into three codes. First, the post was coded as a Retweet since it was a verbatim copy of the original post by @TeacherToolkit with only the signifier “RT” denoting a retweeted post and the citation of the originating account added to the post. One of the shortened links included in the post redirects to a news article at teachertoolkit.com and the other points to an image illustrating the post. The linked article deals with the use of a stamp for student work that stated “Verbal Feedback Given” and this stamp is shown in the linked illustrating image. The article itself discusses the use of this stamp on student work to denote a conversation has taken place with a student regarding their assignment. While the article itself is editorially against the use of the stamp, it does explore the reasons why such a stamp is used in the classroom, causing the post to be coded as Philosophy (McGill, 2015). Since the use of such a stamp to denote a discussion has taken place is the implementation of a method in the classroom, the post was also coded with the Technique code as well. The post also included the hashtags for the conversation #ukedchat as well as the code for #edchat.

A third example of a post coded with multiple codes was posted by the account @richtheteach: “Ever wanted to create interactive collaborative timelines with your students? #elearning #timelines #teach #edchat <https://t.co/SwGisKfAz8>” (Poth, 2016). This post links to a YouTube playlist where the video creator explains how to make interactive timelines with students in the classroom. The YouTube page for the playlist provides an extensive set of links for creating interactive timelines while the videos themselves not only explain how to create the

timelines but also how they may be utilized with students in the classroom (AT Tech Edu, 2016). Because the linked content provides not only tools to create the timelines but suggestions of classroom methods for their use, the post was coded as both a Resource and a Technique. Besides the #edchat hastag, the post also includes the hashtag for #elearning, #teach and #timelines.

Categories and Themes

After the initial coding of the sample posts, the codes were reviewed and sorted into categories for discussions. Some codes were combined with others for a category while other categories of posts emerged during coding. The categories of posts used for discussion were Status, Assistance, Chat Promotion, Follow Friday, Memes, Question, Recommendation, Resource, Techniques, News, Reflection, Research, Student Work, and Philosophy. From analysis of these categories of posts, themes that echoed the literature were highlighted and discussed. These themes included Active Learning, Continuous Learning, Online Resource Sharing, and Global Interaction.

Data Analysis—Surveys

The survey instrument was generated to allow exploration of the perceived use and value of participation in the education communities on Twitter beyond the actions in the communities observed in the collected posts to Twitter of the #edchat community. Respondents were asked to define their role in education, giving the respondent multiple choices as well as the opportunity to self-define their own role. The respondents were also asked about the amount of experience they have in education as well as the length of time they had used Twitter to network with other educators. The age of respondents was also collected to determine if there were trends in the survey respondents' Twitter activity in relation to their age.

The survey gave the respondents a list of common activities within the #edchat community on Twitter, such as sharing and resharing resources, following links to others' shared resources, engaging in professional dialogue with individual educators on Twitter, participating in scheduled Twitter chats using a hashtag, and seeking assistance from other educators on Twitter. The respondents were given the option to classify how often they participated in these activities across five categories: Daily, Regularly, Often, Sometimes, or Never. Respondents were also asked a multiple-choice question regarding their offline relationships with the educators they interact with on Twitter and if these interactions took place exclusively online or if these interactions also had a face to face component. The survey instrument also asked respondents to describe the benefits they receive from participation on Twitter as a professional educator. Respondents were provided several choices about the kinds of interactions and information shared on Twitter by educators and could choose as many as applied or provide their own response.

Two open-ended, free response questions were included in the survey. The first of these addressed what the responding educators viewed as the primary benefit of their professional interactions on Twitter. The second of these questions addressed the perceived value participation in the education communities on Twitter had on the respondents' classroom, school, and system. This allowed respondents to self-report the perceived value of the network to themselves and their communities in their own words.

The survey adhered to many of the principles of online surveys advanced by Dillman (2007). The survey began with a welcome screen that explained the nature of the survey, the researcher's name and University advisors, and relevant contact information in adherence to the standards of the University of Alabama Institutional Review Board. Questions were broken

down into groups of similarly themed questions and each subset of questions had its own page on the survey with a graphic denoting how far along in the survey the respondent was at all times. Radio buttons were used instead of dropdown menus to allow respondents to easily see all of the answer choices. Open-ended questions were used sparingly and respondents were not required to answer all questions to proceed. These design choices allowed respondents to complete their surveys with greater ease as well as insured that they were kept informed of their status in the process (Dillman, 2007).

Survey responses to demographic and closed-ended questions were presented graphically for analysis. Open-ended questions were divided by common themes. The gathered survey responses were then analyzed through the lens of Wenger's Community of Practice. Elements of the three components of the community of practice, domain, community, and an emerging set of knowledge and norms, were sought and documented from the survey data.

CHAPTER IV

RESEARCH FINDINGS

The purpose of this qualitative study was to explore the activities and interactions of the community of educators who use Twitter hashtags as a tool to build communities for improving teaching and learning, and discover how participation in this community benefits its members and the education community as a whole. To view the #edchat community on Twitter through the lens of a Community of Practice, as well as determine if the community is generating social capital through an extended community held together through the strength of the ties among its members, the community's activities were observed and analyzed. By collecting and coding the tweets containing the #edchat hashtag, the actions and interactions of the group were studied and evaluated. For this study, the #edchat tweets were collected and coded with NVivo 10 Qualitative Research Software. These posts were examined to determine if the discussion using the #edchat hashtag had the characteristics of Wenger's Community of Practice: domain, community, and shared methods and values. Data from the collected survey instruments were also analyzed for these characteristics and the respondents' perceived activity on #edchat conversations as well as their perceived value to the respondent. Full responses to the survey instrument may be found in Appendix C.

Captured Tweets

Posts to Twitter containing the #edchat hashtag were collected from 5 randomly selected hours over the course of 1 week. No hours from Tuesday were part of the random selection due to the formal topics chosen for discussion using the #edchat hashtag every Tuesday (Terrell,

2009). Days were numbered with Sunday being 1 and Saturday being 6, with Tuesday not being assigned a number. Hours of the day were assigned a number between 1 and 24, with 12:00-1:00 a.m. assigned the number 1 and the numbers running sequentially until 11:00 p.m.-12:00 a.m. assigned the number 1 and the numbers running sequentially until 11:00 p.m.-12:00 a.m. assigned the number 24. The hours were Central Standard Time, the time zone of the research. Ten random numbers were generated using the random number generator function within a Google Sheets spreadsheet. The first five numbers were multiplied by the number 6 and then rounded up, generating a random whole number between 1 and 6. This number was then used to choose a day Sunday through Saturday, excluding Tuesday. The second set of randomly generated numbers were multiplied by 24, and the product rounded up to the next whole number, generating a random whole number between 1 and 24. This number was used to choose the hour of the day. These five random hours were: Sunday, 4:00-5:00 p.m.; Monday, 12:00-1:00 a.m.; Wednesday, 8:00-9:00 p.m.; Thursday, 11:00 a.m.-12:00 p.m.; and Friday, 7:00-8:00 a.m. During the week of February 8-14, 2016, posts to Twitter containing the hashtag #edchat during the randomly chosen hours were collected using NVivo 10.

NVivo collects tweets using the proprietary Chrome extension NCapture. A user may search Twitter for a hashtag, a user, or a search, and then launch the NCapture extension. The extension then creates a proprietary file in the NCVX format that begins to collect posts that match the search criteria retroactively from the time the search is performed (“What is NCapture?”, 2015). NCapture does not capture 100% of the posts of the search but is limited by the restrictions of the Twitter Application Programming Interface (API), which does not allow for total scraping of the Twitter database. The total number of posts captured depends on several factors, including the total number of posts that meet the search criteria available and the load on

Twitter’s database servers at the time of the capture (“Capture from Twitter,” 2015). NCapture collected 1,486 posts with the #edchat hashtag during the 5 selected hours (see Table 3).

Table 3

Chart of the Distribution of Collected Twitter Posts During Collection Windows

Collection Window	Number of Posts Collected
February 8, 2016 12:00 - 12:59 AM CST	172
February 10, 2016 8:00 - 8:59 PM CST	319
February 11, 2016 11:00 - 11:59 AM CST	461
February 12, 2016 7:00 - 7:59 AM CST	246
February 14, 2016 4:00 - 4:59 PM CST	288

Of the 1,486 tweets, 555 posts were original posts from 395 different Twitter accounts. The remaining 931 posts were retweets, verbatim quotes of other users’ tweets (Golder & Lotan, 2010) (see Table 4). These retweets came from 788 different accounts and were retweeting posts from 292 accounts. Among the three varieties of posts collected, original posts, retweeting posts, and the original posts that were retweeted, 142 accounts were active in more than one variety of post. For example, an account may make an original post within the collection window and also be retweeted by another account in this window. Accounting for the accounts posting original tweets, accounts retweeting other accounts, and accounts being retweeted, a total of 1,333 accounts were represented in the 1,486 posts collected for the study.

Table 4

Chart of Numerical Distribution of Original Posts and Retweets

Variety of Post	Number of Accounts
Original Post	395
Retweet of Post	788
Retweeted Post Source	292

The 14 coding categories used for coding the tweets collected for this study were Status, Assistance, Chat Promotion, Follow Friday, Memes, Question, Recommendation, Resource, Techniques, News, Reflection, Research, Student Work, and Philosophy. While the 14 coding categories grew organically from analysis of the captured posts, several of the codes were similar enough in their content to be discussed together. For example, the codes Recommendation, Resource, and Techniques all involved endorsing of tools or strategies within the classroom, either by an explicit endorsement or the implied endorsement of the sharing of the resource. While Questions and Assistance existed separately as coding codes, both are asking the #edchat community for advice, opinions, or action. The codes Chat Promotion and Follow Friday are both used to recommend Twitter content of interest to others in the #edchat community, though in different ways.

Just as multiple codes were collapsed into a single theme for discussion, some posts merited discussion apart from the original codes. For example, most of the posts recommending tools or strategies linked directly to digital content or tools on the internet. A subset of these posts recommended non-digital resources, meriting exploration of the variety of offline content and resources shared via the #edchat hashtag. Some posts captured were from posts that self-identified as representing a commercial entity. These commercial posts reflected varying strategies of promotion and community engagement, requiring exploration of these posts on their own. The large percentage of posts that were verbatim reposts of other #edchat content invited further exploration of the information that the community retweets. The 14 original coding categories evolved to a slightly modified set of categories for the purpose of discussion: Status, Questions and Assistance, Chat Promotion and Follow Friday, Student Work, Memes, News,

Reflection, Research, Philosophy, Retweet, Tools and Practices, Offline Content, and Commercial Posts.

Of the 1,486 posts, 1,205 used the Twitter feature to allow users to attach location coordinates to the post. These data could either be that of an original post or that of a retweeted post. Of the 1,205 locations, there were 258 unique locations listed as the geographic origin of the post. These locations, visible as latitudinal and longitudinal coordinates through Twitter, were plotted on a map to generate Figure 2.

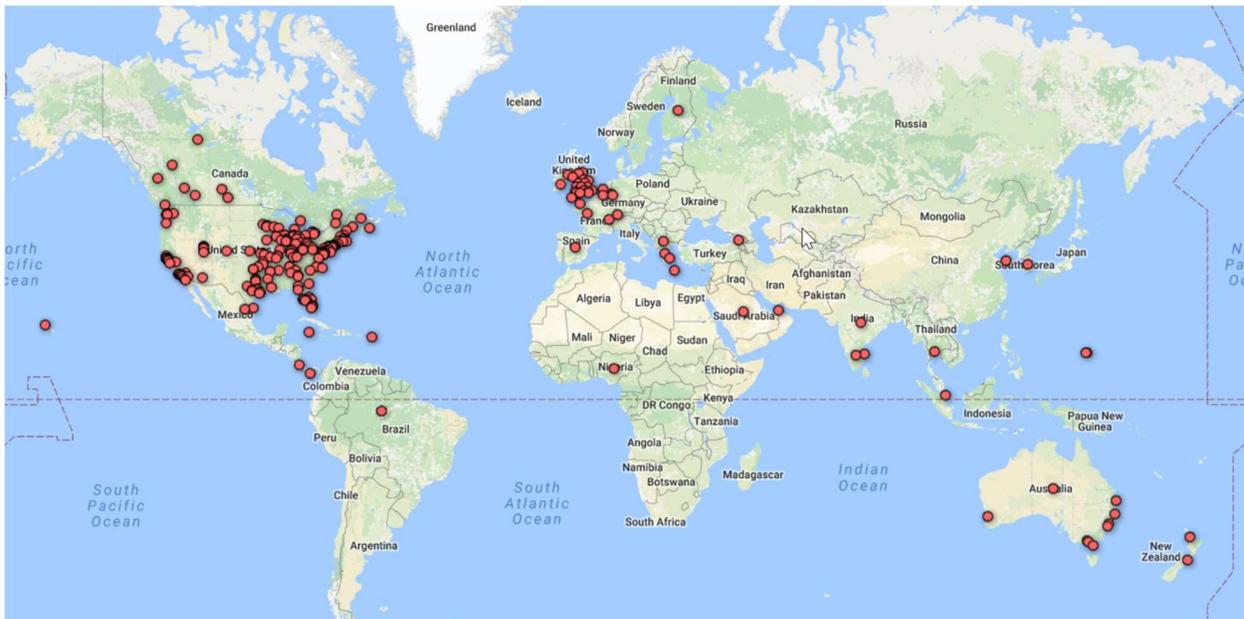


Figure 2. Map of #edchat sample participants.

This map shows that posts during the sampling window came from every populated continent, though predominantly from Western Europe and North America. North American-based posts were primarily from the United States and Canada, while European posts were primarily from the United Kingdom. Asia was represented in the sample primarily in the Arabian Peninsula and Indian Subcontinent. Australian posts clustered in its densely settled western coastline. The sample captured one post each from South America and Africa. While these locations may be

from all over the globe, they represent predominantly English-speaking populations. The single point in Africa is from the nation of Nigeria, an English-speaking nation (“About Nigeria,” 2017) and several of the posts collected from Asia originated in India, a nation where English is the “defacto national language” according to *The New York Times* (Joseph, 2011). English is the most commonly used language on the internet, many times inhibiting the access of individuals not fluent in English to internet resources (Pearce & Rice, 2014). The overwhelming dominance of English-speaking nations in the declared location of #edchat participants, coupled with the finding that not one of the captured posts were in a non-English language, suggests that English may also be the de facto language of #edchat and #edchat requires a level of English fluency for active participation.

Status Posts

The status update is viewed by many as the standard post to Twitter and other social media, detailing what the poster is doing at that particular moment (Braun, 2007). Twitter itself lends credence to this notion, using the prompt “What’s happening?” in the dialog box where posts have been created since 2009 (Stone, 2009) and frequently using “It’s what’s happening,” “See what’s happening,” and “What are you doing?” throughout its promotional copy (Qu, 2016). These posts typically are seen as a reporting of the minutia of the life of the poster and are frequently cause for derision of Twitter in particular and social networks in general as narcissistic and solipsistic (Douglas, 2009).

Status posts were uncommon in the research sample of Twitter posts to #edchat. Only 27 of the collected #edchat posts, less than 2%, were simple status updates. These posts generally reported the posters’ participation in education activities or reporting the general mood or activity of a school or system. Generally, these posts were reporting positive emotions and

enthusiasm. For example, the account @herbertoneiljr posted, “Our Assistant principals have me fired up today! Yes! #lovelearning #energy #schoolculture #edchat” (O’Neil, n.d.b). Another positive Status post came from the account @rmjohnson45, stating, “Running a program like @NewtechhighCFE can be draining, but amazing to hear from and work with educators across the globe! #pblchat #edchat” (Johnson, 2016). These status posts and the others like them showed a public face of enthusiasm and pride in the posting accounts’ schools, classes, and programs.

Even those Status posts that had elements of negativity or complaint generally sought to identify or correct issues more than just simply voice a complaint. The account @kossakovsky posted, “Yes, I caught a student cheating today, not the first time, probably not the last. detention (sic) is a horrible plan for any student #EdChat” (Kossakovsky, 2016). While this post did lament the fact a student cheated, it also stated that the punishment of detention is not optimal. A status post by the account @mish2ne1 stated, “Our work will not be done until we have 100% engagement per Dr. Adams @Simonometry @DrAdamsCVUSD #edchat,” citing advice offered by a superior regarding goals the educator should have to be an effective teacher. Even when the status post was not used to convey enthusiasm, it was used to communicate the job ahead and look for the root causes of issues rather than just to complain or lament.

While Status posts were a small percentage of the collected posts, they helped define the domain of #edchat, one of the three elements of the Community of Practice. Mentions of teaching, students, and schools can be found throughout the #edchat posts, helping to define the domain of #edchat as education. The broad goals of education as well as the minutia of the day-to-day lives of teachers are covered in status posts. These status posts also revealed some of the shared methods and standards of the community. For example, the aforementioned status post by

@mish2ne1 communicated the need to facilitate student engagement. This is an illustration of one of the shared standards of the community, where student engagement is a key to learning.

Memes

Dr. Richard Dawkins (1976) defined a meme as piece of cultural information that easily finds spreads throughout a community, society, or population. In the age of social media, this term became a shorthand for small pieces of media, easily copied and disseminated through the internet (Díaz & Mauricio, 2013). In the #edchat community, these tend to be aphorisms or maxims, either presented as the text of a Twitter post or as text layered over a related or artistic image (Veletsianos, 2016).

Image based memes and text maxims are popular in the #edchat community. Of the sample set of #edchat posts, over 15% were links to these inspirational, informative, or humorous short observations. Many were retweeted several times during the collection period, illustrating the ease with which memes are propagated. For example, the account @aaron_hogan tweeted an image created from another user, @sylviaduckworth, in his post that read, “Success is an iceberg by @sylviaduckworth #leadupchat #edchat” (Hogan, 2016). Attached to this post was the image seen in Figure 3 illustrating what people see as success and the labor that goes into that success remaining unseen. This post was shared at 3:42 P.M., Central Standard Time, on February 14, 2016, 18 minutes before the collection of posts began for the 4:00 hour that day. A total of six retweets of this post were collected by NVivo during that hour.

Text based memes were retweeted with similar frequency and ease. The account @garystager posted, “Data is a narcotic that soothes school leaders who choose to sit at their desk, rather than next to a student. #edchat” (Stager, 2016) 42 minutes before the collection

window began on February 14. During the collection window, NVivo captured five retweets of this post.

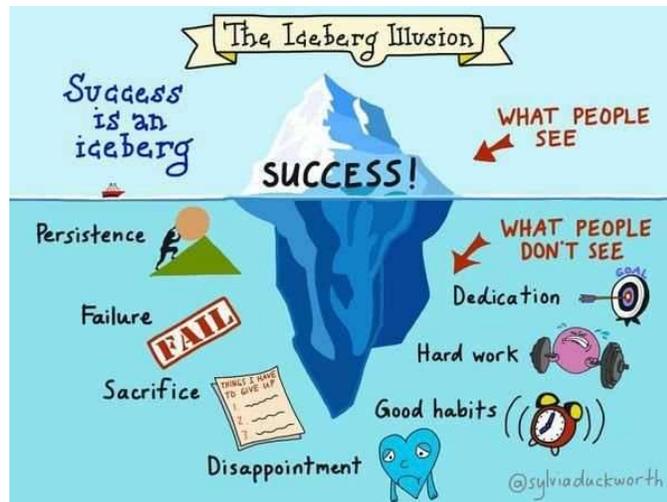


Figure 3. A highly retweeted image meme. Taken from Hogan (2016). Success is an iceberg by @sylviaaduckworth #leadupchat #edchat <https://t.co/NSiqQnO2wr> [Tweet]. Retrieved from https://twitter.com/aaron_hogan/status/698985591745159168

Memes and maxims that are shared in the #edchat community may deliver a clever maxim that has educational ramifications, as in the post by @garystager. In this post, the current reliance on student data is seen as an easy way out for administrators who do not work with students. Another example of this variety of meme captured within the sample of tweets came from the account @TerraTarango: “Friendly reminder: giving assignments is not the same thing as teaching. #edchat #tlap #edbeat #k12 #satchat” (Tarango, 2016). This post also encourages greater interaction with students, this time in lieu of simply making assignments, just as the post by @garystager encouraged greater student interaction by administrators.

Some of these educational maxims and memes use humor to communicate a point about teaching and learning. For example, the account @curriculumblog posted “Coaching shorts have changed. This is proof that learning space, learning goals, & assessment can change. #edchat” (Weber, 2016a) with the image of coaches in vintage school coaching gear attached, as shown in Figure

4. This post was captured, as were five retweets of this post, during the time frame of the study. The post uses humor to make its point, that education evolves and that educators should be prepared to accept the changes.



Figure 4. An image of vintage coaching uniforms used as a humorous example. Taken from Weber (2016a). Coaching shorts have changed. This is proof that learning space, learning goals, & assessment can change. #edchat [Tweet]. Retrieved from <https://twitter.com/curriculumblog/status/697603964393693184/photo/1>

Another example of an image meme that tries to make a statement about teaching and learning comes from the account @danielmccabe: “Pedagogy first, technology second. #edchat #nebedchat” (McCabe, 2016). Attached to this post was the image seen in Figure 5. This tweet and its image are to illustrate the thought process that the poster believes the educator should use to evaluate the use of technology in the classroom. Like many of these posts, neither the post itself nor the attached image go into detail, but illustrate the idea broadly and generally. During the capture window of this study, NVivo not only captured the original post, but five retweets.

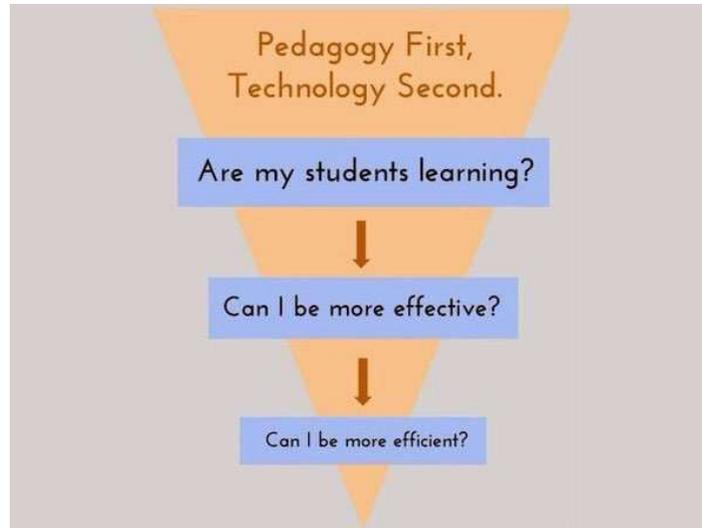


Figure 5. An image used to communicate a maxim. Taken from McCabe (2016). Pedagogy first, technology second. #edchat #nebedchat [Tweet]. Retrieved from <https://twitter.com/danielmccabe/status/697610365509726208>

Many times, the meme posts are more motivational or inspirational than related to improving teaching and learning. The account @NikkiDRobertson (Robertson, 2016) posted, “So true of my #PLN & new #METC16 friends! #tlchat #edchat #aledchat” with the image seen in Figure 6. Unlike the other meme posts, this post was captured by NVivo during the time frame of the experiment, but no retweets of this post were captured.



Figure 6. An inspirational image meme. Taken from Robertson (2016). So true of my #PLN & new #METC16 friends! #tlchat #edchat #aledchat <https://t.co/Q1Ru8zishA> [Tweet]. Retrieved from <https://twitter.com/NikkiDRobertson/status/697615162417803264/photo/1>

Another example of an inspirational image-based meme was originally posted by the account @bethhill2829. The text of this post read, “Love is the greatest filter of all. #leadupchat #edchat #leadership #positivity” (Hill, 2016) and the image in Figure 7 was attached to the post. As with the previous examples, the original post narrowly missed the collection window, being posted 7 minutes before the collection of posts began. Over the hour of collection, six unique retweets of this post were collected. Verbatim retweets may be published by an account by simply clicking the Retweet icon and then another button to confirm. The ease with which this kind of image- or text-based meme may be read, understood, appreciated, and then retweeted may lend itself to the virality of these posts.

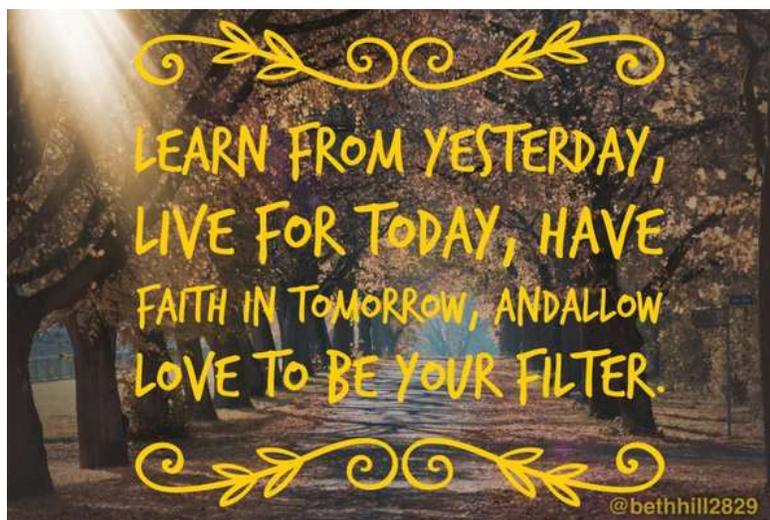


Figure 7. A second inspirational image meme. Taken from Hill (2016). Love is the greatest filter of all. #leadupchat #edchat #leadership #positivity [Tweet]. Retrieved from <https://twitter.com/bethhill2829/status/698988432928800769/photo/1>

Memes and maxims, like status posts, helped define the domain of #edchat. Within the cited memes and maxims above, pedagogy and the evolution of teaching and learning were themes. Even the memes that could be deemed motivational or inspirational reflected the field of education. For example, the meme in Figure 3 illustrated the nature of success and how it is built

on unseen work habits and persistence in the face of failure, themes common in education. The meme in Figure 7, when taken with the text of the tweet, delineated standards for positive leadership in school administration, both defining the domain and communication standards of practice for a segment of that community.

Beyond defining the domain, the memes and maxims can communicate shared values and practices as does the meme in Figure 7. The meme in Figure 5, coupled with the text of the post, communicated standards for technology integration, putting student learning as the primary concern. Even the humorous Figure 4, with its coaches in vintage shorts, is meant to communicate an acceptance of the evolution of teaching and learning. Memes and maxims allow the community to define its values in images and short text posts.

These posts also helped #edchat define itself as a community. Figure 6, upon cursory observation, appears to be a simple exaltation of the power of friendship. When coupled with the text of the post that states appreciation for the expansion of the personal learning network of the account owner and its expansion through attendance at a conference, it becomes a celebration of the community of educators with whom the account interacts.

Questions and Assistance

The #edchat hashtag is used by educators seeking advice, answers, assistance, and actions from other teachers to help themselves, their classes, or their schools to achieve goals or implement a program or platform. This call for assistance hopes to leverage the large #edchat community to tap into the collective knowledge base or mobilize a subset of the community into an action with tangible benefits for those requesting aid. In the research sample, there were only 27 posts, just under 2%, that made a direct request for recommendations or action of the community.

An example of a question posed to the #edchat community comes from the account @DaveGlasbergPHS: “What are your thoughts on students being able to ‘take a walk’ in the middle of class? #EDT400 #teachingmath #edchat #edchatme #edchatr” (Glasberg, 2016). This post asks the community their opinion of a somewhat unorthodox classroom management technique, letting a student leave class. This post is a similar in style to another post by @KurtCeresnak: “Anyone know of teachers using stand-up desks? How is it working? #edu #edchat #cpchat #elemchat #standupdesk #standingdesk #EdAdmin #Edadmin” (Ceresnak, 2016). In both cases, the poster asks the #edchat community for their opinion, one on a classroom technique and the other on classroom furniture. Neither post received an answer in the collection window. Further exploration revealed that the question regarding allowing students to “take a walk” was not answered and eventually deleted. The question regarding standing desks was answered the next day, but by a commercial classroom furniture vendor, @Focalupright, who responded: “@KurtCeresnak Educators love our standing desks and leaning seats! <http://store.focalupright.com/Seat-s/107.htm>” (Focal Upright, 2016). Effectively, the question regarding standing desks and their use in the classroom also went unanswered.

Requests for assistance went beyond requests for advice and recommendations. Some of these requests were calls to action to the #edchat community. Many of this variety of posts asked for the #edchat community to vote in online polls or complete surveys. The account @kristawelz posted, “Music Educators! Take this 30sec survey on "Music Education" <https://t.co/dwbkgiFUXA> #musiced @NJMEA #musiceducation @MusicEdUK #edchat RT” (Welz, 2016). This post asked music educators to take a short survey on the use of picture books in Music Education. The post finished with “RT,” a call for followers to retweet this post. Three minutes later, the account NayiDishaStudio did retweet this post, expanding the scope of the

post. While it cannot be determined from the collected posts if users did fill out the survey, the call to retweet was answered.

Other posts asked members of the community to volunteer or participate in activities online. The account @JaclynKarnowski posted a call for panelists in Ed Talks SF, a discussion group of educators in the San Francisco area, by posting, “working to provide transformational education opps for all students? Be a panelist with @EdtalksSf #edtech #edchat #SanFrancisco.” Another post by @SSpellmanCann attempted to raise money for a scholarship fund with the post “If you are an educator this is how you can help future educators <https://t.co/dSvhXZ3Zjh> #sccrowd #kindnessmatters #edchat #cpchat.” The account @deziel_steve posted “Rate Some Educational Videos and Inspire Your Students <https://t.co/fiLz3TKCAN> #edtech #edchat” in an attempt to increase participation in an educational video community. While these requests for assistance and questions were not common, the community did not hesitate to pass on these requests as retweets. Out of 27 posts coded as questions and requests for assistance, 8 or 29% were retweets as members of the community shared the requests of others.

Answered or unanswered, these questions and requests for assistance demonstrate the view that the conversations around #edchat are a source of best practices, standards, and support for those who use the hashtag. The proliferation of these requests through retweeting also helps define these conversations as discussion among a community. Even if a Twitter user following the #edchat hashtag cannot answer a question or provide assistance, by retweeting the original post the user has expanded the reach of the request and helped permeate the group of teachers that make up the #edchat community.

These questions also reinforce the weak ties of the community. Questions and requests may be made by #edchat participants with the most tangential of relations. There may be a

variety of relationships of accounts following each other or friends of friends. The participants may merely follow the #edchat hashtag. These questions and requests show teachers with weak ties to each other that they have common concerns and issues, and by the fact they are seeing the others' posts on these concerns, they are part of a community.

Chat Promotion and Follow Friday

Members of the #edchat community also use the hashtag to promote other, smaller communities that focus on more specialized education topics, each with their own unique hashtag. Some communities are focused on the educators in a geographical region, such as a city or state, with dozens of hashtags used both on an ongoing basis and to designate a recurring scheduled conversation (Baumgarten, 2014b). Other hashtag-based communities are based on student age groups, such as #6thchat and #1stchat for teachers of sixth and first grades, respectively. There are hashtag-based discussions for subject areas. Some of these discussions are for very broad examinations of a subject area, such as #sschat for Social Studies teachers and #mathchat for mathematics teachers. Other discussions are for a more focused examination of a subject area, such as #precalcchat for Pre-Calculus teachers and #ESCIchat for Earth Sciences teachers. There are chats for dealing with specific technology implementations in schools, such as #1to1techat for teachers in systems where every student is issued a computing device, administrator chats such as #suptchat for superintendents, and chats for a variety of intersectionality based areas of education, such as #hiphoped that explores teaching influenced by hip hop culture. There are even chat sessions that are merely meant to facilitate conversation between educators. These include #BFC530, the Breakfast Club where teachers start their day conversing with other teachers through the hashtag, and #teacherwellness, where teachers lend each other support and guidance (Baumgarten et al., 2014).

With all of these communities discussing the many facets of education, their participants attempt to publicize their favorites using the #edchat hashtag to inform educators. Twenty-two of the collected posts, or 1.5%, were attempts to promote the splinter education communities on Twitter. An example of this variety of post came from the account @jcwastler, who posted, “Join #APChat tonight at 8PM as we discuss ‘Identifying and Nurturing Passion in Education’ #satchat #edchat @NASSP” (Wastler, 2016). This post encourages people in the communities of #edchat and #satchat, a general education discussion occurring on Saturdays, to participate in #APchat, a chat taking place among Assistant Principals (Baumgarten et al., 2014), by promoting the topic of the evening, a discussion of passion for education. The post also tags the account of the National Association of Secondary School Principals to further expand the reach of the promotion.

Another post that promoted other education chats came from the account of @RoseannPetruo, posting, “Join #TBookC tomorrow night as we discuss #meditation & #mindfulness, from *The Zen Teacher*. #edchat #tlap #read4fun <https://t.co/JxIOok6Tz9>” (Petruo, 2016). The hashtag #TBookC is a discussion of education books among teachers (Baumgarten et al., 2014), a truncation of “Teacher Book Club.” This post promoted the upcoming conversation on meditation and mindfulness, both terms receiving their own hashtag, based on the book *The Zen Teacher*. The post also included the hashtag for the Teach Like a Pirate community and a hashtag #read4fun to reiterate the purpose of the conversation. Figure 8 is an image included in the post to promote conversation that included the topic questions that will be discussed in the conversation. Between the post and the attached image, #edchat users are quickly informed about the content of the #TBookC chat and when they may find the discussion occurring.

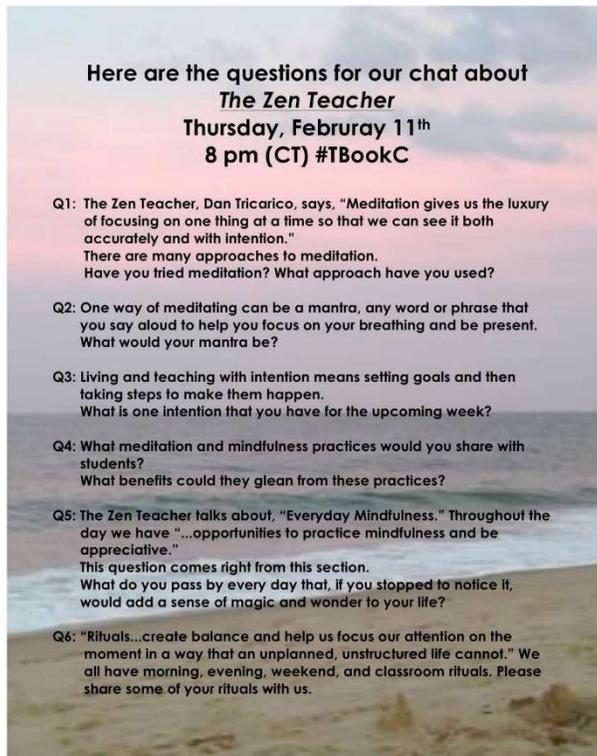


Figure 8. An image used to promote a Twitter chat. Taken from Petruso (2016). Join #TBookC tomorrow night as we discuss #meditation & #mindfulness, from *The Zen Teacher*. #edchat #tlap #read4fun <https://t.co/JxIOok6Tz9> [Tweet]. Retrieved from <https://twitter.com/RoseannPetruso/status/697613166881193984/photo/1>

Educators on Twitter do not only use the #edchat hashtag to promote other education hashtag-based chats, but some promote other users as interesting and informative, recommending that other educators follow these accounts. Many times, this is done via the Twitter convention of the #FollowFriday, or #FF, hashtag. This trend began in 2009 as users embraced both hashtags to call attention to users that may be of interest to their own followers (Baldwin, 2009). One of the hours of collection of posts for this study occurred on Friday, and in that hour, eight posts using the #FollowFriday or #FF hashtags were collected. While this is under a single percentage point of the collected posts, only 1 hour of the 5 hours randomly selected hours occurred on

Friday. These posts were, in turn, retweeted and shared throughout the community. Of the eight #FollowFriday posts collected, seven of them were retweets.

The single #FollowFriday post collected that was not a retweet came from the account of @mckinneysk: “#FF Check out @edpolicyford for the latest in applied #education policy research #edchat @TEACHheartSOUL @EdCampPSWA @teachwithsoul.” The account @edpolicyford (<https://twitter.com/edpolicyford>) was recommended to the followers of @mckinneysk, and several other accounts were tagged within the post to call the recommendation to the account of these users. Not only was this post different from the other collected #FollowFriday posts in that it was not a retweet, it was also atypical in that it gave a reason the account was being recommended. More typical of the collected #FollowFriday tweets came from the account of @Javan_Booker, retweeting @Mann4Edu: “RT @Mann4Edu: My #FF @amann4edu: @aaron_hogan @J_Stew314 @matthew_arend @MarkMccord10 @VealHeidi @heffrey @SaneeBell @TMag29 @TechNinjaTodd #edchat” (Booker, 2016b). This post is more typical of #FollowFriday posts in that it is a list of Twitter accounts with no context or description. Many #FollowFriday posts follow this format with limited information.

The posts that recommend other chats and users of interest to #edchat helped create the weak ties of Granovetter and wove together the community of Wenger’s Community of Practice. Introducing participants in #edchat to other discussions of interest allowed for individual accounts to identify those with common interests or in similar geographic regions or to discover places where they can find comfort and advice. The other communities provide a smaller conversation on a specialized education topic. Participating in these communities brings the user into communication with a new subset of the education community on Twitter, creating both weak and strong ties. Similarly, by sharing users of interest via Follow Friday posts, other users

may expand their social graph and forge more connections, solidifying the community aspect of the Community of Practice. These specialized subject communities also discuss the details and minutia of content areas and niche education topics such as curriculum and education technology, forging a set of best practices, the third feature of Wenger's Community of Practice, to be communicated to the more monolithic #edchat community.

Offline Content Sharing

Sixty-eight posts, or 4.5%, collected during the collection window were recommendations of offline content and resources. These posts directed other #edchat users to conferences, books, physical resources, and other tangible, non-digital items or opportunities. These offline education resources helped the users of #edchat solidify the domain of their Community of Practice as well as share educational touchstones to help shape their best practices. The shared resources are also social capital, a tangible benefit to participation in the community.

An example of a link to offline content was posted by the account @Edcampgcc, which posted, "#edcampgcc is April 23rd. Join us for a day of learning! Please register at <https://t.co/4X5PLBV1bq> #edchat #paedchat #edtechchat." This post, from the official account of EdCamp-Grove City College, encouraged #edchat participants to attend the EdCamp being held at Grove City College. EdCamps are an "unconference," where participants schedule breakout sessions and discussions without the meticulous oversight of events that usually accompanies a more formal conference ("Learn More," 2016).

Another link to offline content was posted by the account @letskiddovate: "DC/MD/VA educators! We hope to see you at tonight's workshop ---> <https://t.co/IWEuks5khp> #Innovation #education #edchat #teachingstrategies" (Kiddovate, 2016) This post invited teachers in the

Washington, D.C., metropolitan area to participate in a workshop focused on student feedback for innovation (“Green Acres Kiddovate Innovation in Action,” 2016). By sharing the invitation to the workshop, Kiddovate hoped to raise awareness of its products and methodology, but also lent its voice to establishing the domain, community, and best practices of the #edchat Community of Practice.

Online Content Sharing

Out of the 1,486 collected posts to Twitter, 929, or 62.7%, contained links to internet-based content hosted in locations other than the Twitter platform. These posts contained links to blogs, news sites, personal and commercial webpages, public facing LMS pages, Web 2.0 applications, and repositories of resources. Many of these posts, 342, promoted content written or published by the account posting the link. Links to online content were generally shared with merely descriptive posts, though the account posting the link sometimes would include an editorial comment.

An example of a simple shared link post comes from the account @davizizq: “Identify gifted students w equity proves difficult #education #educacion #teaching #enseñar #cpchat #edpolicy #edchat <https://t.co/XIWNubWIT5>” (Izquierdo, 2016). This post linked to an article at educationdive.com discussing the difficulties of identifying gifted students in traditionally marginalized populations (McIntyre, 2016). The tweet provided no editorial comments, merely restated the headline with informal abbreviations of several words to allow characters for several hashtags. Beyond the #edchat hashtag, these hashtags included generic educator hashtags such as #education and #teaching, as well as hashtags for discussions of education policy (#edpolicy), connected principals (#cpchat) (Baumgarten et al., 2014), and Spanish language education

hashtags to attract the attention of educators within the Spanish-speaking community, (#educacion and #enseñar).

An example of a post that included an endorsement of the linked content included in the tweet came from the account @Carmen_Restrepo: “Why Assignments Matter? Good read. <https://t.co/Q9vqqjdgKP> @ASCD #edchat #cpchat” (Restrepo, 2016). This post linked to an article at ACSD.org, the official website of the Association for Supervision and Curriculum Development (“About ACSD,” 2014) discussing the intricacies, craft, and necessity of assignments (Dougherty, 2012). The post contained the simple endorsement that followers will find this a “good read.” This is a typical short and direct editorial comment used when posting a link to #edchat. Another post that editorialized the contained link was posted by @K12Insight: “We're impressed by their focus on community and colleague engagement <https://t.co/x4XmLRjsjI> #edchat #letstalk <https://t.co/7lr6bmTneH>” (K12 Insight, 2016). This post linked to a post at the K-12 Insight blog celebrating the way the four finalists for National Superintendent of the Year engage with their stakeholders (“Top Superintendents: ‘We Can’t do This Alone’,” 2016) as well linking to a post from the account @LearningFirst (Learning First Alliance, 2016) celebrating the Superintendent of the Year finalists. While the editorial comment was longer than the two words used in the post of @Carmen_Restrepo, it was still a very basic sentiment with little context. The character limit of Twitter posts may be the cause of this minimal or total lack of editorial comments with posts containing links, leaving an overwhelming majority of these posts with links to merely restate the title of the article.

Web links contained in #edchat posts linked to a variety of content relevant to educators and were important in all three components of Wenger’s Community of Practice. These posts firmly established the domain of the community by linking to content relevant to the work and

lives of educators. By posting these links, it allowed for the community to engage in conversation around the domain. Finally, these links helped the community establish shared goals, knowledge, and best practices, all examples of social capital generated by the community. Linking to content outside of the Twitter platform was the most common type of post gathered within the collection window. Within the sample of posts gathered during the collection window, many varieties of subjects and topics were broached by the linked content. These were coded as Reflection, Research, Philosophy, News, Recommendations, Resources, Techniques, and Student Work. Much of the linked content fell into multiple codes, and received code as applicable.

Online Content Sharing: Reflection

Some content linked by #edchat posts involved reflection by an educator on teaching, learning, or administration. Reflection and mindfulness, the self-examination of one's actions and their effects, are used as a method of self-assessment and are a vital part of continuous improvement (Moon, 2013). By sharing reflective content, participants in #edchat shared content that encouraged other educators to look reflectively at their own practice as well as the role they played within their schools and systems, shoring up the domain, building the community, and encouraging reflection as a best practice of educators. Out of the collected sample of #edchat posts, 163, or 11%, of posts contained links to reflective content served from locations off of the Twitter platform.

An example of a reflective post comes from the account @MlleLofthouse, who posted, "Reflecting on how to introduce Ss to disciplinary thinking that values ALL disciplines: <https://t.co/GbzA1paQnG> #edchat @LukerKristy" (Lofthouse, 2016). This post linked to an article at loftylearning.com, a website and blog authored by the owner of the posting account,

discussing her thoughts on working with cross-disciplinary thinking for students and how it might improve their critical thinking skills. The linked article explained the author's reasoning and potential techniques for teaching students to recognize the required disciplinary thinking and implement it in problem solving (Lofthouse, 2016).

Another example was posted by the account @LearningBird, the official account of an education content provider: "How has Google affected the way students learn? <https://t.co/1nnVhP3LpJ> #teachers #edchat <https://t.co/vBblziJ5SW>" (Learning Bird, 2016). This post linked to an article posted at KQED's Mind/Shift blog discussing the author's thoughts regarding the ways efficient and effective algorithmic search changes the way we think about education and the development of the mind, as well as including the cover image from the article. In the article, the author reflected on the aspects of education that have been changed by advances in technology and pondered the ways effective search will disrupt the teaching of critical thinking and recall skills (Tan, 2016). This post served to inspire and focus further conversation among the educators of #edchat regarding the changes the information age brings to teaching and learning, part of the development of the best practices of Wenger's Community of Practice.

Another Reflection post comes from the account @MathFlashcards, an education news aggregation account that tweets links to education-focused articles around the web. The account posted a link to another education news aggregator, a web site, when it posted, "Project-Based Learning: Underestimated or Overvalued - BAM! Radio Network <https://t.co/GOYTUIXYU0> #edchat <https://t.co/LeJII4QRM>." The linked page at the aggregator activevoice.us pointed to an episode of the podcast #EdChat Radio ("Project-Based Learning: Underestimated or Overvalued - BAM! Radio Network," 2016) that featured a 10-minute conversation among three educators,

one of whom was Tom Whitby, a founder of the #edchat community, discussing the effectiveness and logistical issues of Project Based Learning. While this podcast did touch upon the techniques and methods of Project Based Learning, it was predominately the reflection of three veteran teachers on Project Based Learning in the classroom (Blair, Chandler, & Whitby, 2016). These sorts of posts allow educators on #edchat to bring a variety of web resources into a reflection on the practices within the classroom and a discussion of their efficacy and effectiveness.

Online Content Sharing: Philosophy

Many posts to #edchat during the collection window included links to content regarding philosophy of teaching and learning. These links allow debate and may provoke reflection on the way educators on #edchat view their beliefs on teaching and learning. This is not content defending its position with research, but merely educators stating or linking to corroboration of their beliefs regarding what makes an effective classroom, school, and system.

An example of a post coded with Philosophy comes from the account @LeadtoFeed: “Why school leaders need passion, compassion and soul <https://t.co/18A0DTvlaY> #edchat #leadership” (Lead2Feed, 2016). This post linked to an article at the website of *Education Week*, exploring the personality traits that make an effective education leader. The article does not cite peer reviewed literature but rather interviews education leaders as examples of the authors’ philosophies on the traits of an effective leader (Berkowicz & Myers, 2016). Posts coded Philosophy vary in form and content, but followed this model in that they advance a philosophical stance with predominantly anecdotal evidence.

Another example of a post coded Philosophy came from the account @curriculumblog. This post stated, “A thought-provoking book with a great title by @globalearner #edchat

<https://t.co/XVKJ20derB>” (Weber, 2016b). The link within this post was a link to an image of the cover of the book *Who Owns the Learning?: Preparing Students for Success in the Digital Age*, by Alan November (2017), whose Twitter account @globalearner was cited within the post. The post stated the owner of the account’s praise of the content of the book, which included, in the author’s words, “strategies that [create] a culture of the empowered self directed and collaborative learner.” As with many of the posts credited Philosophy, admiration for the mentioned, or in this case linked, philosophy of teaching and learning was provided with few clarifying details.

As with many posts linking to an online resource, a variety of media beyond written articles is linked in posts coded with Philosophy. An example was posted by the account @MasteryConnect which stated, “Hear @TrentonGoble and @NoelGomezMC discuss ‘The Standards Paradox’ in Episode 5 of Trenton's podcast series <https://t.co/ysEdBCyiK6> #EdChat” (MasteryConnect, 2016). This post recommended a podcast, citing the Twitter accounts of the hosts of this podcast episode, discussing the merits of standards based education and possible pitfalls inherent in the implementation of standards. The podcast is a nearly hour-long discussion between two educators, exploring many aspects of the standards debate, while generally believing standards to be useful in improving teaching and learning (Goble, 2016).

Online Content Sharing: News

Posts containing the #edchat hashtag during the sample window contained 315 references to current events regarding schools, systems, and education policy, 21.1% of all posts captured. Educators using #edchat as a professional networking tool used it as a platform to communicate these current events more than any other linked content. This regular stream of education news

and discussion around these events helped bring the domain of the community into focus as educators disseminate and discuss news and issues shaping education.

An example of a News post came from the account @LuvEdTech: “The freshman survey that rang alarm bells for some at Mount St. Mary's <https://t.co/8NMp19iEqM> #edtech #edchat” (Stiles, 2016). This post linked to an item in the Washington Post RSS feed discussing a survey meant to highlight freshman students who were in danger of dropping out of Mount St. Mary’s, a Catholic liberal arts University and then encouraging them to do so before a reporting deadline. This would improve the reported statistics on freshman retention through the next several years. The tactic of encouraging students to drop out of a post-secondary institution was debated heavily in the local community. The story as a whole is about a recent event in academia and touches on many topics of debate within the education community: equal access, college over career, the importance of data, etc. By posting this link, the account allowed those in the #edchat community to understand how these issues are affecting students at one particular school.

Another example came from the account @shieldsNBOA: “School lockers are trending toward extinction at schools #edchat #facilities <https://t.co/wYnjGWuYOX>” (Shields, 2016). This post linked to a news story discussing the demise of the traditional metal locker in the digital age. The post also included the hashtag #facilities to illustrate that this story discussed the buildings and amenities of school facilities. As educators are discussing what the schools of tomorrow will look like and how they will operate, a news story on the demise of the locker gives the educators information about the continued evolution of schools and the buildings they occupy.

Aggregators are software programs that collect web content into easy, consumable forms (Kugler, 2015). A service that allows for easy aggregation of posts on the Twitter platform is

paper.li, which collects posts that meet a user-assigned criteria in the form of a daily journal that resembles a newspaper in layout (McFall & Morgan, 2013). This aggregator will automatically post to Twitter its generated pages daily and many educators have leveraged this platform to aggregate the content that is important to them and repost it as a news link. Three posts generated by the Twitter accounts' linked paper.li accounts were collected for the sample. These posts were in the typical format of an automatic post from paper.li, such as the post coming from the account of @drfurman: "Furman Educational Resources Technology Newsletter is out! #edtech #edchat <https://t.co/M0ZoybuLXa> Stories via @cognii @VTurner8" (Furman, 2016). The automated post is an announcement that the paper.li has released its latest collection of aggregated Twitter posts and a link to that day's page. Two accounts with posts that were aggregated were cited within the post. While not a news story or current event, these posts aggregate all of the latest content that meets the parameters set out by the account owners and shares the content with the accounts' followers. While the typical news post shares current events and breaking news in education with like-minded professionals, further defining the domain of practice of the community, these aggregated links of news gather a wide range of content and share it as a set of links and posts, contributing to the formation and propagation of the shared professional knowledge and best practices of the education community gathered around the #edchat hashtag.

Online Content Sharing: Tools and Practices

Three codes addressed posts that provided educators with tools and practices for direct implementation within the classroom: Techniques, Resources, and Technology Recommendations. These codes allowed teachers to share tools for use in the classroom (Resources), strategies and methods to be used with students (Techniques), or to make an

endorsement for a platform, website, or application for use within the classroom (Technology Recommendation). Exactly 500 captured posts, or 33.8%, received these codes. Teachers in the #edchat community freely share the tools and techniques that they find with the community. While these codes all originally were coded separately, this sharing of information that may be implemented in the classroom is all related to the body of collected knowledge being assembled by the #edchat community and indicative that the community is a Community of Practice.

The practice of teaching involves many techniques to address classroom issues. These issues include a wide range of topics including dealing with students, teaching particular subjects or topics, increasing rigor, implementing technology, creating collaborative assignments, and many more. An example of a post sharing technique was posted by the account @HodderEd_MyDL: “Bring @Google's '20% time' to your #classroom with passion-based learning via @GuardianTeach <https://t.co/npyx1mL2B5> #edchat” (Dynamic Learning, 2016). This post linked to an article at the online version of *The Guardian* written by a New York teacher explaining the methods and techniques he is employing in his classroom to bring students’ passions into the curriculum and increase engagement (Schoenbart, 2016). Another post discussing classroom techniques was posted by the account @CompetencyWorks: “5 ways to build student #agency in the digital age <https://t.co/zUUS0g3TXz> @arinabokas @RodRock1 #competencyed #CBE #edchat” (CompetencyWorks, 2016). This post linked to an article on the posting Twitter account’s website where the authors, cited within the post, wrote about methods they have used to increase students’ sense of responsibility regarding their own education (Bokas & Rock, 2016). In both articles, methods or strategies related to a broad topic within teaching and learning were communicated to the #edchat community.

Many times, posts shared techniques for highly specific issues rather than the broad topics, such as one post from the account @FourthGrStudio: “Uncovering misconceptions about rectangles! <https://t.co/0FWE9FsupF> #elemmathchat #edchat #elemchat #4thchat <https://t.co/8y36Ew8eJB>” (Fourth Grade Studio, 2016). This post linked to an article about the teaching of rectangles to fourth grade students (Anderson, 2014), as well as including an image from the article and several elementary specific hashtags. Another narrow-focused Technique was posted by the account @deziel_steve: “Track Who Has Completed Your Form and More in the Latest Version of Google Forms <https://t.co/P3hfRK6eLN> #edtech #edchat.” This post links to an article about how newly introduced features to the Google Forms platform for data could be leveraged by a teacher in communication with students, parents, and other stakeholder groups (Byrne, 2016).

While these particular posts may link to strategies and methods relevant to a narrow band of the educator population, they nevertheless add to the body of educator-related knowledge and practices being shared via the #edchat hashtag.

Some posts contained techniques so broad and overarching that they would mean a paradigm shift for a school if implemented. While these posts met the parameters for coding under Technique, they were often more of a discussion of the philosophy behind the technique or strategy involved. These still were coded as Technique though some were also coded as Philosophy. For example, @thomascmurray posted, “Julia Steiny: Instead of School Suspensions, Let’s Listen to Kids - See more at: <https://t.co/S25NB4Aajd> #edchat” (Murray, 2016). This post linked to an article that discussed suspension as seen through a Social Justice lens. A majority of the article addressed the effectiveness and inherent biases of school suspension as a disciplinary tactic, with the last few paragraphs addressing methods of building

trust and open dialogue among students, faculty, and administration as a more equitable and effective discipline strategy (Steiny, 2016). These strategies for moving past suspension as a form of school punishment were only a fraction of the actual article, but these techniques were communicated to the #edchat community as a whole as part of the development of a system of best practices in education and a communal store of knowledge about education and the management of a school.

Posts coded as Resource differed from those coded as a Technique in that a Resource is something that may be used with students or a repository of information rather than a strategy or method to work with students in a school (i.e., a tool or library used in teaching rather than a method of teaching). An example of a Resource post came from the account @UKEdMag: “Read the archive of all our @ukedmagazines online for free at <https://t.co/jRiexCE3Q1> #ukedchat #edchat #education <https://t.co/rxRihaYWwo>” (UKdChat Magazine, n.d.). This post linked to the entire archive of the print magazine *UK EdChat* in both an embedded viewer and as a PDF (Hill, 2017), as well as to a former Twitter post the account had made to link to this archive. While the vast array of articles over the 26 issues available at the time this archive was posted covered a variety of different aspects of teaching and learning, together the archive represents a Resource for teachers to utilize.

Another example of a Resource post came from the account @PSNTPS: “Presidential Spotlight: Abraham Lincoln - primary sources & teaching resources <https://t.co/kRcNZBPzBM> #tlchat #sschat #engchat #edchat” (Primary Source Nexus, 2016). This post linked to a page of primary source material regarding Abraham Lincoln as well as lesson plans using the primary sources (“Presidential Spotlight: Abraham Lincoln,” 2014). Once again, the post has shared a

repository of material that the educators in the #edchat community may employ in their classrooms.

A third repository of resources was offered by the account @chalkupedu: “Some thoughtful #mlearning reads for your Friday. <https://t.co/fERvPd5aD4> #edtech #edchat #FridayFeeling <https://t.co/kiVAweyMJk>” (Chalkup, 2016). This post included a picture of an iPhone and a link to a page of curated resources on mobile learning, including several articles, data on mobile learning, and several Twitter accounts with a mobile learning focus (Miller, 2015). While the archive of *UKEdchat* magazines and the archive of Abraham Lincoln primary source material were both housed on a single website from a single organization, this post was a link to resources brought together from many different sites and sources but all focused on the theme of mobile learning.

Many posts were coded as both a Resource and a Technique. These posts provided a tool or information for teachers, as well as suggested strategies and methods for the use of the Resource. An example was posted by @eduspirePD: “8 Powerful Gmail Tools For Teachers - @medkh9 <https://t.co/nnQXKAYLGj> #appsforteaching #techttools #teachersandtech #edchat #classroomtech” (Eduspire, 2016). This post linked to an article about power tools for teachers using the Gmail web interface, a commonly used email program in schools that have adopted the G-Suite platform, as well as citing the author’s Twitter account and including several education technology related hashtags. The linked article not only provided a description of these new tools, a Resource, but suggested ways they may be employed in an education environment, or Techniques (Kharbach, 2016).

Another example of a post that was coded as both Technique and Resource came from the account @susanrileyphoto: “How to Build #Creative Confidence in #Kids |

<https://t.co/wrPv5i40ym> #creativity #STEAM #artsed #teaching #students #parenting #edchat #edu” (Riley, 2016). Instead of posting resources and then suggesting strategies for their use, as the post from @eduspirePD had done, this post linked to an article about strategies for increasing students’ confidence in their creative ability that includes a few resources in its conclusion (Madsen & Kretschmar, 2015).

Other posts provided resources and techniques together on more equal footing. The account @AusLessons (Aus Curric Lessons, 2016b) posted, “Design an App! A Digital Technologies Project for 4/5/6 <https://t.co/zAiDRSFdWg> #edchat #learning #education #ausvels.” This post linked to a lesson plan where students design, but do not create an app for an iPhone. Being a lesson plan, it has techniques and strategies for implementation throughout. The lesson plan itself is a Resource, and has many links to other resources throughout (Knight, 2014).

Out of the 500 posts that were coded with Resource, Technique, or Recommendation, only 55 were recommendations or endorsements. Educators in the #edchat community contributed to the collective body of knowledge, as indicative of a Community of Practice, but seemed more reticent to make an endorsement. Overt recommendation of a resource or technique may be viewed as unnecessary when posting a link would serve as a tacit recommendation. All posts coded as a Recommendation included an overt endorsement or recommendation and also received a second code. All 55 posts coded as a Recommendation were endorsements of Resources or Techniques. An example of a post coded as a recommendation comes from @LeeAraoz: “Flocabulary: Engage Your Students Like Never Before #edchat #edtech #siedchat@ Flocabulary <https://t.co/k10HdfedJY> <https://t.co/uGdYu9ajxs>.” This post linked to a blog post by the owner of the Twitter account that is an enthusiastic endorsement of the

Flocabulary website, a website and platform for the creation and dissemination of hip hop style videos to reinforce core curriculum (Araoz, 2016a). Most of the posts captured in the sample window would link to articles explaining strategies or tools or directly to a lesson plan or tool. This article is a recommendation for use of the Flocabulary site. For example, Araoz stated, “Students are highly engaged and motivated as they view and participate/interact with this awesome program” (¶ 9). These recommendations were much rarer than the implicit endorsement typical of posts that merely directed #edchat participants to these tools and strategies for the classroom. This style of recommendation is another means to propagate tools and strategies throughout the #edchat community. This sort of explicit endorsement does not seem to garner the post any special reach in dissemination, as this post was retweeted once during the sample window and only twice overall.

The posts that were coded as Resources, Techniques, and Recommendations are where the body of professional knowledge collected and disseminated by #edchat are found. Together these posts were a large percentage of #edchat traffic in the sample and were the category that contained the most retweets. This volume of retweets suggests that not only do educators actively share these tools and techniques, they actively reshare those offered by others, increasing the reach of the resources and strategies shared by other educators.

Online Content Sharing: Student Work

Teachers within the #edchat community use the platform to display student work. These posts featuring student work were rare in the sample, with only 11 posts, or less than 1%, featuring student works. These posts may be rare due to privacy regulations regarding students, but generally these posts reflected an affinity for active and creative projects already seen in the resources and strategies shared by members of the community. An example of a post coded as

Student Work came from the account of @DonWettrick: “#ConspiracyTheories lovers rejoice! 2 students are doing a podcast series #Sept11 building 7! <https://t.co/CZTzJcLbsi> #Education #EdChat.” This post linked to a YouTube channel of a student produced and hosted series exploring the conspiracy theories around the collapse of World Trade Center Building 7 (Fruitfully Honest Podcast, n.d.). The origins of the podcast, or if it was produced as the result of the assignment was not specified in the post or in the YouTube channel. The podcast is well produced and researched, inspiring the educator to promote the student-created series.

Another example of student work promoted on #edchat came from the account @brilaprojects: “Kids are natural philosophers! Watch them talk about and do #philosophy in our mini-documentary: <https://t.co/ZoWQh33eSa> #P4C #edchat” (Brila Youth Projects, 2015). The @brilaprojects account is the official account of Brila Youth Projects, an organization that provides “opportunities for youth to explore life's big questions through creative projects” (“About Us,” 2016). In the linked Vimeo video, children from several age bands discussed how they used creativity to explore philosophy. While the video is not student produced, it features students discussing and presenting their work. Once again, the student work involved the production of creative artifacts to meet learning objectives.

Online Content Sharing: Research

Educators using the #edchat hashtag share research on education using the hashtag. This education research was often from academia, but research from non-profits, think tanks, and other organizations was also shared. Sharing of research was only a small fraction of the #edchat traffic captured by this sample, with 30 posts, or 2%, containing a link to academic research. While many #edchat posts linked to articles that cited or referred to research in some way, only posts that linked to research articles or a story, post, or article specifically about a research article

or a research theme were coded as Research. One example of this variety of post was from the account of @EdPsychReporter: “Anti-bullying program focused on bystanders helps the students who need it the most: Study reports success <https://t.co/ErBrgjPeF0> #edchat” (Ed Psych Reporter, 2016). This post linked to a page at the Science Daily website containing a press release regarding a study from the University of California-Los Angeles on an anti-bullying program in Finland (Wolpert, 2016). This release detailed many aspects of the research and its conclusions regarding the success of the program.

An example of a link to research from a non-academic source was posted by the account @Irobcee: “A New Wave of School Integration #EdReform done right. #edchat <https://t.co/x6OyaTEwae>” (Croston, 2016). This post linked to research performed and hosted by The Century Foundation on charter schools and their positive effect on socioeconomic integration (Potter, Quick, & Davies, 2016). The Century Foundation describes itself on its website as a “nonpartisan think tank that seeks to foster opportunity, reduce inequality, and promote security” (“About the Century Foundation,” 2014). While this research is from a partisan source, it is educational research the original poster deemed worthy of sharing with the #edchat community. This research unites the community within the education domain, while allowing the community to help define its best practices.

Retweet

By far the most ubiquitous code used in the study sample of Twitter posts was the code for a retweet, a verbatim reposting of another Twitter post. Out of the 1,486 posts to Twitter collected for this study, 931, or 62.6%, were retweets of posts by 293 different accounts. Retweets are used to signify many things on the Twitter platform, primarily to rebroadcast and in effect amplify the original post. Retweets also may be used to communicate agreement, either

implicitly by the act of reposting itself or explicitly with a short, included comment. Other factors such as the perceived integrity or authority of the original poster and the unstated communication of some relationship with the source account also contributed to the act of retweeting a post (Boehmer & Tandoc, 2015).

An example of a post coded with the Retweet code was posted by the account @Abreckel4: “RT @justintarte: Shifting the grading mindset starts with our words... via @mssackstein <https://t.co/qIWDgLeoF9> #edchat #sblchat” (Breckel, 2016). This post begins with the RT, a convention from the early days of Twitter to signify a retweet before the act of retweeting was integrated into the platform (boyd et al., 2010), and the citation of the original poster, the account @justintarte (<https://twitter.com/justintarte>). The original post itself is sharing a chart describing vernacular to shift from a grading mindset to a non-grading one created by another Twitter account, @mssackstein, who was cited in the post. While the original post was not collected for this study, nine retweets, including the one from @Abreckel4, were captured for the study. In the collection window of this study, the account @justintarte had 17 unique Twitter posts retweeted 42 times, though no original post by @justintarte was collected. This is indicative of the way popular accounts in the Twitter education community are amplified through the act of retweeting.

Individual accounts with large numbers of retweets were not uncommon in the sample of posts collected for this study. The account @geiendorsed had four of its posts retweeted 16 times in the study sample. Another account, @weareteachers, was retweeted 24 times from 12 original posts. The account @danielmccabe was retweeted 28 times from four original posts. The account @MindShiftKQED had 25 of its original posts retweeted 71 times in the collection window. Finally, the account @wef, the account of the World Economic Forum, had nine of its original

posts retweeted 134 times, meaning 9% of all posts collected for this study were retweets of the account @wef. These highly retweeted accounts have increased reach for their network of weak ties, other accounts that are familiar with their account usernames and the material they post. The proliferation and expanded scope of the weak ties facilitated by highly retweeted accounts help create the strong ties of the #edchat community. Tables 5 and 6 show the most prolific retweeting accounts and the accounts that were retweeted the most often in the study sample.

Table 5

Accounts With the Greatest Number of Retweets of Other Accounts Appearing in the Study Sample

Account	Retweets of Other Accounts
QuestTeaching	20
AmiciSchool	11
NayiDishaStudio	9
EdTechExposed	7
tivertontutor	6
BeingExample	6
_9Sharp	6

Table 6

Accounts With the Greatest Number of Posts Retweeted by Other Accounts in the Study Sample

Account	Posts Retweeted by Other Accounts
wef	134
MindShiftKQED	71
justintarte	44
curriculumblog	33
danielmccabe	28

These accounts were retweeted at such a high rate, the content of these posts bore closer examination. The account @geiendorsed is the official Twitter account of the Global Educator Institute (GEI), an organization that evaluates education products and endorses those that they

find of superior quality with their Seal of Endorsement (“Our Mission,” 2017b). One of their posts was retweeted nine times during the collection window: “Write More. Write Better. Write More Better. <http://buff.ly/1oPJvHB> @ichrislehman #edchat @tcrwp @barbgolub.” This post provided a link to a blog post at the GEI website by Barb Golub, whose Twitter account is cited in the post, regarding the effectiveness of practice in improving writing. Two other Twitter accounts were tagged in the post, including the account of an educator quoted in the blog post, and the image seen in Figure 9 was also attached to the post.



Figure 9. An image promoting a blog article. Taken from Global Educator Inst (2016). Write More. Write Better. Write More Better. <http://buff.ly/1oPJvHB> @ichrislehman #edchat @tcrwp @barbgolub [Tweet]. Retrieved from <https://twitter.com/geiendorsed/status/701059156644597760>

Though this post was originally posted by the account @geiendorsed outside of the collection window for this study, the post was retweeted a total of 13 times, 9 of which were collected for the study sample. The blog post was short and used dialog from the Netflix series *Master of None* to illustrate the author’s point about practice and writing (Golub, 2016).

Another individual post with an even higher number of retweets came from the @wef account, the official account of the World Economic Forum (WEF), an organization based in Switzerland that aims to foster cooperation between the private and public sectors around the world to improve global conditions (“Our Mission,” 2017a). On February 9, 2016, the @wef account posted, “Where are the worst teacher shortages? <http://wef.ch/1XgldlB> #edchat #education” (World Economic Forum, 2016a). The post included a map of teacher recruitment shortfalls in the developing world and linked to an article at the WEF website exploring the depth of the global teacher shortage (Myers, 2015). This February 9 post was retweeted 70 times. This same tweet has been posted by the @wef account 11 times since the article’s posting on the WEF website on December 7, with a total of 781 retweets of all postings combined. This does not count several other accounts posting links to the same article and the retweets accrued by those posts by other accounts.

Another post by @wef had even more retweets. On February 11, 2016, @wef posted, “Which degrees give the best financial return? <http://wef.ch/1LjlfSY> #education #edchat” (World Economic Fund, 2016b). This post linked to an article at the WEF website, using data compiled by Payscale.com and originally published in *The Economist*, discussing what degrees provide the greatest return on investment (Armbrect, 2016). A total of 68 retweets of this post were captured and included in the study sample. The February 11 post was merely one of 12 identical posts made linking to this article by the account @wef, with all 12 posts retweeted a total of 801 times. Once again, this total number of retweets does not include other links to the article by accounts other than @wef and their retweets.

These examples show the way retweets can expand the reach of a post with an interesting story or image, as in the case of the post by @geiendorsed, or a strategy of repeat posting, as

demonstrated by the account @wef. An account may also attract a large number of retweets, rather than one particular post. This is seen in the retweets of the account @MindShiftKQED. During the collection window, this account only had one tweet in the collected posts. It had 25 older posts retweeted 71 times in the study sample. The original post captured read, “4 steps to start building student ownership over their learning data @edweek @LongEDU <https://t.co/LVifuSwrTi> #edchat #data #teaching” (MindShiftKQED, 2016a) The post linked to an article on the website of the newspaper *Education Week* discussing techniques to encourage students to use their own performance data to improve their own classroom performance (Long, 2016) and cited the Twitter accounts of *Education Week* and the author. This post was retweeted in the sample 12 times.

Another post by @MindShiftKQED had 13 retweets in the collection window: “What happens when teachers and students see themselves as both teachers and students? @BryanMMathers <http://ow.ly/YjbmD> #edchat” (MindShiftKQED, 2016b). The tweet, linking to an article on the Medium website discussing how students and teachers should view themselves as simultaneously in both roles (Mathers, 2016) and citing the author’s Twitter account, was posted 2 hours before the collection window. The large number of retweets spread the article beyond the narrow scope of @MindShiftKQED’s followers who happened to see the post in their live timeline. Eventually this post was retweeted a total 148 times. The post regarding student ownership of their learning data was retweeted 37 times. Both articles were linked to by many posts that were not retweets in the days following the initial tweets, pushing the reach of these articles even further into the community. One @MindShiftKQED post that was retweeted by the account @Windsandstars2 during the capture window cited two well-known educators: “RT @MindShiftKQED: 12 benefits of #creativity, including, learning to

think outside the box @SirKenRobinson @sylvia duckworth #edchat” (Phillips, 2016). The original post from @MindShiftKQED had the greatest number of retweets of any post captured during the study, with 441 verbatim retweets.

While these Twitter accounts expanded their audience through the shares and retweets of other accounts, some accounts aggregated the posts of others and published exclusively retweets, at least during the collection window. For example, the account @QuestTeaching (<https://twitter.com/QuestTeaching>), an account belonging to teacher who writes about the profession, posted 19 retweets during the sample window, while posting no original posts of their own. While no other account came close to the number of retweets as @QuestTeaching, many other accounts had multiple retweets during the collection window with no original posts. These accounts were in effect curating stories of importance and relevance for their followers. As the number of information resources available online grows quickly, the role of these laymen curators continue to grow in importance, with research finding that people who aggregate and curate articles and information represent an important factor in the spread and prioritization of information from content creators to its consumers and archivists (Milligan, Ruest & Lin, 2016). The timeline of the account @QuestTeaching is predominantly retweets, with very rare original posts. Other accounts with similar behavior in the window of this study indicated this behavior is not an anomaly for these accounts. These accounts exist as curators of the accounts they follow on Twitter, retweeting the posts they find most relevant, useful, or thought provoking to their followers. Some of these accounts are institutional, for example the account @amicischool (<https://twitter.com/AmiciSchool>), the official account of the Amici World School in San Francisco, retweets from a wide variety of sources, possibly for reference and recommendation to its own personnel. The account posted 11 retweets that were captured in the study sample.

Similarly, the account @BeingExample (<https://twitter.com/BeingExample>), the official Twitter account of the BeingExample website that promotes social change by modeling and research (“About Us,” 2014), is an account curating posts in the interest of furthering the organization’s mission. These curation accounts are not limited to organizations, with many curation style accounts owned by individuals. For example, the account @DanielleSteiert (<https://twitter.com/DanielleSteiert>) is the account of Danielle Jamieson, a Canadian school Assessment and Data Consultant. Her account not only retweets education posts from Twitter, but also shares education content from Pinterest, another social network, as well as other sites through the built-in Share mechanisms on the various websites. These Share features post their content verbatim to Twitter with attribution, similar to the retweet, but with the content originating from the external sites (Jackson, 2016). The account @DanielleSteiert had four retweets with no original posts during the collection window. By facilitating the spread of the posts being retweeted, these retweeting accounts help spread the weak ties from which the strong ties of community grow.

Commercial Posts

With the #edchat hashtag posted 2.5 million times a week (Terrell, 2014b) and followed by a substantial number of educators, advertisers have leveraged the hashtag as a platform to reach educators. There was not a code for posts that were used for marketing or advertising and while there was consideration of the creation of this code, many of these posts exist in a grey area in which it is difficult to make a definitive declaration that they are commercial posts. The post itself may be under the guise of a technique for addressing an issue rather than a more standard promotional post, blurring the dividing line between an informational post and a post that is strictly promotional. For example, the account @Huntingtodorall, a Florida franchisee of

Huntingdon Learning Center, posted, “How does your child learn best? #edchat <https://t.co/ZkRiRf8kFX>” (Huntington Doral, 2016). The link went to a page on the Huntington Learning Center website discussing models of learning styles of children (“How Does Your Child Learn Best?,” 2015). While neither the post to Twitter nor the page on the Huntington website promoted a specific program or product, they both portrayed Huntington Learning Centers as a place that understands the needs of diverse children and how to educate them. Including the #edchat hashtag lends credence to the idea that Huntington Learning Centers is a participant in the national conversation about education. A search of Twitter for the phrase “How Does Your Child Learn Best?” reveals that many locations of Huntington Learning Center have tweeted a near identical post, both with and without the #edchat hashtag.

A more traditional commercial post comes from the account @ParentMail, the corporate account of a system to facilitate communication between parents and schools within the United Kingdom. The post read, “There are now more than 400,000 parents using the ParentMail App! #edtech #edchat #mobileapp <https://t.co/ywCRFhV91z>” (ParentMail, 2016) and includes a link to an image celebrating the 400,000 downloads of the mobile app for the system. This post increases awareness of the app and messaging platform.

Advertising within the stream of a user’s social media feeds is known as native advertising, similar to radio and TV advertising where the host began to pitch a product. The flow of the media is not interrupted by the advertising, but the ads are embedded within the media (Campbell & Marks, 2015). This form of advertising within the #edchat stream is seen by consumers as a positive form of advertising, as opposed to deceptive and manipulative advertising that masks the origination of the content or requires the user to click and open multiple sites (Lee, Kim, & Ham, 2016). These native ads reinforce the domain of the #edchat,

marking #edchat as a space where educators congregate to the point that businesses find it an avenue to reach the educator community (Wojdyski, Brown, Jones, & Wang, 2016).

Themes

Several themes emerged from the collected posts to the #edchat hashtag on Twitter. While the posts themselves with the #edchat hashtag were coded, with the codes evolving to categories, these themes cut across many categories. The themes were reinforced in many of the free response questions to the survey instrument and reflected elements of the theoretical lenses of this study. The primary themes of these posts were Active Learning, Continuous Learning, Online Resource Sharing, and Global Interaction.

Active Learning as a theme emerged from the posts that fell into several categories. Memes and maxims shared by educators promoted the value of students being proactive and creating rather than just memorizing and repeating. Philosophy posts echoed these sentiments, as well as the Research participants in #edchat chose to share. Tools and Resources were focused on student creation and the fostering of student voice and choice. In many posts across almost every category, the concept was advanced that students should create and be active participants in the learning process.

Continuous Learning emerged as a theme from the Philosophy category of posts, as well as the memes shared by #edchat participants. Tools and Resource posts encouraged teachers to continue discovering to improve teaching and learning. Open-ended survey responses lauded the value of a Personal Learning Network to allow teachers to continue to develop and the “self-directed growth and learning” the #edchat network allowed. The #edchat participants valued the ability to improve their own skill set and model Continuous Learning for their students.

The Global Interaction theme emerged from posts across categories and the open-ended survey responses. Many of the survey respondents lauded the geographically diverse nature of the #edchat network on Twitter. Philosophy posts referred to the global nature of the community while Tools and Resources posts suggested ways for students to interact with other classrooms across the world. The international nature of the Twitter #edchat interactions encouraged the educators to bring this global nature into the classroom. The Global Interaction theme emerged from posts across categories and the open-ended survey responses.

The final theme of Online Content Sharing was seen across the #edchat conversations in posts that fell in almost every category. Open-ended survey responses celebrated the sharing of resources and links to content off of the Twitter platform and this appeared in a majority of posts captured for the study. Accounts existed for the express purpose of curating links to the #edchat conversations. The theme of Online Content Sharing is so ubiquitous in #edchat that it would be impossible to discuss #edchat without addressing these internet links.

Participants in #Edchat

A total of 1,166 accounts posted the 1,486 #edchat posts captured for the study sample. These include original posts from 395 accounts and retweets from 788 accounts, with 16 accounts posting an original tweet and a retweet within the study window. The 788 accounts posting retweets were retweeting from 292 different accounts. Removing duplicates from the group of accounts that posted original posts, the group that retweeted other accounts, and the group of accounts that were retweeted, a total of 1,333 different Twitter accounts were making posts using the #edchat hashtag during the study window. These accounts showed a wide range of Twitter activity, from the account @MomQuips (n.d.) that was less than 1 month old with 74 posts to the account @courosa (<https://twitter.com/courosa>) with 111,383 posts on an account

opened in January, 2007. Table 7 provides a list of the most prolific posting accounts in the study sample.

Table 7

Accounts With the Greatest Number of Posts Captured in the Study Sample

Account	Original Posts in Capture window
EducatorsRoom	12
MathFlashcards	11
curriculumblog	9
AusLessons	6
teachermarija	6
BAMRadioNetwork	6

The posting accounts were likewise varied in who they represented, with a wide variety of education stakeholder groups represented. Educators on the K-12 level were the largest declared group by far, but post-secondary educators, consultants, administrators, parents, and vendors also were active in the collected posts. The aforementioned @MomQuips described herself in her Twitter bio as “Wife. Mother to 5 under 11. Dog lover. Enjoy running, lifting weights, and eating veggies. Protector of good things.” The account @courosa identified in his Twitter bio as, “Professor of #edtech & #media, #education researcher, #consultant, #connected educator, keynote #speaker & #open scholar - Faculty of Ed., University of Regina.” Many accounts identified as teachers, such as the account @justingee69 (Endigit-Us, n.d.), whose Twitter bio read, “Teacher, political and environmental activist. My goal is to share information and media that can be used to empower our next generation in the classroom.” The account @JeffCharbonneau is that of a very experienced teacher, writing in his bio, “2013 National Teacher of the Year - 2015 Global Teacher Prize Top 50 Finalist - 2015 ASCD Emerging Leader - Chemistry, Physics, Engineering Teacher - NBCT – Dad.” Administrators were present in the study sample, an example found in the account of @bobby__dodd (Dodd, n.d.) with a bio that

stated, “Principal, @GLHSLions, 2016 @NASSP Nat'l Digital Principal Award, #EdCampLdr Ohio organizer, co-moderator #ohedchat, father, husband, #WeAreLions, #aimhigher.” Not only were local school administrators represented but LEA administrators and superintendents also were represented in the study sample. For example, the account @PaulEnderle (Enderle, 2016) stated in his bio that he is “Superintendent of Oak Lawn-Hometown School District 123 Interested in learning new things in the field of education and how to foster student success.”

Post-secondary level educators were also a strong presence in the study sample of #edchat posts. Besides the highly prolific as well as retweeted account of @courosa mentioned above, there are accounts like that of @robertoglezcano (<https://twitter.com/robertoglezcano>) whose bio stated, “Roberto Alonso Gonzalez Lezcano PhD. Researcher. Teacher in San Pablo CEU University @uspceu @epsceu.” Several accounts indicated that they were adjunct faculty, such as the account of @stevens3 (<https://twitter.com/stevens3>) who described herself as, “Systems Thinker, Dir. of Prof Learning @thesocialcore, Dir. of Curric, Inst., Assmt, Ed Tech Adjunct Professor, Inst. Coach, eMINTS Teacher, Learning Partner.”

There is no way to measure the number of accounts that follow #edchat posts without actively participating, known as lurking. By definition, these observers do not post with the #edchat hashtag, and collecting posts containing the hashtag will not reveal these accounts. Accounts that posted within the collection revealed a wide degree of activity on Twitter. The account @TechSavvTeacher (TechSavvyTeaching, n.d.) only had 103 posts at the time of the study, while the account @CelebrainLTD (<https://twitter.com/CelebrainLTD>) had 324,033 posts. During the study window, the account @wef had 2,810,360 followers while three accounts, the aforementioned @TechSavvTeacher (TechSavvyTeaching, n.d.) as well as the accounts

@KurtCeresnak (Ceresnak, n.d.) and @michaelrenee2 (Thomas, n.d.), had a meager 12 followers each.

Accounts existed for the sole purpose of curating content for #edchat. Some were curated by a human user posting or retweeting stories of interest to them, while others were curated by a computer script called a bot that can retweet news stories from a user, a hashtag, or merely post content from an internet syndication feed (Stroud, 2015). Some of these accounts will be unclear about the organization or users behind them. For example, the account @AusLessons (n.d.) (<https://twitter.com/AusLessons>) stated in its bio that it is “[a]n automated feed of #lessons, #activities and #ideas for #teachers in #Australia and the #world. Check us out and share a lesson.” The Twitter page of this account links to <http://www.australiancurriculumlessons.com.au>, a repository of lessons, curriculum, and activities. This website houses an extensive collection of teaching materials without an explicit statement regarding the users or organization that fund the website development or hosting costs. If an account did not identify as an automated curation account, it could be difficult to distinguish between a curation account and one with a high volume of retweets.

Accounts by commercial entities also participated in #edchat. Many of these are similar to the account @_iblobl (Ibbleobble, n.d.). This account’s bio represented itself as “Award-winning educational games for kids carefully assembled to aid the development of vocabulary, numeracy and problem-solving skills for children age 4+.” One of the two posts captured from this account read, “Educational iOS App's helping clever kids grow. <https://t.co/M92H3i2h4s> #edapp #edchat #edtech #elearning #STEM #g... <https://t.co/C7qWnjxmMW>.” This post linked to the iTunes page for the app Ibbleobble Clever clogs, a collection of apps produced by KidDotCo (2016), as well as attaching a marketing image for the bundle. The post also included

six hashtags to elevate the post to as many education hashtag communities as possible. The final hashtag is truncated as #g, suggesting the posting was done by a bot that cut off the end of the word. The other post by @_iblobl is another marketing post: “*NEW* Educational apps helping clever kids grow. <https://t.co/KPikXDsn0w> #edapp #ed chat #edtech #elearning #STEM #g... <https://t.co/I5gxo0UkJ6>.” This post linked to the same app bundle and the same image, with merely the marketing copy changed. This sort of link was considered spam, or unwanted mass advertising in a conversation venue, by the #edchat community (Schulten, 2011). Neither post was retweeted, though identical posts were posted by the accounts @KidDotCo (2016), the software company developing the suite of apps, and @kidd81 (Kidd, n.d.), whose bio stated he is a co-founder of KidDotCo. A review of posts from the @_iblobl account outside of the collection window indicated that this account posts this advertising for their apps every few hours, with no other content.

Other commercial accounts, however, participated in the #edchat community rather than exclusively advertising their products and services. An example of this was found in the account @Go4Schools (GoAnimate 4 Schools, n.d.), the official account of the cloud-based animation platform GoAnimate 4 Schools. This account had six retweets and two original posts captured as part of the study sample, none of which was an explicit promotion of the company’s platform. For example, one of the original posts of @Go4Schools read, “24 resources to start #teaching your students #programming: <https://t.co/Du9lZZjZPo> #edtech #edchat <https://t.co/0Dx7zYQEfC>” (GoAnimate 4 Schools, n.d.) Including a link to an article regarding techniques and tips to start a computer programming program and a picture from this article, this post and the article it linked did not mention or allude to the Go4Animate platform. While the @Go4Schools account is active, with nine posts collected within the study window, none of them were promotional and

the account activity resembled that of other aggregation accounts. This community participation as a form of advertising has become a strategy in social media marketing, allowing a company to establish a brand presence as an engaged member of the community (Palmer & Keonig-Lewis, 2009).

Other commercial accounts posting in the study window were participating in the community in a similar fashion. For example, the account @WritingwDesign (Writing With Design, n.d.), a vendor of a writing program for schools and systems that includes professional development and writing resources, made three posts within the sample. One of these posts stated, “Are robots coming to education? <https://t.co/fMdAitXiNQ> #edchat #edtech #teachers” (Writing With Design, 2016). This post linked to an article on edudemic.com about different roles that robots could play in education over the next few decades (Hicks, 2016). The post itself contained no promotion of the services of Writing With Design. The article itself was on a website unrelated to Writing With Design by an author with no obvious connection to the company. Both of the other posts made by Writing With Design were similarly devoid of obvious promotional content. Further examination of the @WritingwDesign account outside the study window revealed that the account posts primarily education-related content that has no explicit promotion of the company’s services and products. The account does post occasionally regarding its promotional monthly writing contest and frequently posts about the teaching of writing. This has grown the reach of the account, which had 98 accounts following it during the study window and just under 700 followers 1 year later.

Other Hashtags in #edchat Posts

Each of the 1,486 posts captured within the study window contained the #edchat hashtag, as this was the factor that triggered the capture. Many of these posts contained other hashtags,

linking the post to topics or other hashtag-based conversations. While these other hashtags may just denote a subject, many are other smaller and more specialized education chats on Twitter. By bringing the hashtags for the other conversations into the #edchat posts, the poster is bringing the voices and topics of the more specialized subjects into the larger community, generating bridging social capital. In the captured posts during the study window, participants in #edchat conversations used 668 other hashtags 2,506 times. Only 252 posts, 16.9%, contained exclusively the #edchat hashtag. Another 609, just under 41%, posts contained a second hashtag. The remaining 42.1% of the captured posts contained more than two hashtags with 13 posts containing 10 or more hashtags.

The most commonly occurring hashtag beyond #edchat was #education, occurring in 231, or 15.5%, of all posts. Ninety-two of these posts included only the #education and #edchat hashtags, with the remaining 139 of the #edchat posts containing the #education hashtag containing additional hashtags. Under 7% of posts containing the #education hashtag in a capture of 250 posts also included the #edchat hashtag. Posts containing the #education hashtag generally displayed news about education as a topic of discussion rather than information about education as a practice. For example, a post by @CarloPenaII read, “Public Pensions Are Killing #HigherEducation | The Report: US News <https://t.co/YtEwG9ZNV1> I #education #publicpensions” (Pena, 2017). This post linked to a public policy story related to education, specifically one regarding the management of public higher education pension funds (DiSalvo & Kucek, 2017). Another post to #education, this one by @alexjonnaert, read, “If every girl completed a primary #education in sub-Saharan Africa, maternal mortality could fall by 70%... <https://t.co/69Ghbg08w6>” (Jonnaert, 2017). This post linked to an article explaining the benefits of a quality education to young women in the developing world (Cowley, 2017). Both of these

posts are typical of those posted with the #education hashtag in a cursory examination of the traffic on the hashtag. The hashtag is typically used for education topics predominantly by non-educators to indicate articles about education news and policy, rather than the in-depth and multifaceted discussion of education that occurs around the hashtag #edchat.

The hashtag #edtech was used in conjunction with the #edchat hashtag in 219 of the sample posts, the second most frequently occurring ancillary hashtag of the sample with 14.7%. A commonly used portmanteau of “education technology,” posts containing the hashtag would be understood to discuss the implementation of technology in an educational setting. A sample of one of these posts containing the #edtech hashtag in conjunction with the #edchat hashtag was posted by the account @teachermarija: “How to Resize Videos in Google Forms <https://t.co/e3P0LDQdCj> #edtech #edchat via rmbyrne” (Patreska, 2016). This post linked to a page at linkis.com, a service that allows users to customize links and their content, including the ability to place a frame around an embedded web page with additional content (“About Linkis,” 2017). The account @teachermarija had embedded the content of an article from <http://www.freetech4teachers.com/> discussing ways to customize embedded videos within Google Forms, a platform commonly used by teachers to collect data and perform assessments.

The #edtech post of @teachermarija was a common variety posted with the #edtech hashtag in that it provided direct advice on the use of education technology. Another variety of #edchat post that also included the #edtech hashtag asked questions about the effectiveness of technology in improving teaching and learning. A post from @cseessums stated, “The #edtech industry is worth >\$8 billion. Yet do these new products improve learning? <https://t.co/yN4rIKm1rn> cc @audreywatters #edchat” (Sessums, 2016). This post linked to a news article questioning whether the multibillion dollar investment in education technology

actually improved teaching and learning. In addition to the hashtags #edchat and #edtech, the post also tagged the account @audreywatters, whose owner self-described as “ed-tech's Cassandra” (Watters, n.d.). In Greek mythology, Cassandra was cursed to have her prophesies ignored by the masses (Zajko, 1998), and presumably @audreywatters, and possibly the #edchat community as a whole, was tagged to generate debate over the effectiveness of Education Technology.

Other hashtags appeared in #edchat posts with much less regularity. The hashtag #teachers appeared 65 times in the sample and the hashtag #teaching appeared 44 times. These both appear to be used similarly to the #education hashtag, as a general hashtag indicating a topic related to teaching. Hashtags dedicated to regional #edchat groups appeared multiple times, such as #ukedchat for the United Kingdom (44 occurrences), #nebedchat for Nebraska (25 occurrences), and #aussieed for Australia (24 occurrences). Other hashtags appearing in the sample multiple times were related to subject areas or grade levels, such as #elemchat for elementary teachers (16 occurrences), #mathchat for math teachers (16 occurrences) and #engchat (29 occurrences). A total of 663 hashtags appear less than 40 times in the sample with 488 hashtags appearing only 1 or 2 times in the sample. These hashtags allowed the more monolithic #edchat community to gain exposure to more esoteric topics and the interests of smaller, more focused communities.

Survey Responses: Demographics

The survey instrument was linked in a post containing the #edchat hashtag, inviting participants in the #edchat community to participate in the study. This post was retweeted daily at various times throughout the day to attract users who were active on the platform in different time zones or times of day. These posts were scheduled using twuffer.com, a site allowing users

to schedule Twitter at specific times on specific dates. The study originally was scheduled for a week of posting the request for participation; the collection of surveys extended to 3 months in an attempt to collect more responses. After 3 months of daily posts seeking participants, 27 responses were collected. This low number could be indicative of the number of requests for participants to complete surveys posted within the #edchat channel. In one 24-hour period, March 1, 2017, a total of 28 requests for survey participants were discoverable using a search for #edchat and “survey” in the Twitter search engine and discounting results not directly asking for survey participants. While this day may not be indicative of the number of requests for survey participants in the #edchat community, a large number of requests for participants may cause users of the #edchat hashtag to become indifferent to these requests. Twitter introduced its native polling feature in October, 2015, (Sherman, 2015), and in January the platform posted to its official account “Thanks for weighing in! Yours is one of 1.7 billion votes cast in Twitter Polls since October's launch” (Twitter, 2016). The introduction and popularity of the Polling feature may have also distracted #edchat users from an off-platform research survey or added to users’ survey fatigue. The responses to questions regarding education roles and experience of the 27 respondents, seen in Table 8, indicated that most were veteran educators who had been participating in the network of educators on Twitter for some time.

Of the respondents to the survey, 21, or 77.7%, were veterans of education circles, reporting that they had used Twitter to interact with other educators for longer than 2 years. Respondents were predominantly education veterans with only four, 14.8%, having less than 5 years of experience as an educator and seven respondents, 25.9%, having over 20 years of experience in education. This experience is reflected in the reported age of the respondents with 13, or 48.1%, reporting their age within the 40-49 band. Another nine respondents, 33.3%,

Table 8

Complete Demographic Responses to the Survey Instrument

What is your current role in education?	How long have you had a Twitter account for networking with other educators?	How many years' teaching experience do you have?	What is your age?
Coach or supplemental instructor	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	6-10 years	30-39 years old
Administrator	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	11-15 years	40-49 years old
Post-Secondary Educator	Greater than two years	11-15 years	30-39 years old
Administrator	Greater than two years	11-15 years	40-49 years old
I teach PreK-8th grade students in a computer lab.	Greater than two years	Greater that 20 years	40-49 years old
Instructional Technology Specialist	Greater than two years	Greater that 20 years	40-49 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Secondary Educator	One to two years	6-10 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	40-49 years old
Secondary Educator	Greater than two years	11-15 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	50-59 years old
Post-Secondary Educator	One to two years	11-15 years	30-39 years old
Edupreneur	One to two years	6-10 years	40-49 years old
Student in educator training program	One to two years	Less than 1 year	20-29 years old
author and facilitator	Greater than two years	Greater that 20 years	Greater than 60 years old
Coach or supplemental instructor	Greater than two years	11-15 years	30-39 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Parent; work for education resource/TA/PD agency	Greater than two years	Less than 1 year	40-49 years old
Elementary Educator	Greater than two years	Greater that 20 years	40-49 years old
Elementary Educator	Greater than two years	1-5 years	20-29 years old
Administrator	Greater than two years	Greater that 20 years	40-49 years old
Coach or supplemental instructor	Greater than two years	Greater that 20 years	50-59 years old
Elementary Educator	Greater than two years	Greater that 20 years	40-49 years old
Elementary Educator	Greater than two years	16-20 years	40-49 years old
Secondary Educator	Less than six months	1-5 years	30-39 years old

reported their age in the 30-39 year-old band. Only two respondents reported being in the 20-29 year-old age band, as well as two respondents in the 50-59 year age band and one 60-year-old or older. These responses identified 22 respondents, or 81.4%, between the ages of 30 and 49. This age band includes what has been described as the Oregon Trail Generation, those who grew up before the proliferation of digital technology throughout society but entered a professional world where the internet and computers were ubiquitous, embracing the potential of social media in the workplace (Garvey, 2015).

Twelve of the respondents to the survey were classroom educators, with seven respondents, 25.9%, indicating they were in the elementary classroom and five, 18.5%, indicating they were secondary educators. Four respondents indicated they were technology coaches and two others responded they worked in post-secondary environments. One respondent was a pre-service teacher. The remaining respondents self-described as a variety of roles, such as consultants, parents, and student facilitators. One of the remaining respondents identified as an edupreneur, a portmanteau of educator and entrepreneur used to identify someone within a school or system who develops programs or products to reach institutional goals (Lavaroni & Leisey, 2015).

Survey Responses: Twitter Activity

The survey instrument was disseminated using the #edchat hashtag and respondents came from the members of the #edchat community. Respondents must have been following the originating account, an account that retweeted the link to the instrument, or the #edchat hashtag. The survey respondent then had to click through the link and proceed with the survey. This element of self-selection of the survey respondents could influence the replies to the survey instrument, with respondents indicating a greater degree of engagement with the community.

Survey responses indicated that the respondents were engaged with the #edchat community in several ways. All of the responding users reported sharing resources to the community. Fourteen of the 27 respondents, 51.9%, indicated they shared a link to online education resources via Twitter daily or often. Another eight respondents indicated they shared links to resources regularly, with the final four respondents, 14.8% of the sample, indicating they shared links to online resources only sometimes. Only one respondent, 3.7%, reported never sharing offline resources, with another single respondent reporting sharing offline resources daily. Thirteen respondents indicated they shared offline resources sometimes. These responses echo the sampled posts, with online resources being shared heavily and offline resources being shared much less often. The respondents also indicated they reposted resources they discover through Twitter, with 12 respondents reporting they retweeted links daily or often and another 11 indicating the retweeted links regularly. Most respondents also reported posting to Twitter with education hashtags, with only 1 indicating never making such posts and 22 indicating they posted with education hashtags daily, often, or regularly.

The survey also asked respondents to report their interactions with other members of the education community on Twitter. Only one respondent reported never providing help or assistance to other educators on Twitter and two reported never asking for help or advice on the platform. While no respondent reported helping other teachers or asking for help daily, 14 indicated they asked for help often or regularly and 15 reported they attempted to help other educators often or regularly. While three respondents replied that they never use an @reply to engage in a professional dialogue with other educators, 17, or 63%, reported doing so daily, often, or regularly.

Education hashtags are also used to turn Twitter into a real-time discussion similar to a chat application. Not only does #edchat have two scheduled chats of this variety on Tuesdays, hundreds of smaller Twitter education communities scheduled regular chats. While 4 of the respondents, or 14.8%, reported that they never participate in these chats and another 4 indicated they did so only sometimes, 19 respondents, 70.4%, reported that they did so daily, often, or regularly. These teachers were engaged in the education community on Twitter and interacted with their fellow educators there.

Among the respondents, engagement in the #edchat community is not limited to the Twitter platform. Five of the respondents indicated that the interaction with the educators they have met through #edchat are only through digital platforms such as social networks and email. Sixteen respondents, or 59.3%, reported interacting with their Twitter cohort face to face. Six more of the respondents indicated that they have many face-to-face interactions with other members of the community.

Survey Responses: Benefits of Twitter

Respondents were provided a list of potential benefits that would come from participation in the educator community on Twitter and asked to choose all that they believed applied, as well as given the opportunity to provide their own response. All 27 of the respondents indicated that they used the educator community on Twitter to find news about the field of education. Twenty-five of the sample, 92.6%, indicated they used the community to find resources and information for classroom use. The community was also a source of collegial support to many of the respondents. Twenty-four respondents, 88.8%, said that they used Twitter to find other teachers with similar interests and issues. Over half, 55.5%, said they find the emotional support of the community to be an asset.

Respondents were asked to provide their own response to a question regarding the primary benefit to their interactions with other educators on Twitter. These responses were viewed through the lens of the Community of Practice and its three components: Domain, Community, and Practice. As the responses were coded, other themes were also identified.

A Community of Practice gathers around a domain, and in the case of the Twitter #edchat community the domain is education, the practice of teaching and the improvement of learning. The mention of this domain appeared in five of the responses directly. For example, an administrator replied in part, “Knowing others are trying to transform education too.” Another response, this time from a teacher educator, included the statement, “Being part of a global education community lifts all of our voices.” An elementary educator stated, “Using Twitter, my eyes have been opened to different view points [*sic*] on topics of interest to educators, such as grading, homework, and use of technology.”

The community found on Twitter for those in the education domain was an element of 19 of the 27 responses. An elementary educator responded that Twitter gave her a place for “discussing and sharing ideas, understanding the norms of the profession, job searching and networking, support.” A post-secondary educator stated that the education community on Twitter allowed them to “connect, learn, share, and affirm . . . in that order.” A new elementary educator stated that Twitter offered them “encouragement--especially as a new teacher. I don't get support from my admin.” Being part of a community not limited by geography was cited by several respondents, including a secondary educator in their 30s who responded “the ability to interact with a geographically and culturally diverse group of educators with whom I can share ideas and widen my own knowledge is the primary benefit.”

Six of the respondents specifically mentioned the concept of a Personal Learning Network, or PLN. The PLN, an aspect of a Connectivist Learning Environment, is a group of resources such as mentors, colleagues, collaborators, and content where the learner becomes an active and contributing participant. Learners in a PLN also derive emotional satisfaction and validation from the bonds they form with their fellow learners (Pettenati & Cigognini, 2007). An elementary educator in their 40s expressed “My PLN is INVALUABLE!” at the end of her response. An administrator stated the primary benefit of professional interactions on Twitter to be “a PLN that is global.” These teachers view the community as supportive and part of the professional growth.

The practice of teaching was also apparent in the answers to this question on the benefits of using Twitter. An administrator responded,

"We don't know what we don't know." The professional interactions allow us to become aware of what we don't know and use the information shared to get clear about our beliefs, the future of education, the needs of our students, and pedagogy using new technology tools.

This statement specifically addresses the discussion of the practice of teaching and the emergence of a set of best practices from the collective knowledge and discussions of educators on Twitter. Other responses to the survey instrument echoed this sentiment. A secondary educator replied, “Twitter offers resources, ideas, inspiration, and a worldwide help desk if I have a question!” An elementary educator stated, “With the seemingly exponential pace of change in the edu and edu-tech landscape, Twitter provides a way to connect to those with more experience using a variety of pedagogical and technology tools and techniques.” Another elementary educator indicated that Twitter provided “quick, relevant, and innovative ideas/strategies.” These teachers are gleaning ideas and tools, staying current, and generating an evolving set of best practices.

Survey Responses: Outcomes of Twitter

The final question on the survey instrument was another open-ended question: “9. What outcomes do you believe that participation in the professional educator network on Twitter brings to your classroom, school or system?” In this question, two of the three factors of a Community of Practice, the domain of education and the community in which they interact, are referenced in the phrase “professional educator network.” The third factor, the emerging set of group content knowledge and best practices, was found in 26 of the 27 responses to the question.

An administrator responded that the education community on Twitter “exposes us to others who do what we do and allows us to learn from them, share our experiences, and get better at what we do because of our increased knowledge,” portraying the information shared in Twitter education conversations as a two-way street. This participant was aware that as they are learning from other educators, they are also sharing their practice with the community, in turn allowing the community to build a knowledge base and improve teaching and learning. This emerging best practice is clearly seen in the response of an elementary educator who responded, “I constantly train the teachers in my building with the latest and greatest ideas I find on Twitter.” This teacher takes the resources, techniques, and information discovered in the education communities on Twitter and disseminates it in the local school, allowing the collective knowledge and refinement of the teaching practice taking part in the #edchat and related conversations to spread to those not part of the community. This sentiment is echoed by a secondary teacher who responded that participation in the #edchat communities would result in “better teaching and learning experiences for me and for all who work with me.”

Some respondents saw potential for systematic change coming from the individuals networking on Twitter. An education consultant responded that their interactions on Twitter

“[allow] change on the individual level, if not always possible with the system.” An elementary educator responded,

With their collective knowledge, I become a more creative, innovative, effective teacher in my room and school. Fellow teachers as well as administrators have noted my energy and enthusiasm for craft development and my willingness to step outside the traditional modes of information delivery.

Another respondent, an elementary educator, indicated that participation in the education communities on Twitter brought “a better understanding of education, and the support of others who are searching for the best ways to teach young people.” These open-ended survey questions showed the respondents believed the education chats on Twitter not only bring changes to their own classrooms and schools, but also allow refinement of goals and techniques of the classroom, schools, and systems beyond the classroom of the participant on Twitter.

CHAPTER V

DISCUSSION, IMPLICATIONS, CONCLUSIONS, AND RECOMMENDATIONS

This qualitative study using content analysis and survey sought to explore the activities and interactions of the community of educators who use Twitter hashtags as a tool to build communities for improving teaching and learning, and discover how participation in this community benefits its members and the education community as a whole. While hundreds of education-related hashtags are used by educators on Twitter, this study focused on the hashtag #edchat, one of the first education hashtags in common usage. This hashtag is the most used education-related hashtag on the platform and is an entry point for many novice users to more niche education hashtags and discussions. Twitter posts containing the #edchat hashtag were captured during randomly selected hours of 1 week in February, 2016. These posts and any contained hyperlinks were read, coded, and analyzed to determine the nature of the information teachers shared on the platform. A survey instrument was disseminated on Twitter using the #edchat hashtag to glean participants' perceptions of their use of the platform and hashtag, as well as their thoughts on the benefits and impacts of their participation in their classrooms and schools. This chapter will review the findings of these observations and the survey instrument to determine how they relate to the literature regarding information, knowledge, and impacts of social networks, as well as addressing further avenues for study.

Discussion

This exploration of the network of educators using the #edchat hashtag on Twitter was conducted to gain insight into the interaction and activities of the teachers using it as a virtual

meeting space. As the usage of the Twitter platform by educators continues to gain official sanction (Carpenter & Krutka, 2014a), both tacit and explicit, these interactions and activities must be more fully understood to ascertain if institutional endorsement of the use of the platform is merited.

Themes

Several themes emerged from the collected posts to the #edchat hashtag on Twitter. While the posts themselves with the #edchat hashtag were coded, with the codes evolving to categories, these themes cut across the many categories. The themes were reinforced in many of the free response questions to the survey instrument and reflected elements of the theoretical lenses of this study. The primary themes of these posts were Active Learning, Continuous Learning, Online Content Sharing, and Global Interaction.

Active Learning. Posts to Twitter with the #edchat hashtag promoted an educational model where student voice and choice were paramount. Students were to create and discuss, become critical thinkers and active learners. When members of the community would recommend tools and techniques to each other, they were more often than not tools of digital creation and ideas to construct relevant lessons to the subject matter with these tools. Teachers encouraged each other to listen to the needs of their students, as well as allow the students to use their diverse set of skills to create artifacts for grading. According to these posts, students should rise above the typical constraints of a written assignment and teachers should cultivate their abilities to communicate across a variety of platforms and media. While the teachers shared tools and techniques, they were reinforcing a set of social goals and best practices, as Wenger's Community of Practice would (Wenger et al., 2002). The development of community orthodoxy

predicted by Wenger and Snyder (2000) emerged as the community embraced the value of active learning and promoted its use.

Continuous Learning. Another theme of the posts to the #edchat community called on teachers to model the concept of the life-long learner. While compelling students to pursue their interests and cultivate their skills, the community expresses the belief that a teacher should model this behavior (Forte et al., 2012). Teachers should continue their learning and #edchat and the many Personal Learning Networks of the teachers using the #edchat hashtag are encouraged as an avenue for this learning. As teachers strive to continue the growth of their own knowledge, they are cultivating the collective knowledge Wenger would expect of a Community of Practice (Wenger et al., 2002). Encouraging the #edchat community as a whole and the smaller PLNs for an avenue of this growth, the network is also encouraging the formation of community (Hiscott, 2013). Teachers generate the bonding capital among their PLN (Sun & Shang, 2014) as well as the bridging capital and strength through weak ties (Friedkin, 1980) as members of these communities interact with each other (Forte et al., 2012).

Global Interaction. Teachers using the #edchat hashtag view isolation as an impediment to learning, both for teachers and students. By reaching out to other regions and nations, teachers and students may find alternative solutions, procedures, and methods. By exposure to this diverse knowledge base, teachers and students may determine which is the best suited for a particular problem. This attention to a global community not only allows the members of the community to find the best practice for a particular issue, but consulting a diverse set of ideas is itself a best practice (Pariser, 2011). This also helps the network foster its communities and forge the weak ties of distantly connected teachers into a strong global community building social capital (Hofer & Aubert, 2013). Teachers often have leveraged the internet to fight the perceived isolation of

the classroom (Carpenter & Krutka, 2014b), and by using Twitter and the #edchat hashtag educators are reaching out beyond the walls of their class and geographic confines of their system to work with this global network.

Online Content Sharing The final theme of Online Content Sharing emerges from almost every category and many of the open ended responses. Links to content away from the Twitter platform were in almost two-thirds of posts collected for this study, as is consistent with previous research (boyd et al., 2010). Open-ended responses to the survey instrument lauded the #edchat community and its resource sharing. This link sharing has been noted on the platform before (Holmes et al., 2013) and is commonly seen as one of the values of the hashtag-based education communities (Forte et al., 2012). These links hold the collective knowledge base of the Community of Practice and the repeated sharing and retweeting of these links reinforces the practice of the individuals in the community.

Theoretical Lenses. The mechanisms of social capital, where members of a group or community gain benefits from their interactions among their colleagues, are at work in the generation of tangible benefits from the actions of the educators interacting on Twitter. Granovetter's (1973) theories on the strength of weak ties also play an important part in the relational interactions of the educators on Twitter, allowing a network of individuals to coalesce into a community. However, the exploration of the #edchat community in this study was performed primarily through the lens of Etienne Wenger's (1998) Community of Practice. In a Community of Practice, a discipline draws together a group of practitioners who create a network of connections that develop into a community in which a body of best practices and perception of the future development of the domain may emerge.

Social Capital. Social capital exists in two varieties. Bonding social capital brings members of a group together in solidarity, and coalesces a group with strong bonds within a community. Bridging social capital encourages more ancillary members of a group to have greater participation within group dynamics (Sajuria et al., 2015). While Facebook facilitates bonding social capital and increases the insularity of groups and communities on its network, Twitter, due the default public nature of its posts, not only allows for bonding social capital to create strongly bonded groups, but creates bridging social capital to allow for the inclusion of ancillary members of the network and their ideas to the community. From this community of individuals and groups, the members of the community may find value generated from their interactions.

Bridging social capital may be seen in multiple aspects of the educator community on Twitter. The convention of Follow Friday, where members of the community recommend other members to follow, brings other voices into the conversation and attempts to promote their sentiments as valid contributions to the community. Likewise, the posts that recommend other smaller and more specialized education conversation hashtags bring in the voices of these conversations into the mainstream of the monolithic #edchat hashtag.

Bonding social capital is seen in the frequent retweets of the education community. By allowing the message of #edchat participants to be shared and reshared among the community, it allows participants to give endorsement to and increase the scope of dissemination of the ideas and information shared by others. This facilitates members of the community finding those who have similar interests and ideas and strengthening the bonds between them.

Respondents to the survey instruments provided evidence of both varieties of social capital. Several indicated their Personal Learning Network as one of the great benefits of their

participation on Twitter. These small groups have bonding social capital and the bonds of these small groups of educators are important to their members. Respondents also gave responses detailing the bridging social capital of the network. Respondents extolled the ability of the network to allow teachers to reach beyond the familiar and find ideas and collaborators from different regions and countries. The influx of new ideas, techniques, and methods into their practice was of value to several respondents, a form of bridging social capital.

The Strength of Weak Ties A community comprises individuals and their relationships with the other members of the community. These relationships may be defined as strong or weak, depending on the number of interactions between parties, the emotional intensity of the interactions, and the mutual tangible benefits of the relationships. In a large community there will be more relationships with weak ties than those with strong ties. The weak ties of those who interact through others with a bridging stronger relationship bond facilitate a strength within the community as a whole (Granovetter, 1973).

There are many ways for members of the educator communities to interact. Some survey respondents excitedly spoke of the strength of their Personal Learning Network and the value of the relationships they have formed with other members of the community. Others specifically cited the professional and emotional support offered by others in the community. These are strong ties which others may use to facilitate interactions with the other members of the community with whom they may not have direct ties. The collaborative aspects of the community are also facilitated by the strong bonds of individual Personal Learning Networks.

The individual #edchat posts also reflect the weak ties of the community creating a strong bond among its members. Participants in #edchat recommend community members for others to follow and other hashtag-based conversations that may be of interest. The community retweets

posts it finds important and these posts find wide dissemination, allowing participants to discover these retweeted posts through those in the community that may be followers of other colleagues or simply followers of #edchat and its related hashtags.

Domain. The domain of the Twitter users utilizing the #edchat hashtag is the field of education. Social networks like Twitter have been shown to facilitate the professional ties of their participants (Cardon & Marshall, 2015) and to this end the originators of #edchat created the hashtag so that other educators would not miss out on the education discussion on Twitter (Anderson, 2012). Participants describe themselves as being from a variety of education stakeholder groups: teachers, administrators, instructional coaches, parents, vendors, consultants, preservice teachers, and students. The discussions using the #edchat hashtag revolve around education. This includes the practice of teaching, the ways students learn and the artifacts they produce, education research, learning theories, and the evolution of education both as a practice and an institution. While users of the #edchat hashtag may not have an explicit mention of education in their Twitter bio or a reference to their teaching career in their username, all discussion using the hashtag captured for this study discussed some aspect of education, making it the clear cut domain for this community.

The survey instrument also demonstrated the domain of education bringing users of Twitter together. Survey participants identified from a wide array of education stakeholders, predominantly classroom teachers and school administrators. Respondents referenced education, students, classrooms, and the practice of teaching throughout their open-ended responses. They also indicated that Twitter is a location for discovery of tools and techniques for their classrooms and schools, as well allowing them input into the discussion of the evolution of education.

Community. A website or platform does not make a community, but a community is created by people exploring their domain and pursuing goals together. They form relationships with others involved in their domain and share information relevant to their shared interest. Online platforms have been shown to facilitate the formation of these communities among like-minded professionals (Maness, 2006). While they may practice the craft of their domain independently to varying degrees, they develop the tools of that craft in shared spaces and as a collective determine its progression and evolution (Wenger, 2011). The educators on Twitter are using their hashtag-based discussions to form this sort of community, as evidenced by the collected posts with the #edchat hashtag.

The community is exploring the domain of education on many fronts. They routinely share strategies and resources for use in the classroom as well as management of the administrative and clerical duties of working in an education institution, in addition to posting reflections on the success or failure of these strategies and resources. They routinely share news articles and research regarding education with each other. Philosophies of education and learning are often a topic of discussion as well as discussions of ongoing education research.

Educators on Twitter also routinely share aphorisms and image-based maxims regarding challenges and goals within education. Memes and images are shared to provide other educators with encouragement in the face of common issues in the classroom. These educators also use the #edchat hashtag to ask each other advice and for assistance and recommendations.

The community, as Wenger defined it, is perhaps most apparent in two common varieties of posts made by educators. The first variety of posts contained recommendations of other education chat hashtags and users to follow. While #edchat is the most commonly used education-related hashtag, there are hundreds of smaller, more specialized communities

discussing education esoterica and niche topics. These hashtags often appear with posts using the #edchat hashtag to reach educators who actively follow or participate in these smaller education discussions. These extra hashtags with #edchat posts also raise awareness of these smaller and more focused Twitter discussions in the #edchat community. Many times, participants in these smaller education discussions post with the #edchat hashtag in an overt manner to advertise the discussions occurring around these hashtags. Other times, educators on Twitter participate in Follow Friday, the tradition of posting a list of interesting accounts to follow with the hashtag #FF or #FollowFriday. By posting a list of educators who post interesting and intriguing material with the #FF and the #edchat hashtags, these lesser known accounts and chats are introduced to the monolithic #edchat community. This brings other topics of discussion and other voices into the larger group and allows different varieties of information and other voices to receive focus within the community. This makes the network larger, more diverse, and allows new relationships to form.

The second variety of posts both illustrating the reach of the community as well allowing greater propagation of information through the network is the retweet. A retweet is a verbatim repost of another users Twitter post. It may either be denoted by “RT” added to the post by the user doing a retweet or automatically by Twitter. A retweet is a common way of pushing a post out to an account’s followers that may not follow the original account. It is also seen as an endorsement of the material contained within the post. Most of the Twitter posts captured for this study were retweets, endorsing and further disseminating the posts of other members of the educator networks on Twitter and the #edchat community. The educators on Twitter are working and learning together and spreading their knowledge, resources, and connections. They are forging an ever-growing and stronger community through their interactions on Twitter.

The community was cited many times in the open-ended responses to the survey instrument. The community was seen as a source of resources and differing perspectives. It reassured teachers to hear of the way things were done in places beyond their own school and system. The Personal Learning Network, a term for a community of cooperative learning and growth, was cited specifically by several respondents. The sharing of resources and the refinement of the craft of teaching were also specifically cited by respondents, concepts cited by Wenger as identifying the professional community.

Practice. Research has shown that the social connections of networks of professionals facilitates the sharing of resources (Yoo et al., 2012) and the cultivation of the practice of teaching, and the continuous development of an evolving set of best practices is the third element of Wenger's Community of Practice (Wenger, 2011). The educator community on Twitter is using the hashtag #edchat for this purpose as evidenced by the coded posts to Twitter and survey responses. Twitter posts using the #edchat hashtag during the collection window not only posted research and philosophical positions regarding the practice of teaching and learning, but shared myriad tools, resources, strategies, and techniques for use in the classroom and education institutions. Maxims were shared that, while brief and many times humorous, reflected attitudes about teaching, learning, and teacher/stakeholder interactions that illustrate the community's ideals. Survey responses evidenced teachers in the Twitter educator community seeking to refine their practice and other perspectives on the profession that allow their own philosophy and techniques to progress.

Techniques and resources were among the most common posts made to the #edchat conversations. While most of these were not overtly recommended, proactively posting these tools so other teachers may use, investigate, or evaluate their effectiveness in the classroom

served as a tacit endorsement. Many posts shared links to digital tools, aggregated lists of digital resources, or exploration of school-based usage of a digital platform. By raising awareness of these resources and their usage, posting accounts allowed the community to determine the efficacy and usefulness of the resources to teaching and learning. Non-digital strategies and classroom techniques were often shared as well, allowing teachers to attempt to leverage these solutions and techniques in the classroom.

While the posters to the #edchat discussion were sharing tools and resources, the common themes in the implementation of many of the shared resources indicated values held by the community in regard to what an effective teacher and instruction should be. Tools encouraging students to create were shared and discussed often. The members of the #edchat community are seeking and sharing resources that will free the classroom from the industrial model of a teacher explaining a topic and then assessing through a test or written questions. The community values giving the student agency and voice by allowing students to create to meet assessment requirements. When the student is given a choice on the media and presentation in response to a question or prompt, it is seen as increasing engagement and efficacy of the instruction. By promoting tools and techniques that promote student agency in this way, the community seeks to redefine education institutions and embrace a learner-centered curriculum.

Beyond forging a vision of instruction, the community also promotes a system of values for teachers. Student inclusion is seen as a priority by the community and the maxims and tools promoted by the #edchat conversations encourage teachers to engage all students and be accepting of the divergent communities interacting in educational institutions. The ability to evolve and embrace change is also a top priority in the articles and techniques posted to #edchat conversations. As more mobile- and distance-based technologies come into mainstream use, the

community encourages teachers to reflect on the ways these changes will change our perceptions of what a school should look like and how it should operate. A running theme in the posts made with the #edchat hashtag was community members' views that being attached to industrial age educational models and goals is seen as a hindrance to the future of students and education as an institution. Teachers, administrators, and elected officials who are resistant to change are anathema to the progress that forward-thinking teachers are struggling to achieve. Through their posts, the teachers on #edchat are not just providing other teachers with the most current tools for their classrooms today, but modeling a mindset for professional and institutional growth.

Survey respondents also communicated the value of the community of educators on Twitter to their practice and their aspirations professionally and for the field of education. Respondents cited increasing their skill sets and the scope of their resources as a positive outcome of their participation in the community. The cultivation and perpetuation of the respondents' own growth mindsets and their endeavors to spread this mindset to their colleagues was also a theme in several responses. Professional and learning development were specified by several respondents as well. The diversity of opinion allowing reflection on one's own practice was also seen in many responses. The community of educators on Twitter, particularly those in the conversations around #edchat, are seeking a collective knowledge base and a community derived set of best practices.

These educators having conversations around the #edchat hashtag are brought together to discuss the domain of education. Their interactions transform a network of loose and weak connections to one of the strong connection of a community. This community shares knowledge of their practice and seeks to craft a set of ideals and best practices for the domain. The community meets Wenger's criteria for a Community of Practice. While an individual's benefit

from participation in the community may vary according to their engagement, creating a collective body of knowledge and aspirational standards of best practice the Community of Practice benefits the domain of education as a whole.

Implications

Participation in the education community on Twitter has been encouraged by individual educator advocates and has gained institutional endorsement with many administrators encouraging use of the platform and systems, granting continuing education credits for educators' participation. The posts collected for this study and responses to the survey instrument indicate that the participants in the conversations regarding education on Twitter are generating both bridging and bonding social capital, creating a community, and developing a set of forward thinking best practices and standards. A Community of Practice has emerged in the #edchat conversations. This Community is of value to education, allowing education stakeholders to take part in a real-time global conversation about how to best educate students, both now and in the future.

These conversations, via an open and public platform, allow anyone to join, contribute, and benefit. The dialog between educators is occurring on a proprietary platform tied to a commercial entity, making them subject to forces outside the realm of control of the community. Changes to the platform may have significant impact on the networks from which the Community of Practice arises. The elements that have led to the growth of the Community of Practice on Twitter, such as a low barrier to entry, easy signifiers of the domain, conventions to cultivate community, and the simplicity with which information is shared, must carry over into next generation platforms so that the digital Community of Practice for educators may continue to create the collective knowledge bank for the institution of education globally.

Conclusions

The educator community on Twitter, communicating with the #edchat hashtag as well as the myriad related #edchat groups, has used the weak ties of a multitude of casual relationships to create the strong ties of community. This community draws from their interactions social capital to both draw themselves together in tight-knit groups and bring others from the periphery of the network into the general discourse of the community. Those educators using the #edchat hashtag gather in a community to discuss the domain of education and from this community an emerging set of standards and best practices have emerged. These practices are encouraging student-centered, active learning in the classrooms and systems and schools where students, teachers, parents, and administrators have a voice in the curriculum and procedures of a school. The community of teachers facilitates the spread of ideas and lessens the isolation of districts and schools that have traditionally had little communication and collaboration with other education institutions. The Twitter platform and the hashtag #edchat are cultivating an educator community of practice, and the knowledge of this community is a rich resource for teachers, and the potential for the collective voice of educators this community is developing has potential to aid in the crafting of educational policy where the concerns of teaching and learning are addressed in a forward-thinking manner.

Recommendations for Future Research

Digital social networks are ephemeral. Over the last 2 decades there have been dozens of social networking sites that have had varying degrees of success. Platforms that cater to both monolithic audiences, such as Facebook, Twitter, and Pinterest, and niche targets, such as Tumblr and YikYak, are popular across many demographics across the world (Riese, 2016). These platforms come and go and even the dominant platforms may quickly lose all of their user

base, as evidenced by the fall of MySpace (Gillette, 2011). Teachers have gathered on digital social platforms before, including blogs, email lists, and early social networks like Friendster (Carter et al., 2008). Even now, communities of teachers are thriving on platforms like Facebook, Google+, and Pinterest (Devaney, 2016). Further research should be conducted to determine if the size and scope of the educator Community of Practice on Twitter is due to the feature set of the platform or factors related to a critical mass of educators on the platform. With the community's reliance on the platform being so important, research should investigate how such a community may be replicated on another platform should Twitter become less relevant, a process that some say has already begun (Von Tobel, 2017).

Another line of future research should pursue the efficacy of the community. Many teachers have been introduced to the #edchat community; however, not all participate in the network regularly or at all. These non-participating teachers are difficult to reach regarding the platform due to their disengagement from the platform. The factors that encourage a teacher to be an active participant in the Twitter educator community specifically or digital educator communities of practice in general should be explored so that this style of interaction may be cultivated and encouraged.

A third line of inquiry should seek to quantify the impact on teaching and learning from a teacher's participation in the #edchat community. Teachers self-report that their practice is impacted positively, but the true impact of participation on in the #edchat community is not known or understood. Issues of how to measure engagement in a digital Community of Practice will need to be addressed, as well as the proper benchmarks or test scores to measure possible impact.

Finally, the implications of incorrect or flawed information in the channel of #edchat should be addressed. The #edchat community on Twitter is an excellent vehicle for the dissemination of techniques and resources into the global education community. How the community self regulates should be addressed. The entire community may act as an informal method of peer review, but the reach and impact of incorrect or flawed information and propaganda should be determined.

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APPENDIX A
IRB APPROVAL

Office for Research
Institutional Review Board for the
Protection of Human Subjects



January 29, 2016

John Mark Coleman
ELPTS
College of Education
The University of Alabama
Box 870231

Re: IRB # EX-16-CM-008 "Observations and Survey of the Educator
Community on Twitter"

Dear Mr. Coleman:

The University of Alabama Institutional Review Board has granted approval
for your proposed research.

Your protocol has been given exempt approval according to 45 CFR part
46.101(b)(4) as outlined below:

*(4) Research involving the collection or study of existing data, documents, records,
pathological specimens, or diagnostic specimens, if these sources are publicly available or if
the information is recorded by the investigator in such a manner that subjects cannot be
identified, directly or through identifiers linked to the subjects.*

Your application will expire on January 28, 2017. If your research will
continue beyond this date, complete the relevant portions of Continuing
Review and Closure Form. If you wish to modify the application, complete
the Modification of an Approved Protocol Form. When the study closes,
complete the appropriate portions of FORM: Continuing Review and
Closure.

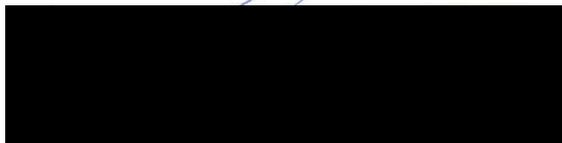
Should you need to submit any further correspondence regarding this
proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 820-3066



APPENDIX B
SURVEY INSTRUMENT

1. What is your current role in education?
 - a. Preschool Educator
 - b. Elementary Educator
 - c. Secondary Educator
 - d. Post-Secondary Educator
 - e. Coach or supplemental instructor
 - f. Other

2. How long have you had your Twitter account for networking with other educators?
 - a. Less than 6 months
 - b. Six months to a year
 - c. One to two years
 - d. Greater than two years

3. How many years' teaching experience do you have?
 - a. Less than 1 year
 - b. 1-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16-20 years
 - f. Greater than 20 years

4. What is your age?
 - a. Less than 20
 - b. 20-29
 - c. 30-39

- d. 40-49
- e. 50-59
- f. Greater than 60

5. How often do you engage in the following activities while professionally networking on Twitter?

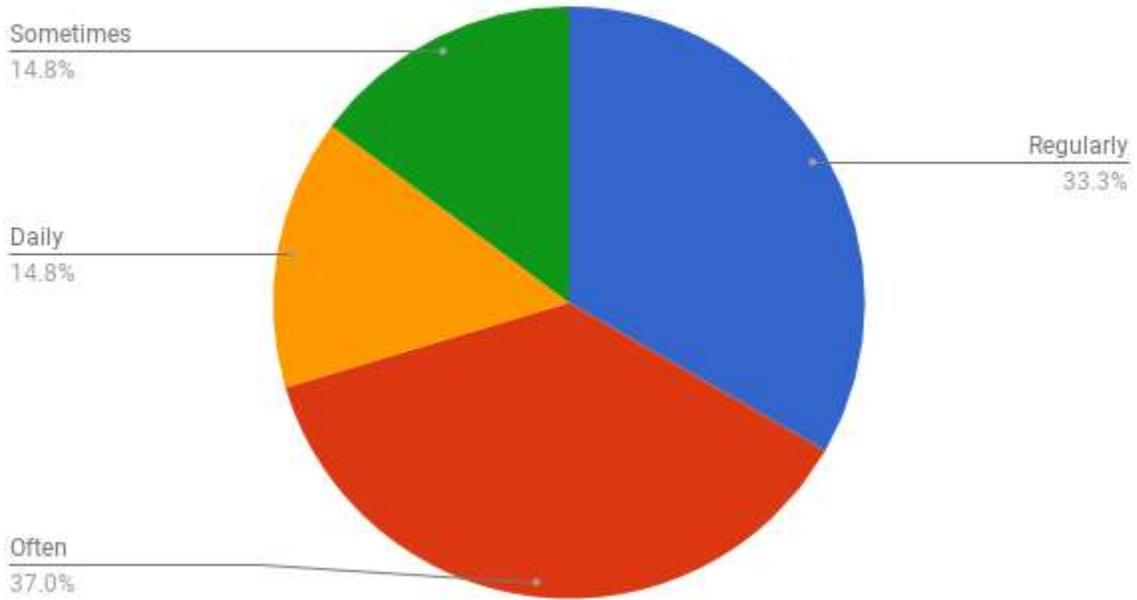
	Never	Sometimes	Often	Regularly	Daily
Share a link to an online resource					
Share a description to an offline resource					
Reshare a resource shared by others					
Follow a link to a resource shared by others					
Read posts marked with an educational hashtag					
Post with an educational hashtag					
Engage in a professional dialogue using an @reply					
Take part in a scheduled Twitter chat using an educational hashtag					
Ask for help or advice from other teachers					
Provide help or advice to other teachers					

6. How would you describe your offline relationship with the teachers you follow or interact with on Twitter?
 - a. We have only interacted on digital platforms such as Social Networking, email or chat
 - b. I have met some of the teachers I interact with on Twitter face to face a few times
 - c. I have met some of the teachers I interact with on Twitter face to face many times
 - d. I have met many of the teachers I interact with on Twitter face to face many times
 - e. On Twitter, I exclusively interact with teachers I know offline
7. Which of the following best describes the benefits you receive from the professional educator on Twitter?
 - a. I receive news about the field of education.
 - b. I find resources and information that I can use in my classroom
 - c. I find like-minded other teachers with similar challenges and interests
 - d. I find a community to provide emotional support
8. What do you believe is the primary benefit of professional interaction on Twitter with other educators?
9. What outcomes do you believe that participation in the professional educator network on Twitter brings to your classroom, school or system?

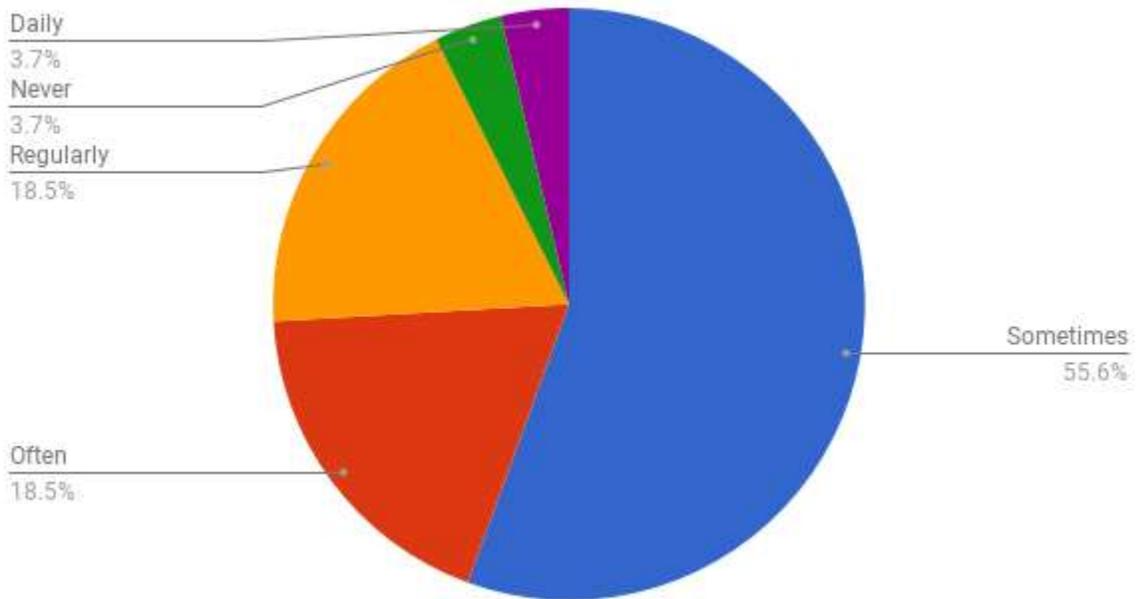
APPENDIX C
SURVEY RESPONSES

What is your current role in education?	How long have you had a Twitter account for networking with other educators?	How many years' teaching experience do you have?	What is your age?
Coach or supplemental instructor	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	6-10 years	30-39 years old
Administrator	Greater than two years	16-20 years	40-49 years old
Administrator	Greater than two years	11-15 years	40-49 years old
Post-Secondary Educator	Greater than two years	11-15 years	30-39 years old
Administrator	Greater than two years	11-15 years	40-49 years old
I teach PreK-8th grade students in a computer lab.	Greater than two years	Greater than 20 years	40-49 years old
Instructional Technology Specialist	Greater than two years	Greater than 20 years	40-49 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Secondary Educator	One to two years	6-10 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	40-49 years old
Secondary Educator	Greater than two years	11-15 years	30-39 years old
Elementary Educator	Greater than two years	6-10 years	50-59 years old
Post-Secondary Educator	One to two years	11-15 years	30-39 years old
Edupreneur	One to two years	6-10 years	40-49 years old
Student in educator training program	One to two years	Less than 1 year	20-29 years old
author and facilitator	Greater than two years	Greater than 20 years	Greater than 60 years old
Coach or supplemental instructor	Greater than two years	11-15 years	30-39 years old
Secondary Educator	Greater than two years	16-20 years	30-39 years old
Parent; work for education resource/TA/PD agency	Greater than two years	Less than 1 year	40-49 years old
Elementary Educator	Greater than two years	Greater than 20 years	40-49 years old
Elementary Educator	Greater than two years	1-5 years	20-29 years old
Administrator	Greater than two years	Greater than 20 years	40-49 years old
Coach or supplemental instructor	Greater than two years	Greater than 20 years	50-59 years old
Elementary Educator	Greater than two years	Greater than 20 years	40-49 years old
Elementary Educator	Greater than two years	16-20 years	40-49 years old
Secondary Educator	Less than six months	1-5 years	30-39 years old

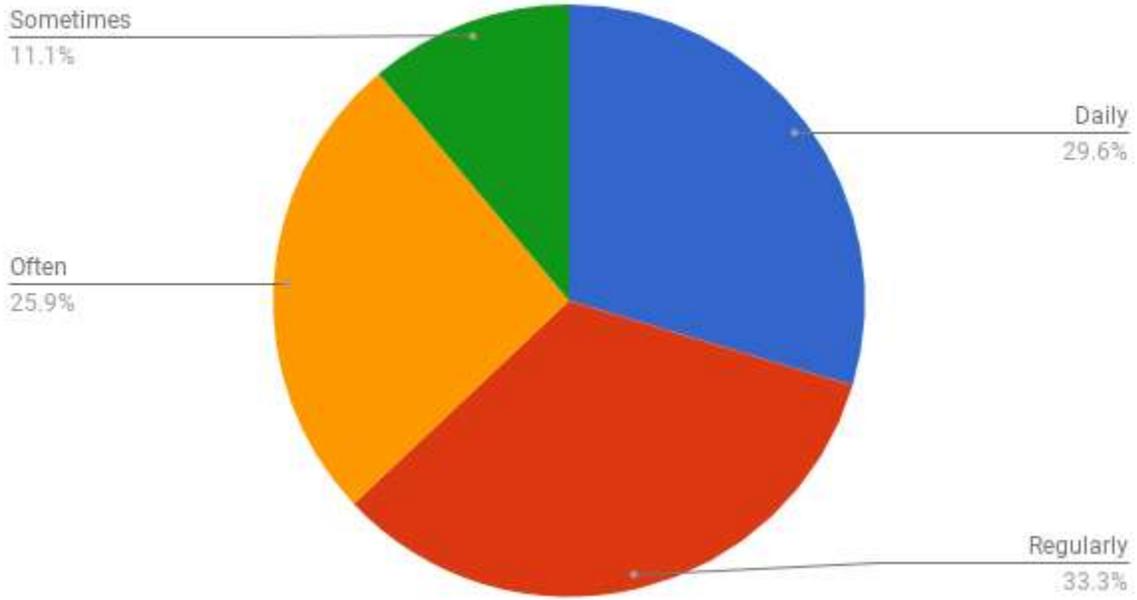
Share a link to an online resource



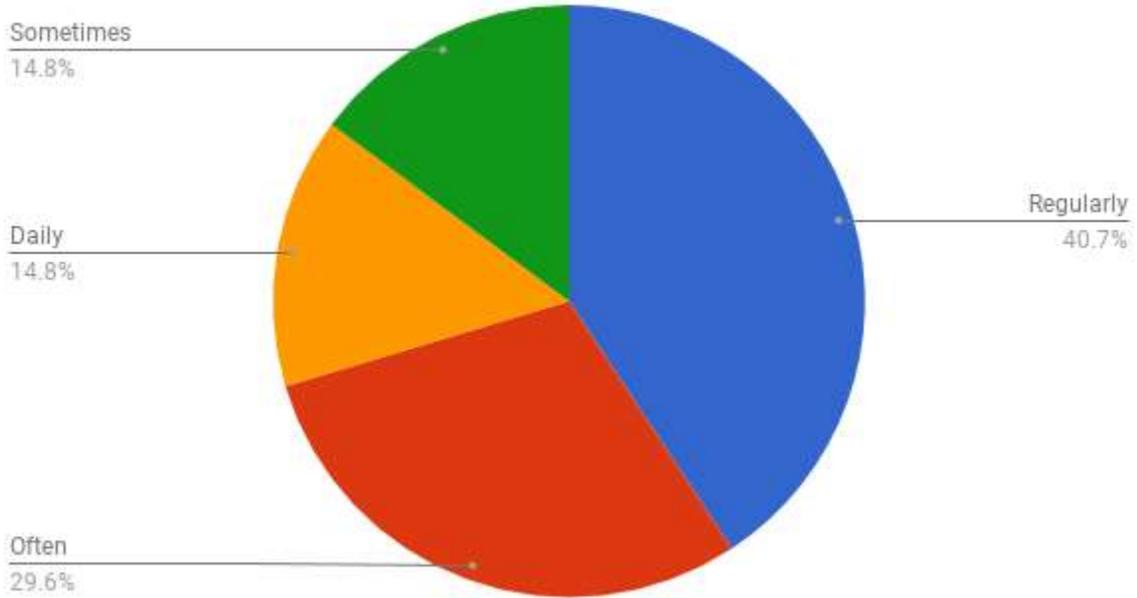
Share a description of an offline resource



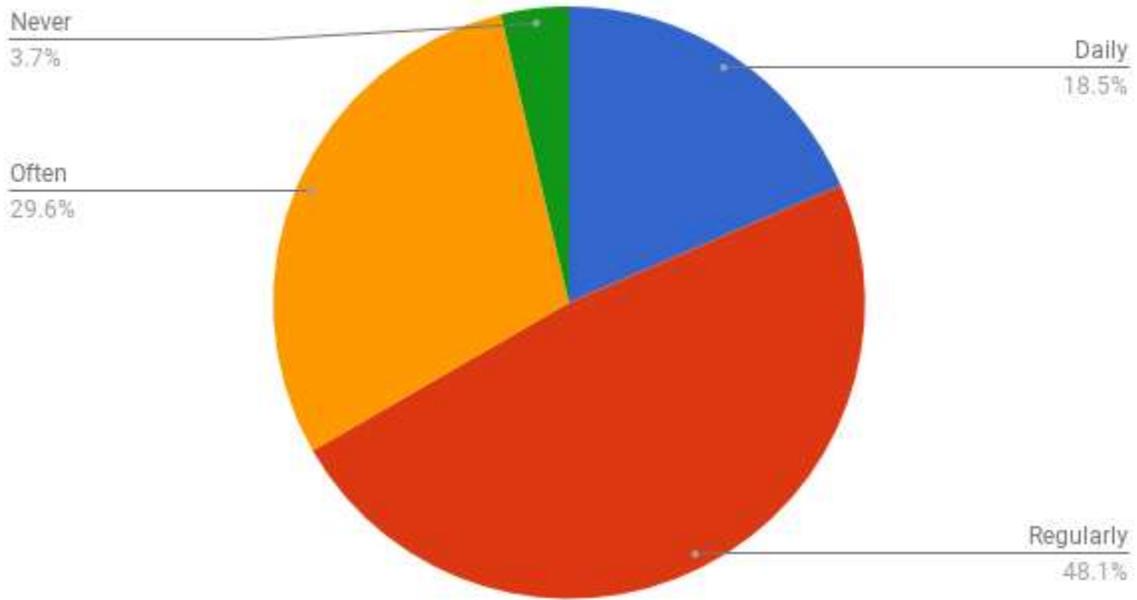
Follow a link to a resource shared by others



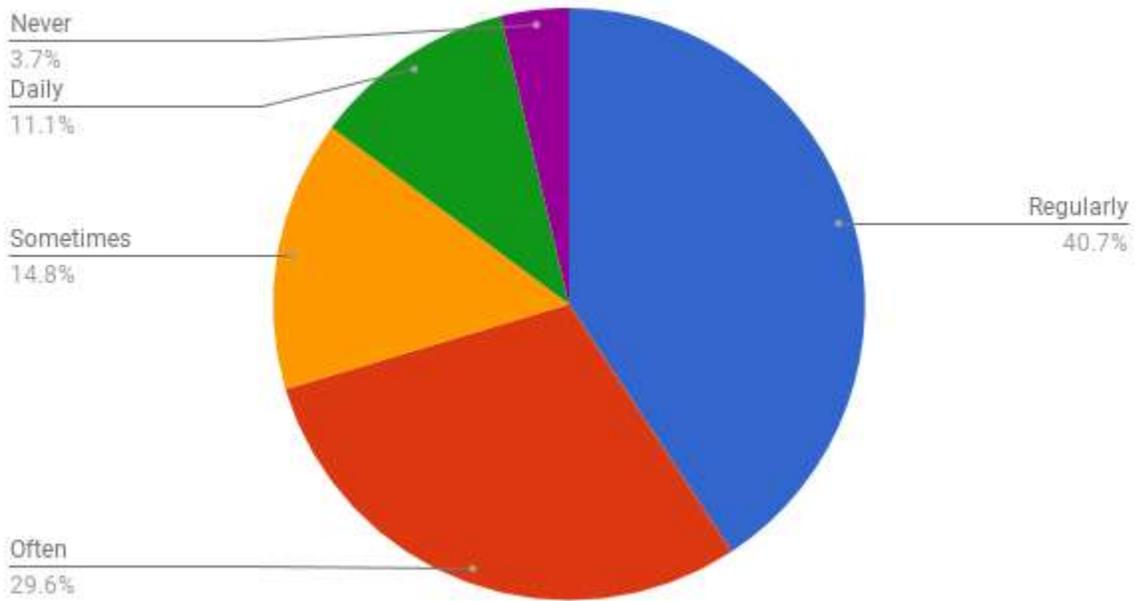
Reshare a resource shared by others



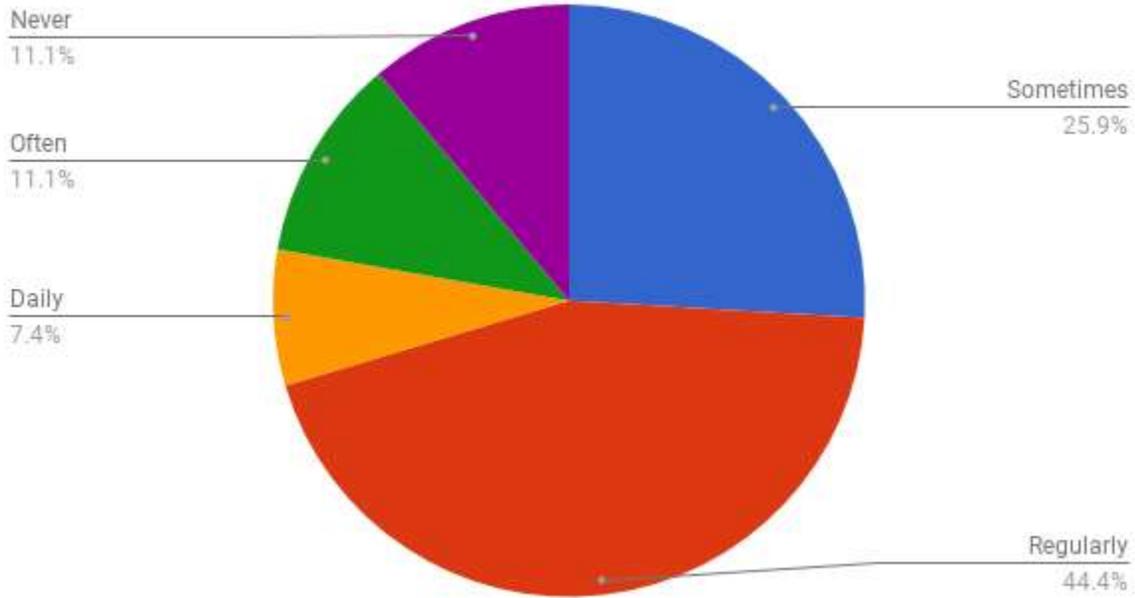
Read posts marked with an education related hashtag



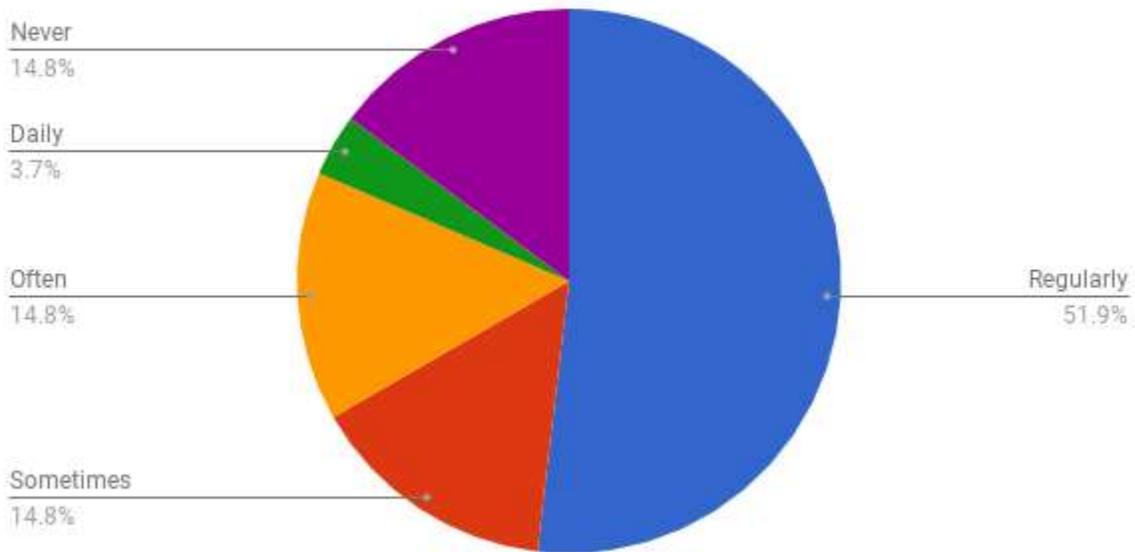
Post with an education related hashtag



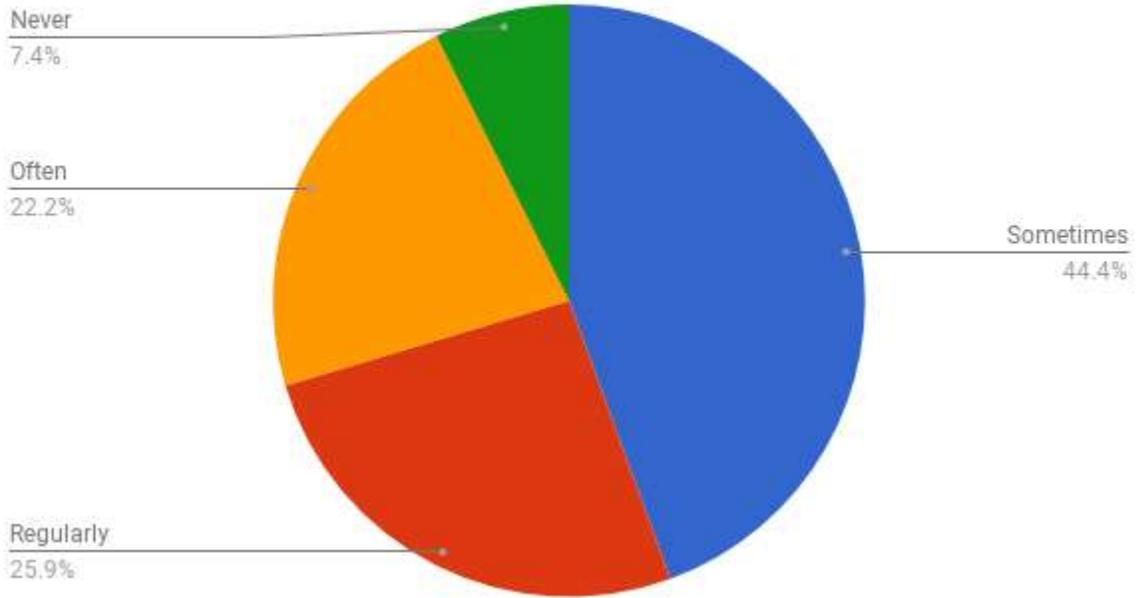
Engage in a professional dialogue using an @reply



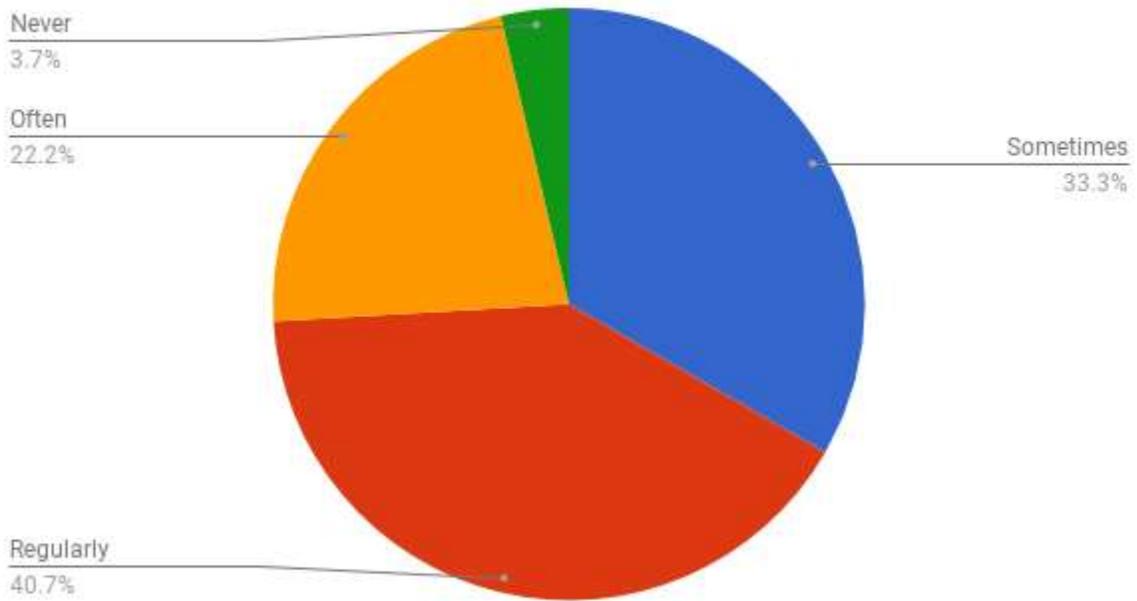
Take part in a scheduled Twitter chat using an education related hashtag



Ask for help or advice from other teachers



Provide help or advice to other teachers



What do you believe is the primary benefit of professional interaction on Twitter with other educators?

Knowing others are trying to transform education too. Learning from where they have been.

Collaboration. Knowing that others are working on similar ideas.

Collaboration in the truest form. It promotes growth mindset as well.

Creating a professional learning network

"We don't know what we don't know." The professional interactions allow us to become aware of what we don't know and use the information shared to get clear about our beliefs, the future of education, the needs of our students, and pedagogy using new technology tools.

Using Twitter, my eyes have been opened to different view points on topics of interest to educators, such as grading, homework, and use of technology.

Collaboration and communication

The ability to collaborate asynchronously across distance and between nations.

The primary benefit is finding relevant information related to my practice when I need it and on my own schedule. Twitter offers resources, ideas, inspiration, and a worldwide help desk if I have a question!

Professional and emotional support, particularly in this time of public teacher-bashing. With the seemingly exponential pace of change in the edu and edu-tech landscape, Twitter provides a way to connect to those with more experience using a variety of pedagogical and technology tools and techniques. Finally, sharing and exchanging with teachers from across the country and around the world develops my sense of one-ness in facing similar challenges. That sense of unity and support provides strength and encouragement on more challenging days. My PLN is INVALUABLE!

Crowdsourcing needed tools, info, and so on.

Building a PLN, discussing and sharing ideas, understanding the norms of the profession, job searching and networking, support

Connect, learn, share, and affirm...in that order

Network;connect

Resources are readily available

Exposure to a variety of experiences and opinions. It helps me push my thinking.

Having conversations with other educators to broaden my views and find new ideas.

The ability to interact with a geographically and culturally diverse group of educators with whom I can share ideas and widen my own knowledge is the primary benefit.

Anytime, anywhere, self-directed growth and learning. Always keeping up with the latest. Being part of a global education community lifts all of our voices.

Exchanging ideas and providing inspiration

Encouragement--especially as a new teacher. I don't get support from my admin, so I am thankful for me PLN.

A pln that is gloval

A community of learners

The support and ideas I receive are invaluable.

Quick, relevant, and innovative ideas/strategies.

Networking

What outcomes do you believe that participation in the professional educator network on Twitter brings to your classroom, school or system?

When educators take control of their own learning, everyone benefits. When educators come to believe that learning is something they do to themselves instead of something forced on them by their district, they can see how learning translates the same way to their students. They then empower students to take ownership of their learning, doing learning to themselves instead of having it imposed on them by others.

Motivation. New and different resources. Research. Data.

I have new and engaging things to try.

Shows pre-service teachers the network of other teachers and education professionals that are available. Provides support to pre-service and in-service teachers.

It exposes us to others who do what we do and allows to learn from them, share our experiences, and get better at what we do because of our increased knowledge.

I learn about new technology tools or other ways to support our students' learning, and share it with my colleagues.

Ideas from all over are shared and benefit my teachers and students

I learn constantly, stay up to date on trends in education, and have my assumptions challenged in a way that wouldn't happen if I were exclusively off line.

Twitter has helped me grow as an educator by exposing me to new ideas and challenging old ones. It's changed my practice and given me a window into how others work with students. I've shared information learned from Twitter with administrators on occasion and it's been utilized to improve our school.

With their collective knowledge, I become a more creative, innovative, effective teacher in my room and school. Fellow teachers as well as administrators have noted my energy and enthusiasm for craft development and my willingness to step outside the traditional modes of information delivery. The push to develop independent thinkers, creative collaborators, and problem-solvers is supported by my Twitter PLN. I am a better teacher because of my regular, active participation in Twitter chats like #BFC530, #SUNchat and #SATchat, particularly because I am engaged in discussion with educators at all levels - elementary, secondary, middle, administrator, media specialist, content specialists, SPED teachers, et al.

Better teaching and learning experience for me and for all who work with me.

A better understanding of education, and the support of others who are searching for the best ways to teach young people and prepare them for college and career readiness (although I hate those terms and would prefer "life readiness" because that is really what we are hoping to do for our young people.)

Best on-going professional development I've had.

Increased knowledge of resources/innovations/techniques

Positive outcomes that come from learning the latest things to implement in the classroom.

Helps to stay closer to the cutting edge of innovation.

Good news (activities in classrooms) shared more readily. Connections in the district made.

Wider base of knowledge and experiences.
More awareness of change that has and could happen locally. Allows change on the individual level, if not always possible with the system.
A global classroom that incorporates a variety of strategies and encourages student-centered learning
I constantly train the teachers in my building with the latest and greatest ideas I find on Twitter.
Resources, ideas, contacts
Perspective, valuable feedback,
Fresh ideas, new technology and support
New ideas, new technologies, and new friends.
Collaboration