Conversations, Debates and Affiliation Networks on Twitter

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ABSTRACT

The question addressed is whether, in connection with education, Twitter can be considered both a communication centre and an affiliation space, where virtual communities with shared interests are formed. The 6654 tweets containing the *#education* or *#educación* hashtag sent on specific days in 2014, 2015 and 2016 defined the sample. The design was a combination of the quantitative and the qualitative. The results indicated that, when tweeters not directly related with education show interest in the topic of education, they do so exclusively during a limited time period; that is to say, no permanent interpersonal links were observed amongst such tweeters. Therefore, the conclusion was that the *#educación* and *#education* hashtags make it easier to share information and to make primarily non-activist comments related with education; furthermore the hashtags enable the creation of a virtual community of shared interests but do not lead to the establishment of a permanent community. In addition, the characteristics defining the Twitter network (speed and immediacy) were observed to promote monologues more than dialogues and to encourage information sharing more than any real intention to interact or conduct in-depth discussion. These points must be taken especially into account in education.

INTRODUCTION

Twitter has been proved a valuable space for making public opinion about recent events known (Madge, Meek & Tristram, 2009; Marwick & Boyd, 2011; Woodly, 2008). Social networks' influence on citizens has even been thought to be able to outweigh that of conventional media (Bennett & Segerberg, 2012). In fact, studying Twitter communication processes and discussions through analysis of the hashtags used in messages has become a widespread practice accepted by most researchers (Bruns & Stieglitz, 2012; Veltri, 2013). As Zappavigna (2011) asserts, hashtag analysis reveals what people are talking about at a given time, and in addition using the linguistic code of the hashtag makes it easier for Twitter users to form communities that share interests. In short, Twitter may be regarded as an important source of knowledge about public opinion on a given topic. However, it is difficult to ascertain just how much microblogging reinforces true processes of communication and social affiliation and whether, on the contrary, microblogging encourages individualistic action devoid of social commitment and interest in others.

REVIEW OF THE LITERATURE

Communication Centre: Communication versus Information

The foundation of this research is the difference between the concepts of "communication" and "information" according to Kaplún (1998:64), who defines communication as "that process whereby an individual enters into mental cooperation with another until they both reach a common awareness" and information as "any one-way transmission of messages from a transmitter to a receiver". Kaplún (1998) insists that communication cannot be confined to an active transmitter (speaking) and a passive receiver (listening); instead, it is fundamental for both to interact and share their own experiences. As Noguera, Martínez-Polo and Grandío (2011:139) assert, "the socialising power of the media […]" has helped make the receiver a creator and transmitter of messages, and therefore it has boosted the increase in social actors who make their opinions heard.

Twitter was created to facilitate communication amongst Twitter users and their followers. As we all know, this interaction process takes place through the posting of messages or tweets (García-Avilés, 2015). Microblogging has been considered a conversation or communication centre (Boyd, Golder, & Lotan, 2010; Del Fresno, 2014; Honeycutt & Herring, 2009; Larsson & Moe, 2012); heavy participation and great liveliness have been registered on the web through messages of no more than 140 characters. Analysts have looked at the tool's linguistic potential on the basis of a given hashtag (Zappavigna, 2011) and even the coherence of Twitter conversations and the functions of the @ symbol when used in the body of messages (Honeycutt & Herring, 2009).

In this context, some research points to a lack of interaction amongst users and considers Twitter a space for information spreading more than a space for conversation or interaction (Faktor, 2013; Lovejoy, Waters, &

Saxton, 2012; Waters & Jamal, 2011), an environment where users do not argue their opinions (Calvo, 2016), where the monologues outnumber the dialogues and where true communication processes do not take place (Lovejoy et al., 2012; Veltri, 2013; Waters & Jamal, 2011).

The Twitter communication process has been described as communication that is the result of "following" other network users and/or "being followed" by others, where no reciprocal relationship between the followed user and the follower is necessary (Kwak, Lee, Park, & Moon, 2010:6). Analysis of the communication process has produced different ways of classifying messages or tweets, which researchers label according to the linguistic codes used in the body of the message.

Kwak et al. (2010:6) provide the following tweet classification system:
- • - "Singleton": Single (or direct) tweet sent by a user. Characterised by the absence of @.
- • - "Reply": Response to a tweet sent previously by another user. These tweets include @ with the user ID of the original message's author.
- • - "Retweet" (or RT): A message resending an original tweet to other users. A retweet may include fresh comments. Retweets include @ plus the user ID of the original tweet's author.
- • - "@userid": @ plus a particular user's ID, indicating the intention to quote and communicate with that particular user.
- • - "Hashtag" (#) before the keyword and/or indicating a specific topic: This code is highly useful for locating information, compiling tweets and/or locating conversations.

Another classification is that provided by Bruns and Stieglitz (2013), who point to the existence of two main types of tweets:
- • - "@mentions" (messages with @ in their content), which may be of two types: *genuine @replies* (messages that contain "@userid" but are not retweets) and retweets (or RTs) (tweets in this format: "RT @userid [original message]").
- • - "Retweets", which may be divided into "unedited retweets" (tweets starting with "RT @userid") and "edited retweets" (tweets not starting with "RT @userid", although the code does appear somewhere in the text).

Other forms of codes include "via @userid" (which indicates where the post comes from) and the option of indicating that you "Like" tweets.

The functions of @ in messages is another of the aspects examined. The use of @ as an indicator of communication intention has been highlighted, as has the use of @ to show "addressivity" (the fact that a message is addressed to a particular person) (Honeycutt & Herring, 2009; Java, Song, Finn, & Tseng, 2006; Larsson & Moe, 2012). Bruns and Stieglitz (2013) assert that "@userid" in tweets entails no communicative intention when it is the result of retweeting, in which case more-detailed analysis of the tweets is necessary.
Honeycutt and Herring (2009:4) differentiate amongst the following functions of @ in tweets:
- • - "Addressivity": When @ informs a user that this message is addressed to him or her.
- • - "Reference": When the message talks about a person but is not addressed to that person. Example: I don't like what @pepe is doing.
- • - "Emoticon": When @ is used as part of an emoticon. Example: @ _ @.
- • - "e-mail": When @ forms part of an e-mail address.
- • - As a stand-in for the English preposition "at".
- • - "Other": A grab bag of uses that do not fall into the categories above.

Tweets have been classified in different ways according to their content as well.

Java et al. (2006) establish the following taxonomy of user intentions in microblogging:
- • - "Daily chatter": Tweets commenting on tweeters' daily life, talking about their routine or what they are doing.
- • - "Conversations": Tweets including the @ symbol followed by the user ID in replies.
- • - "Sharing information" or URLs. Tweets containing a URL.
- • - "Reporting news": News or comments on current events, publication of reports.
- • - "Unknown": Tweets that cannot be classified into the categories above.

Martis and Alfaro (2012) discern the following types of messages: news sent by a formal, objective institution, usually with a URL; news accompanied by a personal opinion; advertising or personal promotion; general opinion expressed individually; an event or information giving the author's location; chat or conversation;

question; and personal message. Naaman, Boase and Lai (2010) classify tweets into information sharing, self-promotion, opinion and/or complaints, statements and thoughts, personal anecdotes and others' anecdotes. Lastly, Sriram (2010) proposes news (neutral, personal and commentated), opinions, deals, events and private messages.

Affiliation Network: Virtual Community of Shared Interests

Affiliation amongst Twitter users who share interests has been studied by many authors, from the perspective of homophilia (love amongst equals) (Kwak et al., 2010), finding that interaction amongst similar persons happens more quickly if the persons are different (Weng, Lim, Jiang, & He, 2010), and from the Twitter user standpoint, finding that users who follow each other share interests (McPherson, Smith-Lovin & Cook, 2001). There are also a great many studies highlighting Twitter's role in the formation of social movements (Boix, 2009; Castells, 2012/2013; Shirky, 2009; Torrego & Gutiérrez, 2016) and citizen engagement in affairs of social interest (Bennett & Segerberg, 2012).

Studies based on social network analysis start with the concept of the social circle (Kadushin, 2013), which is defined as an informal network formed on the basis of shared interests, whose members do not necessarily have direct relationships with one another, but instead tend to have an indirect connection through, for example, friends of acquaintances. In short, the social circle is defined as diverse communities of like-minded people and/or people with shared interests without any formal organisation (without rules, borders and/or established leadership) (Kadushin, 2013:184).

Zappavigna (2011) looks at the interaction patterns and linguistic complexity of Twitter users. Zappavigna starts by assuming that the main function of using the hashtag as a linguistic code is to facilitate affiliation and the creation of communities that share interests. The author asserts that users form communities when they search for and share messages using a hashtag as a linguistic code. The author concludes that use of the various tweeting codes (RT, @ and #) modifies interaction and affiliation patterns and that looking for messages on Twitter by searching for hashtags facilitates the creation of non-permanent communities with shared interests; in other words, that a tweeter's affiliation with the community is determined by how the topics of interest evolve over time.

The research reported in this paper evaluates Twitter's potential as a communication tool, starting with the tweeter intention classification created by Java et al. (2006), including and redefining some aspects according to the proposals of Sriram (2010), Naaman et al. (2010) and Martis and Alfaro (2012). The first points examined are the value of the @ code as a conversation indicator (Java et al., 2006; Larsson & Moe, 2012), the addressivity function and other functions indicated by Honeycutt & Herring (2009), taking account of the codes singled out by Kwak et al. (2010). Moreover, microblogging is considered an affiliation centre that facilitates the creation of non-permanent virtual communities according to the evolution of topics of interest, as Zappavigna (2011) indicates. This paper begins with the interest generated by the *#educación* and *#education* hashtags as important clues for ascertaining what the community interested in education-related topics is talking about during given time periods.

METHOD

Objectives

The general objective is to find whether Twitter can be regarded as a) a communication centre and b) a space of affiliation where virtual communities with shared interests are formed in connection with education.

In short, questions in this research are as follow:
1. Can Twitter be considered, as far as the educational environment is concerned, a Communication Centre and/or a space for affiliation where virtual communities with shared interests are formed?
2. Which are the users' intentions when dicussing Education topics on Twitter? Which is Twitter's main communication style - monologue or dialogue?
3. Which are the main communication systems (retweets and direct tweets or quotation using @) and dissemination processes taking place on Twitter?
4. Which are the specific characteristics of the virtual community related to participation in conversations about #educación and #education on Twitter?
5. What are the profiles of those Twitter users regularly posting about education like? Are those profiles related to the Education sphere?

Participants

Convenience sampling was used (McMillan & Schumacher, 2001/2005). Despite the drawbacks of this type of sampling technique, such as the difficulty of generalising for the whole population on the basis of the results, convenience sampling facilitates the selection of cases for in-depth study and enables a more-detailed analysis of user intentions that would not be possible otherwise (with a broader sample). The tweet extraction days were selected at random.

The *#educación* and *#education* tweets compiled on various days in 2014, 2015 and 2016 define the sample: 2014 (03 and 09 September), 2015 (13 and 15 January) and a third selection taken in early 2016 that includes data from late 2015 (17 December) and early 2016 (01 February and 23 March). The population data are given below.

Table 1. Preliminary Sample

Year	Population
2014	18076
2015	14561
Late 2015 and early 2016	8742
Total	41379

The tweet selection procedure was performed in the following phases:

1. 1.   Selection of messages posted in accounts in Spanish and English and grouping of tweets and retweets by topic within each year (referred to as "topic groups").
2. 2.   Grouping of messages that are the same, messages responding to the same news and sum of the frequencies in each group (including original tweets and RTs): Total tweets including RTs = 22455. Total topic groups = 1265.
3. 3.   Selection of messages whose frequency is equal to or greater than 10, for each of the years, and elimination of the remaining messages, which are considered less representative: Total tweets = 6654. Total topic groups = 226.
4.

Table 2. Analysed Sample

Year	By Topic Groups		By Total No. Tweets and RTs			
	Frequency	Percentage	Frequency		Percentage	
			Tweets	RT	Tweets	RT
2014	104	46	3294	72121	49.50	71.26
2015	95	42	2576	16376	38.71	16.18
2016	27	11.9	784	12835	11.78	12.68
Total	**226**	**100**	6654	101212	100	100

The analysis of the aforementioned 1183 profiles on Twitter accounts from which the information was disseminated, shows that participating users have had an average of 24097.15 Tweets sent, 653,87 Follows, 1135.02 Followers and 752.75 Likes (contained in their messages). As far as these Tweeter users' traits, it can be concluded that most of them post as individuals (53.5%) and not as part of an organization or institution while 41.2% are accounts belonging to institutions. A 4.4% of them correspond to cancelled accounts and 0.9% provides no information on their profile. Users researched show interest in a wide range of socio-political topics, related to citizenship, news dissemination, sports, religion, fashion, food and music. In some other cases, the accounts aim to promote business, sales, and telecommunication providers. Next, further details will be provided on whether users have Education-related profiles, which is a factor of special interest in this research.

Such data provide a different perspective when compared with those obtained from analyzing the profiles of the most popular users (132 top users) since the latter are mostly belonging to institutions (56,1%) such as: Apply For College; General Secretary National Union of Teachers; Psychotherapist & Certified Diabetes Educator; Communications Officer, @CoE; Secretariat of the Statistical Commission of @OIC_OCI; school-based healthcare professionals; Shasta College Online; Podemos; Mchari Institute. On a lesser amount, profiles corresponding to individuals are registered (31,8%), such as: Massachusetts teacher and technology integrator, SMARTboard trainer; Educational Tech Coach, EdTech enthusiast; Citizen and active participant in the world; Kan ku pandu dunia ini; Director of Earth FX International; an education/political activist; Cardiologist; Emmy Award writer; Kindergarten Gen Ed & Spec Ed Teacher, etc. A 9.8 % corresponds to cancelled accounts.

Instruments
The data collection instruments used were the *Twitter Archiving Google Spreadsheet (TAGS* v6*)* (Hawksey, 2013), Excel (to organise the data) and SPSS Statistics version 22.

The data were collected by means of the TAGS v6 (Hawksey, 2013). These data collection systems labour under certain restraints. In the first place, Twitter limits tweet retrieval to the last month's tweets, depending on the number of messages sent. In the second place, overestimation of the more-influential users could bias the data (Jain, 2015) and/or select the more-retweeted tweets instead of the original messages (Bruns & Stieglitz, 2013). In the third place, TAGS v6 only covers tweets sent in the last seven days.

Albeit temporary, the data gleaned from these collection systems are still an interesting research objective (Bruns & Stieglitz, 2013; Gerlitz & Rieder, 2013); it is interesting to collect both original messages and retweets, because retweeting frequency is considered a reflection of the information's popularity. In addition, as Bruns and Stieglitz (2012) point out, to obtain all the tweets or hashtags, one must trust the API, because it is the only tool that facilitates large-scale data collection. Researchers have no other way of confirming data quality and accuracy, and therefore this restriction is considered an inevitable one that does not invalidate the results (Bruns & Stieglitz, 2013).

The research was performed in three phases:
1. 1.   Phase 1. Data extraction with the TAGS V6 tool: Searches were run for tweets in the months of September 2014, January 2015, December 2015 and February and March 2016.
2. 2.   Phase 2. Sample preselection and selection: April 2016. The sample whose content was to be analysed was selected from the data found.
3. 3.   Phase 3. Data analysis: September and October 2016.

DATA ANALYSIS
The design combined quantitative elements (a descriptive study) and qualitative elements (content analysis).

With all the different communication options available (RT, @ and original tweet), **descriptive analysis** helped learn how the communication process developed and what tweeters' intentions were. Tweet **content analysis** enabled the messages to be grouped by topics and ascertained tweeter profiles (as persons related with education or not related with education) and the characteristics of the community or affiliation group with shared interests.

In order to obtain information about the users' profiles, their account are acceded and the latest Tweets received are checked. In addition, posted information is analysed since, as a whole, it can be considered as the user's introduction letter to potential followers. Such analysis shows the participants' basic traits and their relation – if any – with the Education sphere. Those classified as directly related to the Education sphere are the ones belonging to an Education institution (school, education-focused media, universities, etc.) or professionally engaged in the Education field (teachers, professors, school principals, politicians assigned to education issues, etc.).

Content analysis was performed following the steps given by García-Llamas, González and Ballesteros (2001): 1. Definition of the content universe and selection of the sample; 2. Decision on the unit of analysis and establishment of the families and codes (classification system based on categorizing content according to its similarities). Lastly, the information was organised into five *families* of message types: news reports, information, quotations, personal matters or daily chatter and other.

After the superfamilies (grouping of families to facilitate the recovery of information according to pre-established criteria) and families were established, the various families were subjected to comparative analysis. Following the recommendations of Flick (2015:65), the goal was "to find the core of variance in the field". The contents published by tweeters who are teachers and/or are directly related with education and tweeters who are not teachers and have no relationship with education were compared, because it was felt that the two samples could furnish interesting data contrasts. Further contrasts were run looking at messages' activist nature and relationship with tweeter profile. Descriptive analysis was performed through the generation of contingency tables, and the messages sent by the two samples were subjected to content analysis.

Table 3. Relationship Between Research Objectives and Data Analysis Method

Research questions	Method	Sample
a) Communication Centre: Communication Versus Information *1.* Which are the users' intentions when dicussing Education topics on Twitter? *2.* Which is Twitter's main communication style - monologue or dialogue?	Descriptive analysis	6654 tweets organised into 226 topic groups.
3. Which are the main communication systems (retweets and direct tweets or quotation using @) and dissemination processes taking place on Twitter? *b) Affiliation Network: Virtual Community with Common Interests* 4. Which are the specific characteristics of the virtual community related to participation in conversations about #educación and #education on Twitter? 5. What are the profiles of those Twitter users regularly posting about education like? Are those profiles related to the Education sphere?	Content analysis Descriptive analysis (contingency tables)	6654 tweets organised into 226 topic groups. 1183 profiles of tweeters responsible for sending the most popular tweets and 137 top tweeters.

RESULTS
The results of these analyses are presented according to the research objectives: Twitter as a conversation centre and Twitter as an affiliation space and community of shared interests.

Communication Centre: Communication Versus Information
The following were utilised to analyse the communication process that takes place on Twitter:
1. 1.   Classifications of tweets by the codes employed: Kwak et al. (2010) on retweeting and direct tweets or quotations (using @); Bruns and Stieglitz (2013), who differentiate between *genuine @replies* (tweets that contain the user's @userid but are not the result of a retweet) and RT @ (tweets in the "RT @*username* [original message]" format).
2. 2.   The functions of @ according to Honeycutt and Herring's classification (2009), the contributions of Java et al. (2006) and Larsson and Moe (2012): *addressivity* (@ addresses a message to another person and has the function of telling a user that this message is addressed to him or her), reference, emoticon, e-mail, a stand-in for "at".

Classifying according to Kwak et al. (2010), it was found that 21.1% were singletons (no @), whilst the majority, 77.9%, used the code "@*user id*", either as the result of retweeting or as a direct message addressed to some person (*genuine @reply*).

Subsequent analysis showed that only 14.6% of these messages were messages with a *genuine @reply,* and that 63.3% were the result of a retweet (*RT @userid*). Within these groups, 4% of the messages were observed to use *RT @userid* and *genuine @reply* together in the same message. In addition, in another 4% of the messages, the @ referred to the message's origin (*via @userid*). The other categories established by Honeycutt and Herring (2009) were not found.

Table 4. Descriptive Analysis of Message Types

	Frequency	**Percentage**	**Valid Percentage**
No @	50	22.1	22.1
@Retweet	143	63.3	63.3
Genuine @reply	33	14.6	14.6
Total	226	100	100

Analysis of the *most popular tweets* revealed a certain interaction by means of the "Like" label. The message "when your alarm goes off tomorrow morning and you think to yourself: do I really need an education?", coded as "personal comment", registered 10936 "likes". The message came from Cameron Asa (@Tweet like a girl), a communications student at the University of Tennessee, who opened her account in 2012. According to El Mudo TKM (2014), her messages tend to go viral.

Affiliation Network: Virtual Community with Interests Related with Education

For the study of the characteristics of the virtual community, the points analysed were tweeters' profiles and relationship with education, tweet content and the activist nature or sociopolitical interest of tweets.

In order to find out the characteristics of the vitual community, information posted on the tweeters' profiles is thoroughly checked.

Tweeter profiles were categorised under the following criteria:

1. 1.   Relationship with education:

- -   No relationship: The tweeter has no direct relationship with education although the tweeter has commented on certain topics having to do with education at some point.

- -   Direct relationship with education: Users are considered directly related to the Education sphere if they are professionaly focused on Education (teachers, school principals, members in Education institutions, etc.) and/or if the profile belongs to Education institutions (schools, universities, academies, etc.).

1. 2.   Teaching career: The account owner is a teacher or is not. Accounts are filed under this category only in case the account owner is a teacher. All other options have been discarded.

Analysis of tweeter profiles revealed that 72.2% of the tweeters at issue had no direct relationship with education, and only 27.8% had some relationship with education. In fact, amongst the tweeters related with education, it was observed that only 7% were teachers. In contrasts, analysis of the profiles of the 132 top tweeters (the most popular tweeters in the sample) confirmed that 62.5% of that population had a direct relationship with education, but only 7.6% had a Twitter profile as a teacher.

Categories to analise the tweets' content are based on a two-stage process:

1)   Reading each tweet and categorizing its content.

2)   Analyzing classifications used by external experts in previous studies (Java et al., 2006; Martis y Alfaro, 2012; Naaman et al., 2010; Sriram, 2010) and checking whether they appear or not in the research sample.

Therefore, the tweets' content is classified under the following categories:

i.   1.   News sharing: News or current events, reports, generally posted on formal media and accompanied by a URL.

ii. 2.   Information sharing: Opinions on different topics (politics, jokes, personal matters). These tweets may originate with a news item, but they include commentary. They may be accompanied by the new item's URL.

1.   2.1.Sociopolitical and education events:

  2.1.0. Non-activist.

  2.1.1. Activist.

1.   2.2.Reports, blog entries, interviews.

2.   2.3.Promotion or self-promotion: Messages sent to introduce, publicise or promote events, institutions, courses, magazines, etc.

3.   2.4.Educational resources.

1.   3.   Personal, personal comments or daily chatter: Personal information, commentaries on daily life and personal life, voicing thoughts or sharing quotations.

1.   3.1. Quotations: Sharing quotations by other authors to display agreement with the opinion, making it one's own.

2.   3.2. Personal comments.

  3.2.1. Non-activist.

  3.2.2. Activist.

1.   3.3. Congratulations.

1.   4.   Unknown, unlocatable or cancelled account: Message of unknown origin, message that cannot be located or account that has been cancelled.

Content analysis indicated that most tweets were personal comments (personal information, commentaries on daily life and personal life, voicing thoughts or sharing quotations) (37%), followed in second place by tweets sharing information (34.4%).
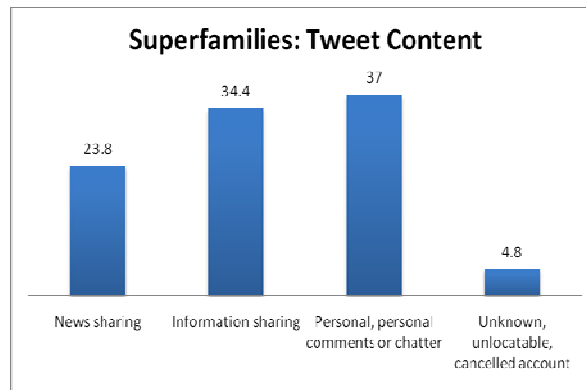
Figure 1. Tweet Content Superfamilies

Deeper analysis shows that, in the "Personal, personal comments or daily chatter" superfamily, most tweets were personal comments (76.2%), 53.6% were non-activist tweets and 45.2% were activist tweets. Most of these tweets (77.4%) were sent by tweeters unrelated with education. In addition, it was found that, within the "Information sharing" superfamily, the most frequently sent tweets were "promotional or self-promotional" messages of institutions and/or courses (37.2%), followed in second place by posts referring to reports, blog entries and/or interviews (30.8%). Most of the tweets in this superfamily were not activist messages (94.9%) and bore no relationship with education (69.2%), and the tweeters were generally not teachers (96.2%).

Comparison of frequencies within the analysis of families found that most of the tweets were personal comments (28.2%), followed in second place by news (23.8%). One interesting finding was the low percentage of tweets related with sociopolitical events related with education (1.8%).
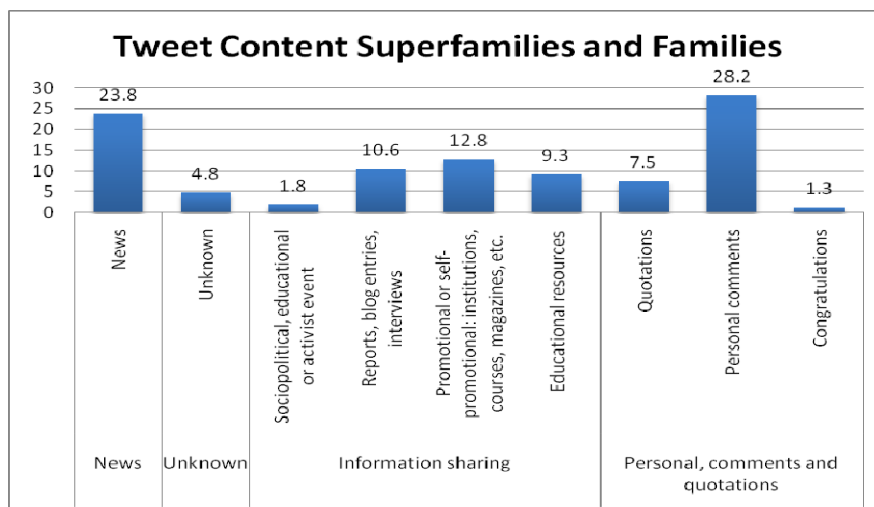

Figure 2. Tweet Content Superfamilies and Families

The activist nature of tweets was analysed as well. It was found that most tweets were not activist (81.1%) and that the activist tweets were related with sociopolitical events (18.5%) and, to a lesser degree, with personal comments and quotations (0.4%).
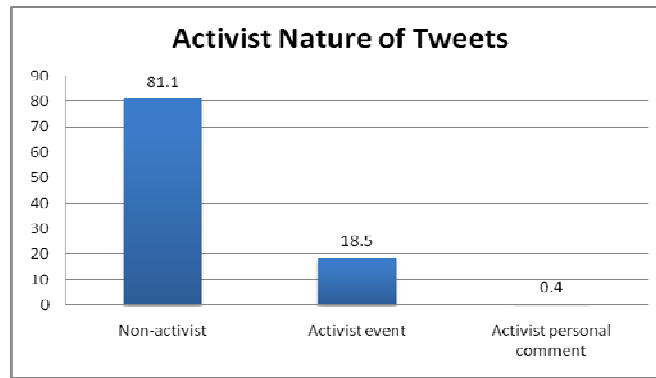
Figure 3. Activist Nature of Tweets

Tweeters related with education posted mostly "information sharing" tweets (38.1%), in contrast to tweeters unrelated with education, who posted mostly personal tweets (39.6%). It was found that teachers posted mostly personal tweets (50%), followed in second place by news (31.3%) and in last place information (18.8%).

Table 5. Cross-tabulation of Superfamilies with Relationship/Non-relationship with Education

		Superfamily			
		News Sharing	**Information Sharing**	**Personal, Personal Comments or Chatter**	**Unknown, Unlocatable, Cancelled Account**
Relationship with Education	No	23.2	32.9	**39.6**	4.3
	Yes	25.4	**38.1**	30.2	6.3

Furthermore, it was found that most of the activist tweets were sent from profiles not directly related with education (13%). Only 5.7% of these posts were sent by tweeters related with education. However, it was found, first, that 31.25% of Twitter entries made by teachers were activist in nature (as opposed to 18% of non-teacher posts) and, second, that 20.6% of the messages sent by tweeters related with education were also activist tweets (as opposed to 18.2% of the tweets from profiles unrelated with education).

Table 6. Cross-tabulation of Activist Nature of Tweets with Relationship with Education (in Percentages)

		Relationship with Education	**Total**		
		No		Yes	
Activist Tweet	No	59.03	22.02	81.05	
	Yes	**13.2**	**5.72**	18.94	
Total		72.24	27.75	100	

Table 7. Cross-tabulation of Activist Nature of Tweets with Tweeter Profile (Relationship with Education: Teaching Career) (Percentages)

		Teacher	
	No	**Yes**	
Activist Tweet	**No**	81.9	68.75
	Yes	18.0	31.25

Because activist tweets are considered to be of special significance, some examples are offered.
In the first place, some examples are given from amongst the tweets classified into the **"Personal, Comments or Chatter"** category sent from profiles **related with education,** as such tweets are considered to be of special interest.

In the Spanish national environment, @xavieraldekoa criticised fundamentalism ("Contra el fundamentalismo: Educación, arma de construcción masiva. https://t.co/ilhqXpZBtz") ("Against fundamentalism: Education, weapon of mass construction. https://t.co/ilhqXpZBtz"). He posted a picture of a group of fundamentalists shying away from a book entitled, "Education". The tweet sparked a huge amount of conversation and interaction amongst participants. The second tweet of special importance was sent by @EorldeRohan, criticising the Spanish ministries of Health and Education ("RT @EorldeRohan Sanidad y Educación, los ministerios más

importantes con los ministros más incompetentes. #AnaMatoDimision #Wertdimision") ("RT @EorldeRohan Health and Education, the most important ministries with the most incompetent ministers. #AnaMatoResignation #Wertresignation").

In the international sphere, there was @louisevanrhyn, who sent a personal tweet stating concern over improving the education system in Africa ("Listen up South Africa: we can transform our education system in 10 years. If we care enough to do so"). A second tweet drew attention to the announcement that the Legislative Assembly of Victoria, in Canada, will be maintaining financing for children's education ("@bctf: Let's keep up the call for more education funding to meet kids' needs - Contact info for MLAs here: http://t.co/kvpElSHe7I"). Lastly, in the United Kingdom, in the wake of fee protests, students complained about the growing cost of living and demanded affordable housing, or else they would have to leave university ("RT @JudyFriedberg: Students are campaigning for end to rents that swallow up 95% of their maintenance loans, writes @shellyasquith […]").

Foremost amongst the messages sent by tweeters with **no direct relationship with education** were these: requests for better primary education ("RT @elnathan: Dear Jonathan I take it back. Don't fix electricity. Fix education. Starting from primary school. We are gone, but please sav"); denunciations of the cost of keeping prison inmates and the potential use of that money in education ("RT @FactsInYourFace: The money it takes to support a prison inmate every year could pay 3 years of a college education"); denunciations of education cutbacks to finance the Tea Party, a party focusing on conservative right-wing politics in the United States ("RT @FLBlueVoter305: #GOP cuts Education funding to keep #teaparty alive. #UniteBlue http://t.co/24NemftGPM"); criticism of the dearth of black academics at university ("RT @MelBala: #Nzimande on being an example: Young people must get educated. Only 30% are black academics at university. The struggle today"); general criticism of education ("RT @PassionPosts: so many years of education yet nobody ever taught us how to love ourselves & why its so important" and "RT @diostuitero: EDUCACíón. https://t.co/HpvrWclkCs"); messages emphasising the positive aspects of having an education ("RT @harisbhadra: Education is the most powerful weapon which you can use to change the world"); and criticism of the education systems of certain countries, such as Venezuela ("@diana_dagostino: Para reconstruir a Vzla es imperativo educación de calidad, maestros con sueldos dignos, transporte, comedores, biblio") ("@diana_dagostino: To rebuild quality education in Vzla, decent teacher salaries, transport, dining halls, library are musts") and Singapore ("@herniepotter: my friend speaks the truth abt our education system http://t.co/ey9rdOvVBo").

The foremost tweets in the Spanish national sphere support public education and health ("RT @eva_arqtec: ¿Crees en una sanidad y educación públicas, en una justicia independiente y en una democracia participativa? #El31EcomienzaenelSur") ("RT @eva_arqtec: Do you believe in public health and education, independent justice and participatory democracy? #El31EcomienzaenelSur") and support for Susana Díaz's policy in the autonomous community of Andalusia ("RT @psoedeandalucia: Susana Díaz: En Andalucía sólo se ha recortado un 5% en educación frente al 20% del conjunto español #SURsusanadíaz") ("RT @psoedeandalucia: Susana Díaz: In Andalucia education has been cut back by just 5% as opposed to Spain's overall 20% #SURsusanadíaz").

In second place, amongst the **information-sharing tweets posted by tweeters related directly with education,** one **activist** tweet stands out, about a letter addressed to the U.S. House of Representatives asking for review a law ("RT @hamletgarcia17: In America Wanting a Quality Education should never be a crime PA bill HB2341 https://t.co/cjDooYkVdT"). Spencer (2015) describes this case in the state of Pennsylvania, where a child's parents were taken to court for "stealing of an education", the felony of theft of services and conspiracy to commit theft of services. They were accused of lying to get their daughter into a school, which could mean a fine and seven years in jail. Also shared is the manifesto of the National Union of Teachers of the United Kingdom ("RT @cyclingkev: @LabourEoin could you RT this very wide support for the NUT's Stand Up For Education manifesto? http://t.co/sukudQeMDB", 2015), which stresses the need to think and talk about education, the need for politicians to listen to parents and the need for the education community to participate in the creation of a manifesto on education improvement.

An interesting message on "information sharing" was sent from a profile **with no direct relationship with education.** Syed Talat Hussain, a Pakistani journalist and foreign political commentator, tweeted criticism of the fact that schools throughout the world forbid Muslim women to wear headscarves whilst many such schools allow crucifixes ("Hypocrisyhistory6:Muslim women r barred from education, if wearing headscarf. There is no uniform policy, and crosses").

Lastly, in messages tweeted from **profiles related with education with no activist intent,** there are promotional

and/or self-promotional tweets, such as these: the announcement of the opening of the national Ofsted organisation in the U.K. ("RT @Ofstednews: Help shape the future of education inspection - major Ofsted consultation opens 10am today #OfstedConsult"); application sharing ("#iOS #Apps - Google for Education launches Classroom iOS app to help students get more done - Six months… http://t.co/00qWnh657Z #Google"); a personal interview with Enrique Dans ("Hablando sobre educación: Carlos Guerra me hizo una pequeña entrevista hablando sobre temas […] http://t.co/tOzMlSNTAe #avanzacorporate") ("Talking about education: I gave Carlos Guerra a short interview talking about topics […] http://t.co/tOzMlSNTAe #avanzacorporate")] and information about Stamford Bridge Stadium's hosting Education Day on 23 February 2015 ("RT @ChelseaFC: Stamford Bridge is to host the @ZRFoundation Education Day next month... http://t.co/k1yNXyWksH #CFC http://t.co/aVOvnA0sZm").

CONCLUSIONS

The *socialising power of the media* and new social networks has helped turn the receiver into a transmitter and also a creator of messages. Tweeters perform this function by sharing information that they consider especially significant (Noguera et al., 2011). All Twitter users can participate in the communication process as transmitters and receivers, a necessary condition, according to Kaplún (1998), for the process to be considered communication at all.

This research found that when users talk about education they display a tendency to share information and general personal commentaries rather than discussing or conversing with other tweeters.

Firstly, it was found that 21.1% of messages were direct tweets, posts without any interactive intent, where the tweet's author primarily gives an opinion or shares a resource but does not address the message to a particular recipient. This kind of communication on Twitter results in monologues where users send information one-way without referring to other users. In these cases there is no true process of communication; there is only a spreading of information in which one-way message transmission occurs.

Secondly, despite the fact that a high number of tweets using the @ code was found (77.9% used @*userid*), it cannot be unequivocally concluded that Twitter is a conversation centre, because only 14.6% used *genuine @replies,* which indicate an explicit intention to communicate; and therefore only in that 14.6% of cases could it be concluded that the tweeter was unequivocally addressing another person. Furthermore, 63.3% were retweets (*RT @userid*), which indicated that the tweeter was resending a message received from another tweeter. This kind of message reveals two things: interest in the retweeted content and the message's reception-transmission trajectory, rather than a true intention to communicate or addressivity. The conclusion drawn in these cases was that the intention to communicate with another user was not explicit; tweeters were simply indicating the origin of the message. In addition, only a certain amount of interaction was used by means of the "Like" tag, especially in the most popular tweets; but such tweets could not be considered significant, taking account of the entire sample studied.

The Twitter tool can promote one-way conversation and/or individualistic behaviour, through singletons entailing no intention to interact or through almost mechanical retweeting; a tweeter needs to pay no attention to other users or show any true intention to communicate and interact with third parties. The automatic message management system that microblogging presents promotes a fast process of communication that could explain the general trend (found in the sample) to retweet without including any comments. Probably the network's own traits (speed and immediacy) primarily promote the sharing of information, making it easier to know what is happening with a topic in real time, but speed and immediacy do not reinforce a true communication process, in which time is spent interacting and topics are discussed in depth. In addition, the 140-character limitation on tweets means information must be condensed; it does not allow a detailed description of what one wants to express and thus limits the communication possibilities.

As Zappavigna (2011) asserts, the different codes used when we communicate on Twitter (RT, @ and #) are modifying our patterns of interaction and affiliation. Hashtag searching has facilitated the creation of **virtual communities** interested in the topic of education at specific moments in time: communities characterised by their temporary nature, non-permanent communities. Union within each community works according to the way the topics of interest evolve over time; there is no similarity amongst the profiles of the tweeters in the community. Generically speaking, the members of the sample studied did not share common interests related with education. Most of the tweeters had no relationship with education (72.2%), and only 7% were teachers. In short, the tweeters did not share a specific interest in education; they had diverse interests, but at a given point they found certain news or information interesting and/or made comments on education. The conclusion is that the analysed sample, containing dissimilar profiles, showed interest in the current-events topic of education for a

given period, without any permanent ties uniting the members of the sample. The *#educación* and *#education* hashtags made it easier for members to spread information, providing the opportunity to create a non-permanent virtual community.

It can be concluded that the discourse related with *#education* and *#educación* has been in the hands of people who bear no direct relationship with education. This implies that the general citizenry is mostly responsible for transmitting news, spreading information and making comments about education during the time periods analysed. However, the more-popular tweeters about education had profiles related with education, although only 7.6% of these top tweeters were teachers. In addition, although the majority of the activist posts were sent by tweeters having no direct relationship with education, it was observed that tweeters related with education and teachers (when they participated in Twitter) were more likely to share activist messages or messages of sociopolitical interest than were non-teachers and/or tweeters with no direct relationship with education. This fact could point to the importance of education institutions for spreading information on Twitter and for reinforcing communication processes on social networks concerning education and topics related with sociopolitical and/or activist events. Obviously, though, citizen participation is considered fundamental to spread information through microblogging.

Tweet content analysis showed that topics of high socio-educational and political importance were handled, both nationally (in Spain) and internationally, such as: education funding and/or denunciations of cutbacks in education, citizen participation, fundamentalism and its relationship with education, improvement of the quality of education, the importance of children's education, the need to reflect, the importance of opening discussion about education and engaging the education community, restrictions on university access for racial reasons, positive and negative aspects of education, student activism and problems related with the education systems of different countries.

In short, the social network could be promoting individualistic more than collective, interactive actions. It could be turning into a space where monologues are reinforced more than dialogues. Tweeting about education cannot be held to involve a true process of communication or a genuine intention to interact with other users related with education. However, in this context, where messages and interaction-free retweets abound, posts of high sociopolitical and education significance –messages that deal with topics of social interest– were found (although less frequently). Amongst all the noise generated by citizens, participants in microblogging also generate conversations and deal with affairs of socio-educational and political interest. It is necessary to reflect on Twitter's influence on noise generation within the communication process, although, in the end, the network is just a virtual reflection of the very nature of the communication process and our society.

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