Using Twitter in Higher Education in Spain and the USA

Uso de Twitter en Educación Superior en España y Estados Unidos

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Abstract

This article examines student teachers' use and perceptions of Twitter, based on a mixed-method comparative approach. Participants (N=153) were education majors who used Twitter as a part of required coursework in their programs at two universities in Spain and the United States. The theoretical background covers research on international work carried out on Twitter as well as a brief overview of the introduction of technology in two educational national systems. Quantitative data were collected via a survey, while qualitative data were obtained from students' reflective written texts. The majority of participants from both contexts perceived educational benefits to Twitter. However, their use of Twitter, and the nature of their perceptions of its educational value, appeared to differ in important ways. The USA participants' longer and more frequent use of Twitter was accompanied by more positive beliefs regarding the educational relevance of Twitter. While many Spanish participants saw value in the use of Twitter to find and share information, USA students highlighted interactive and collaborative uses. The study uncovers some challenges for learning related to Twitter's short format. In the conclusion section we discuss implications for learning and teaching in an age of ubiquitous social media.

Resumen

El presente artículo examina los usos y las percepciones de estudiantes y profesores en relación a Twitter a partir de una investigación comparada con metodologías mixtas. Los participantes (n=153) fueron alumnos de educación de dos universidades en España y Estados Unidos (EE.UU.) que usaron Twitter como parte de una actividad del curso. El marco teórico abarca la investigación internacional sobre Twitter así como un breve repaso a la introducción de la tecnología en los dos sistemas educativos nacionales. Los datos cuantitativos se recogieron con un cuestionario mientras que los datos cualitativos se obtuvieron a través de los textos reflexivos escritos de los estudiantes. La mayoría de los participantes de los dos contextos percibieron los beneficios educativos de Twitter. Sin embargo, su uso de Twitter y la naturaleza de sus percepciones

en relación a su valor educativo, difirió de forma significativa. Los participantes de EE.UU. usaron Twitter por más tiempo y de manera más frecuente a la vez que demostraron creencias más positivas en relación a la relevancia educativa de Twitter. Mientras que los participantes españoles valoraron el uso de Twitter para encontrar y compartir información, los estudiantes americanos destacaron los usos para la interacción y la colaboración. El estudio destapa algunos retos del formato breve de Twitter para el aprendizaje. En las conclusiones discutimos las implicaciones para la enseñanza aprendizaje en la era de la ubicuidad de los medios sociales.

1. Introduction

This article addresses future educators' beliefs about and experiences with educational uses of the microblogging service Twitter. Research has suggested that successful ICT implementation is related to not only hardware and teachers' digital skills, but also to teachers' beliefs and attitudes (Ertmer & Ottenbreit-Leftwich 2013). Furthermore, it has been noted that teachers' attitudes regarding technology are influenced by their own learning experiences with technology as students (Hermans, Tondeur, van Braak, & Valcke 2008). Thus, attention to educators' beliefs and attitudes is considered by many to be necessary for successful ICT integration in educational systems (Teo, 2009; Tirado-Morueta & Aguaded, 2014).

While Twitter is used in many countries and has received significant attention in education (Junco, Heiberger, & Loken 2011; Carpenter & Krutka, 2014a), comparative research on this technology is relatively uncommon. Comparative studies of social media other than Twitter have generally aimed at exploring users' profiles and their habits and routines (Adnan, Leak, & Longleya, 2014; Amichai-Hamburger & Hayat, 2011; Ku, Chen, & Zhang, 2013; Jackson & Wang 2013). However, little previous comparative research on social media has addressed educational applications. Although some research on social media in education has included international samples (Wesely, 2013), a comparative approach that seeks to parse differences among participants from various countries or contexts has been missing.

The current study is based on required, course-based use of Twitter by university students majoring in education fields, which was mainly aimed at enhancing participants' engagement with course content and building their digital skills. It also provided an early experience meant to influence the participants' attitudes and beliefs regarding the use of social media for learning and teaching in their future professional careers. In a previous stage of research (Carpenter, Tur, & Marín, 2016), student teachers' perceptions of Twitter for their learning and their future professional careers were explored. However, some questions arose from this phase: can these perceptions be influenced by students' real usage? Are there differences in the way students use Twitter for educational aims? Also, while the impact on students' learning of some characteristics of Twitter have already been explored, more information was needed and Twitter's format is further explored in this new step. Thus, this article explores relatively under-researched aspects of the impact of ICT and social media in the educational systems of the USA and Spain from a comparative perspective. Analysing students' reported behaviours and perceptions, this work explores commonalities and differences in the impact of social media, and Twitter in particular, on educational experiences in these two countries.

2. Background

2.1. Twitter in Education

There is a growing interest regarding Twitter in many research areas. In education, previous studies have focused on the employment of microblogging for learning aims and its possible support of innovative teaching practices. Twitter has been employed for diverse teaching practices since soon after its launch in 2006 (Carpenter & Krutka 2014a; Castañeda, Costa, & Torres-Kompen, 2011). Shah, Shabgahi and Cox (2015) suggested four uses of Twitter for learning: formal and informal learning community, collaborative learning, mobile learning and reflective thinking. Several studies, such as those by Carpenter (2014), Kassens-Noor (2012), Marín and Tur (2014), Mercier, Rattray and Lavery (2015) and Tur and Marín (2015), have explored the enhancement of informal and collaborative learning with Twitter. Some research has suggested that such collaboration can reach the level of a Community of Practice (De-Paoli & Larooy, 2015; Wesely, 2013). Studies have also demonstrated the impact of Twitter on learning and students' engagement (Junco, Heiberger, & Loken, 2011; Junco, Elavsky, & Heiberger, 2013) and in particular to overcome obstacles to participation in the context of large-lecture classrooms (West, Moore, & Barry, 2015). Twitter has been explored as a tool to support teachers' professional development (Carpenter & Krutka, 2014a; 2015). The extant literature has also identified challenges associated with educational uses of Twitter, such as the potential for the information flow to be overwhelming for some users (Davis, 2015).

2.2. ICT and Social Media in the Educational Systems of the USA and Spain

Nowell's (2014) research reported that social media use with USA students can improve student-teacher relationships and extend learning beyond the classroom. In the case of Twitter, its use by USA educators appears to have been on the rise in recent years (Lu, 2011; University of Phoenix, 2014). Kurtz (2009: 2) described how Twitter provided elementary school parents and families "windows into their children's days", while Hunter and Caraway (2014) reported that Twitter positively impacted high school students' literature engagement and motivation. Twitter does, therefore, appear to offer real educational potential. It remains to be seen, however, to what degree that potential will be realized.

What is now generally understood is the need in Spain to develop students' digital skills (Area & al., 2014). The Escuela 2.0 programme, which is based on the characteristics of Web 2.0 and social media tools, postulates that every individual can generate and share knowledge (Correa, Losada, & Fernández, 2012). The increased use of Web 2.0 tools for educational aims is likely related to the increase in the use of social media and the development of a knowledge society in Spain. Innovative social media use to support K-12 students collaboration and learning has been documented by Basilotta and Herrada (2013). Blogging by primary and secondary students is quite common, as evidenced by the annual awards "Espiral Edublogs" given to student blogs at all grade levels since 2007 (https://goo.gl/8RMxbO). Educational activities with Twitter, however, are not yet as common. Muñoz (2012) reported some use of Twitter in the contexts of primary and secondary level history, philosophy, language learning and storytelling activities. Activities from literature classes based on Spanish masterpieces, such as "El Lazarillo de Tormes" (Molina, 2011) or "Don Quijote" (Domenech, 2015), have also been documented.

3. Research

3.1. Context

This study was set in two different higher education institutions. The sample was one of convenience; the researchers, as employees at these institutions, knew that trainee teachers were using Twitter for required coursework at each university. The University of the Balearic Islands in Spain is the only public university in the region of the Balearic Islands and has different units on the islands of Majorca, Menorca and Ibiza. The university has approximately 11,000 undergraduate and 2000 postgraduate students. Elon University is a private university in the southeast of the United States that enrolls approximately 6000 students.

3.2. Participants

The participants from the University of the Balearic Islands were from the Majorca and Ibiza campuses. They were all students preparing to be teachers, most of them undergraduates (n=85) and, in addition, some postgraduates in Ibiza (n=15). In the case of Majorca, participants were students in their third year of study preparing to be primary school teachers. In Ibiza, primary student teachers were in their first year of study and the other students were studying a Master's degree program in preparation for teaching. The participants (n=53) from Elon University were all undergraduates in their second, third, or fourth year of studies. The Elon students were preparing to be teachers in a variety of subject areas and at the primary and secondary levels.

3.3. Twitter procedure

Participants in both countries used Twitter as a part of required coursework. Tasks varied according to the different courses in which the participants were enrolled. In both contexts, students were required to have a public Twitter account. They had to "follow" the Twitter accounts of their classmates and other educators or educational organizations beyond their classmates. Students were also required to send a minimum number of tweets that included a course hashtag and related to course content. In the USA, participants also were required to participate in Twitter chats, which are one-hour long, synchronous Twitter discussions focused on a particular topic (Carpenter & Krutka, 2014b). At semester's end, the students in both settings submitted written reflections on their use of Twitter.

3.4. Research questions

This work aimed to explore the differences in uses of and beliefs regarding social media, in particular Twitter, among students in the USA and Spain. Thus, this study addressed the following research questions:

- Are there differences in the way USA and Spanish students use Twitter?
- Are there differences in the way USA and Spanish students perceive the educational use of Twitter?
- Are there differences in the way USA and Spanish students perceive the short format of Twitter and its impact on learning?

3.5. Methodology

With the aim of a comparative study in mind, we collaborated to design an anonymous online questionnaire to be implemented in both contexts. This instrument, which was designed in Spanish and English to be adapted to each university, gathered quantitative data regarding student experiences with Twitter and their perceptions of Twitter and other social media. At the end of the semester, we asked the participants to write a reflection on their personal experience with the use of Twitter in order to gather qualitative data that would provide rich description and examples to supplement the quantitative findings.

3.6. Instrument

The survey used in Carpenter and Krutka's (2014a; 2015) research on educators' use of Twitter was the starting point for the creation of the instrument for this study. The authors' own experiences and the existing literature on social media use in education informed an initial survey draft in English. We considered cultural differences in order to try to design a survey that would allow participants from both countries to describe their experiences and perceptions. The survey was translated into Spanish, and reviewed by a colleague to ensure that items would be clear to participants. The instrument gathered descriptive statistics regarding the participants, and also included closed questions. The closed questions were measured on nominal or five-point ordinal Likert scales.

4. Results

The questionnaire was answered by 153 participants: 100 education majors from Spain (65.4%) and 53 from the USA (34.6%).

4.1. Research question 1: Are there differences in the way USA and Spanish students use Twitter?

Participants were asked about whether they used Twitter for academic and/or personal reasons (see Table 1). In both contexts, majorities reported use for academic and personal purposes. Because the participants were required to use Twitter for at least one of their courses, there were only a few respondents who indicated solely personal purposes. A chi-square test for association indicated there was not a statistically significant association between nationality and the balance of academic and personal use, $\chi^2(2) = 1.503$, p=.472.

Table 1. Academic and personal use		
	% Spain	% US
I use Twitter for academic purposes	42	35.9
I use Twitter for academic and personal purposes	51	60.4
I use Twitter for personal purposes	7	3.8

Participants were also asked about their following behavior on Twitter. The survey allowed respondents to choose from a list of types of Twitter users and indicate a percentage for how much they followed each type. The average percentages are shown in Table 2. While among the USA students, classmates (29%), education organizations (19.6%) and friends (17%) were most popular, students from the Spain highlighted other educators -non classroom teachers- (20.2%), classmates (19.2%), education organizations (17.7%) and in-service teachers (17%). Because of outliers and the non-normal distribution of the data, independent-samples t-tests were determined to be inappropriate for analyzing this data, and Mann Whitney U tests were instead conducted. Mean rank scores for USA and Spanish students were not significantly different for following of in-service teachers (U=2266.5, z=-1.480, p=.139), educational organizations, (U=2318, z=-1.287, p=.198), friends (U =2631, z=.070, p=.944), and celebrities (U=2494, z=-.628, p=.530). Mean rank scores for USA and Spanish participants were, however, statistically significantly different for following classmates (U=1631.5, z= -3.934, p<.001) and other educators who were not classroom teachers (U=1688.5, z=-3.718, p<.001). Respondents were also asked if they followed hashtags apart from the required course hashtag (see Table 3). USA students were significantly more likely to follow additional hashtags ($\chi^2(1)$=15.832, p<.001).

Table 2. Which of the following groups or types of people do you follow on Twitter?		
	Spain % average	USA % average
Classmates	19.2	29.0
In-service teachers	17.0	14.0
Other educators (non classroom teachers)	20.2	10.7
Education organizations	17.7	19.6
Friends	11.3	17.0
Celebrities	7.9	6.9
Other	6.7	2.8

Table 3. During the semester, did you follow hashtags other than the course hashtag?		
	% Spain	% USA
Yes	17	47.2
No	83	52.8

4.2. Research question 2: Are there Differences in the Way USA and Spanish Students Perceive the Educational Use of Twitter?

Concerning the uses of Twitter that were most relevant for the students' learning in the course, participants from both universities highlighted resource sharing, reflecting, and communicating with classmates (see Table 4). However, opinions regarding the relevance of many other Twitter uses differed between the two countries. For example, for participants from Spain finding up to date information (69%) was also important; whereas for USA respondents participating in Twitter chats (79.3%), collaborating with teachers and other educators (60.4%), and engaging in discussions (60.4%) were more relevant. USA participants also tended to perceive a wider variety of relevant learning applications for Twitter, selecting on average 5.86 different uses in contrast to 4.02 relevant uses selected by Spanish participants. These differences in relevance may in part be explained by some of the variation in what students were asked to do in the courses in the two countries. That the USA students had, on average, been using Twitter longer for academic purposes might also have contributed to their perceiving a wider variety of relevant learning uses.

Table 4. What uses of Twitter have been most relevant for your learning in this course? (Check all that apply)						
	Total number Spain	% Spain	Total number USA	% USA	$\chi^2(1)$	p value
Resource sharing	77	77	40	75.5	0.045	.832
Finding up to date information	69	69	19	35.9	15.58	<.001
Reflection	46	46	17	32.1	2.773	.096
Communicating with classmates	40	40	27	50.9	1.685	.194
Collaborating with teachers and other educators	22	22	32	60.4	22.34	<.001
Engaging in discussions	33	33	32	60.4	10.626	.001
Participating in Twitter chats	6	6	42	79.3	86.317	<.001
Participating in out-of-class activities	30	30	20	37.4	0.942	.332
Participating in in-class activities	21	21	19	35.9	3.956	.047
Communicating with the instructor	13	13	16	30.2	6.662	.010
Networking	9	9	17	32.1	13.076	<.001

Participating in a professional community	8	8	18	34	16.553	<.001
Emotional support	8	8	4	7.6	0.01	.921
Backchanneling (electronic conversation that occurs in parallel to face-to-face conversation)	4	4	5	9.4	1.848	.174
Receiving mentoring from the instructor	2	2	2	3.8	0.428	.513

Comments from participants' reflections provided more detailed glimpses of their perceptions of the educational use of Twitter. For example, a Spanish student credited Twitter with helping her to integrate ideas from her course: "I think that we have used it most to transmit the information we found on our own and share it, a true cooperative work. It has been useful to me to put in their place the pieces of many concepts that we were working with in class". A USA student appreciated the multifaceted nature of Twitter and how participants can tailor their use to meet their needs: "I had the ability to follow and connect with so many people on Twitter this semester. I read articles I may not have encountered had it not been for Twitter. I participated in Twitter chats and met teachers who were supportive and gave me great ideas for the future. I truly learned that you can use it to various extents and for different purposes. You can use Twitter however it would best meet your needs and that may be different for every person. I learned from my professor, fellow students, and other individuals related to the world of education".

4.3. Research question 3: Are there differences in the way USA and Spanish students perceive the short format of Twitter and its impact on learning?

Although many respondents indicated that they perceived multiple relevant uses of Twitter to support their learning in their courses, there was some apparent ambivalence regarding Twitter's format. One survey item explicitly addressed a potential learning constraint associated with Twitter, asking students their level of agreement with the statement "Twitter's short format has not allowed me to express my ideas." For this item, opinions were quite divided (Table 5). A Mann-Whitney U test was run to determine if there were statistically significant differences in beliefs about the limitations of Twitter's short format between Spanish and USA respondents. Distributions of the Likert scores for Spanish and USA students were broadly similar, as assessed by visual inspection. Likert scores for USA participants were not statistically significantly different from their Spanish peers, $U =2273$, $z= -1.496$, $p=.135$.

Table 5. Impact of Twitter's short format						
	Country	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Twitter's short format has not allowed me to express my ideas	Spain	9%	28%	24%	29%	10%
	USA	11.3%	37.7%	20.8%	26.4%	3.8%
Twitter's short format has helped me to summarise main ideas	Spain	13%	48%	24%	11%	4%
	USA	35.9%	41.5%	11.3%	11.3%	0%

A number of students from both Spain and the USA commented in their reflection papers on times that they felt that Twitter did not allow them to communicate their ideas in ways that they preferred. For example, one USA participant commented, "Too often I had to edit my tweets to be shorter than I had originally intended, which was frustrating as often I could not say exactly what I wanted due to the word limit." And a Spanish student explained,
«I am too introspective to make quick contributions as [Twitter] needs; I think too much about things before doing them. To write a tweet I have to believe what I write or what I retweet is interesting enough. This means reading well what you are going to write, verifying the reliability of what

you say and the source that you use, and looking for the ideas that offer different views… all this is impossible [on Twitter], because it wouldn't be so immediate as it is supposed to be».

Despite such critiques of limitations associated with Twitter's short format, a majority of students from both countries indicated either strongly agree or somewhat agree with the statement "Twitter's short format has helped me to summarise main ideas" (Table 5). A Mann-Whitney U test was run to determine if there were statistically significant differences in beliefs about this particular benefit of Twitter's short format between Spanish and USA participants. Distributions of the Likert scores for Spanish and USA students were not similar, as assessed by visual inspection. Likert scores for USA respondents were statistically significantly lower, indicating stronger agreement, than for Spanish peers, U=1918, z =-2.979, p=.003.

5. Discussion and conclusion

Twitter is sometimes dismissed as the frivolous domain of oversharing teens, vain celebrities, and relentless self-promoters, but in reality these media impact a wide range of serious phenomena such as journalism, political campaigning, protest movements, business marketing, and charity fundraising (Shirky, 2011; Theocharis, Lowe, van Deth, & García-Albacete, 2015). Our results suggest that students from two different countries perceived that Twitter can also have a meaningful impact in the educational sphere. Students from both contexts indicated they followed classmates and other professional users or institutions more than friends or celebrities, suggesting that despite its reputation, Twitter may be an appropriate tool for educational and professional aims.

The potential for flexible and open learning associated with the introduction of social media into education (Salinas, 2013; Marín, Negre, & Pérez-Garcías, 2014; Marín & Tur, 2014), together with policies in the USA and Spain that have promoted the integration of ICT in schools, indicate that teacher education programmes should consider how to prepare prospective teachers for new and challenging learning environments. Furthermore, if educators' attitudes and beliefs about teaching and learning with technology are formed at early stages, even while they themselves are students (Hermans, Tondeur, van-Braak, & Valcke, 2008), and if beliefs can become the most important barriers for future uptake (Ertmer & Ottenbreit-Leftwich, 2013), it seems that teacher education programmes should attend to their students' beliefs and perceptions regarding educational uses of technology.

The current work is in line with recent research that focused on attitudes and beliefs for successful ICT integration in educational institutions (Teo 2009; Tirado-Morueta & Aguaded, 2014). Furthermore, this work is a step forward in research since it considers educational usages, affordances and drawbacks from a comparative perspective.

In the case of our participants, many in Spain and some in the United States revealed that they had not previously used Twitter for educational purposes, and quite a few expressed surprise at realizing such applications for Twitter. This fact reinforces the need to provide supposed "digital native" students with guidance regarding educational applications of technologies; young people do not inevitably recognize and/or engage with technologies' learning affordances (Luckin & al., 2009). Scaffolded learning experiences with social media could help to change attitudes and beliefs towards more favourable positions. However, despite majorities in both contexts indicating that they did see educational potential in Twitter, there were still some students who remained skeptical. In our sample, data showed that students in Spain mostly used Twitter for academic purposes for the first time during the semester of our research, whereas more USA participants had previously engaged in academic uses of Twitter.

Our research aligns with previous studies that have suggested Twitter's capacities to impact student learning, especially in terms of collaboration skills, participation, engagement, and course results (Carpenter, 2014; Junco, Heiberger, & Loken, 2011; Junco, Elavsky, & Heiberger, 2013; Kassens-Noor, 2012; West, Moore, & Barry, 2015). With the aim of exploring particular aspects of this impact, this current research has observed that Twitter has mostly involved students in sharing and finding resources, debating and communicating and, reflecting. Qualitative data confirms this

impact, with many of the students noting their surprise regarding the educational value of these activities. Also, the very few comments in Spain about having followed external hashtags is coherent with the low percentage achieved by items related to external discussions. Furthermore, written reflections by students in both countries note the potentially overwhelming impact of access to so much information, which is consistent with conclusions by Davis (2015). Considering the main educational   usages of Twitter defined in prior research (Shah, Shabgahi, & Cox, 2015) it seems that students have observed the impact of Twitter for formal and collaborative learning and reflection, and more work would be needed to also enhance informal and mobile learning.

When comparing the experiences of the participants from Spain and the USA, the USA context appeared to be one in which the greater presence of chats and hashtags created more opportunities for Twitter interactions that were attractive to the participants. Van-Dijck (2011) noted that Twitter can be used in a variety of ways; while chats in the USA may have allowed participants to use Twitter more as a two-way communication tool, the less prevalent chat and hashtag use by the Spanish participants may have defined Twitter for them as more of an information and resource sharing tool. Although such sharing can be worthwhile, it may be a less compelling reason for trainee teachers to utilize Twitter if they are already accustomed to accessing more traditional media for information acquisition. Rather than identifying differences in the general, monolithic USA and Spanish cultures that affected the participants' perceptions of Twitter, our findings thus appear to suggest that dif-ferences in online practices associated with how technologies are employed in different countries or regions may influence users' perceptions and uses of technology. Although offline cultures likely influence online behaviors in many cases, there may not always be solely a one-way causal relationship (Qiu, Lin, & Leung, 2013).

Future implementations of educational activities with Twitter should explore the possibilities of two challenging lines of research. First of all, international collaboration among students could be an interesting new iteration since there is evidence that an interactive use of the Internet is related to higher academic achievement (Torres-Díaz, Duart, Gómez-Alvarado, Marín-Gutiérrez, & Segarra-Faggioni, 2016). Secondly, how educational applications of Twitter can contribute to the development of high level thinking skills appears to be an area worthy of exploration.

This study is limited by convenience sampling, which resulted in different group sizes from the two different countries. However, our findings offer a beginning step in research which the challenging and promising focus is the learning impact that Twitter can have in different academic contexts. Before future research can compare the learning context in greater depth, some previous knowledge on general usage and perception was needed. Thus, from now on, further comparative studies can explore the nuances of the impact of Twitter observed in this study. Future work is needed to promote the educational usage of social media for high level cognitive skills, such as reflection, critical thinking skills, and self-regulated learning, as suggested by recent research (Herro, 2014; Matzat & Vrieling, 2015), and explore the possible differences in terms of age and gender. Finally, since cultural factors could impact social media usage (Carpenter, Tur, & Marín, 2016) new research could address Twitter usage in terms of cultural differences in two main ways: on the one hand, for example, addressing how cultural differences in social norms and anxiety (Heinrichs, & al ,2006) could influence students' behavior in Twitter; on the other hand, focusing on the educational system, how cultural differences in teaching and learning processes -see for example the model of the four dimensions (Hofstede, 1986)- could influence usages and perceptions of Twitter and social media in general. Likewise, since a process of Americanization of the Spanish Higher Education system has been reported (Lalueza & Collell, 2013), it would be challenging to explore how Twitter is contributing to this phenomenon.

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