

# To tweet or not to tweet: Student perceptions of the use of Twitter on an undergraduate degree course

Running heads:

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## Abstract

Microblogging networks can potentially increase reflection, learning, and collaboration among undergraduate students. The purpose of this study is to investigate whether the use of Twitter can enhance perceived learning and promote critical thinking, collaborative learning, and active student roles. The participants, 202 undergraduate students, enrolled on three different degree courses, were studying educational technology course modules. A quantitative, transversal, and retrospective methodology with an *ex post facto* design was applied. The use of Twitter led to an increase in both perceived learning and critical thinking among the majority of students, and in collaborative aspects of the teaching-learning process, as well as in active student roles. Experience of Twitter and its use in an educational context has therefore contributed to enhancing the quality of learning and the teaching-learning process itself.

## Keywords

Perceived learning

Twitter

microblogging

active learning

Higher Education

## Introduction

AQ1 Over the past few years, the link between technology and education has been promoted as a key element in the transformation of teaching and learning in Higher Education. Unfortunately, the integration of these technologies in Higher Education has not been very extensive. There is little evidence of the much-promised transformation in teaching and learning that was to be facilitated by Educational Technology (EdTech). (Englund, Olofsson, & Price, 2017).

The popularity of social networks has motivated their use among teachers and these networks have become an important field of research in Higher Education. But, the technologies have also generated an increasing debate over their potential to assist learning. An increasing number of studies show the positive impacts of using social networks, in so far as they promote informal learning (Abella & Delgado, 2015), foster cooperative learning (Prestridge, 2014), and promote interaction and scholarly engagement (Chawinga, 2017).

There is currently a wide diversity of social media, but our research has focused on Twitter, because educators themselves have expressed a preference for the use of this top social media network in the classroom (Haythornthwaite, 2016). Moreover, Twitter is an open social network in which all users interact on equal terms. Thus, Twitter promotes professional development (Hitchcock & Young, 2016), extends the Personal Learning Network of the student (Luo, Sickel, & Cheng, 2017), and serves as a channel through which pre-service teachers can interact with in-service teachers and benefit from their greater expertise (Holotescu & Grosseck, 2009).

The majority of studies on Twitter in Higher Education have been in the social sciences and the humanities (see Tang & Hew, 2017). However, we hardly have any empirical evidence of its use and its effects on learning. Most of the research conducted using Twitter in Higher Education showed a positive effect on the learning process (Abella & Delgado, 2015; Chawinga, 2017). Some studies have reported that Twitter helped students to build their metacognitive skills (Prestridge, 2014) and promoted a positive impact on learning outcomes (Kim et al., 2015). Other experiences have shown that it helps to increase the degree of commitment of both students and professors in the teaching-learning activities (Hitchcock & Young, 2016; Junco, Elavsky, & Heiberger, 2013). It is also a good instrument to promote informal learning (Gao & Darr, 2016). The use of Twitter on an assignment can at times have surprising consequences. It may, as McKenzie (2014) pointed out, attract the participation of other people not enrolled on the course in the discussions under a hashtag that is specific to the class. These interactions mean that students learn from people outside of the classroom, in some cases even experts related with the discipline.

The aim of this paper is to analyse the impact of Twitter on the learning process and whether Twitter contributes to critical thinking skills, to active student roles, and to collaborative learning. Our research questions are as follows:

- •Will the use of horizontal and open social networks promote critical thinking?
- •What perceptions will students have about what they learn using Twitter?
- •Will the use of Twitter foster active student roles?
- •Will the use of Twitter promote collaborative learning?

## Method

### Description of the activity

The students participating in this study were following mandatory course modules in Educational Technology that form part of three different degrees: Pedagogy (first semester), Primary Education (first semester), and Early Childhood (second semester). Twitter was included in the syllabus and was a mandatory part of the practices on the course programme. The same activity was independently developed on all three degree courses.

The main purpose of the activity was to introduce students to Twitter from an educational point of view, thereby contributing to the development of a learning environment in which they can continue to learn after the end of the course. Dennen (2008) indicated that many students behave as lurkers in learning environments (i.e. although logged in, they are passive users who do not participate). As an obstacle to lurking, we asked each student to produce at least 100 tweets of educational content related to the subject (personal reflections, relevant information on educational technology, retweeting other tweets, information on assignments completed, etc.). They not only have to reach that number of 100 tweets, but they also have to participate actively in an online learning community where they are expected to provide information and to learn from the information published by others.

At first, an explanation was given on how to use the social network known as Twitter and some advice on how to complete the assignment properly (check the information, find reliable information, how to write a good tweet, etc.). In the activity, the students were also asked to do the following:

- •Include a profile picture, a short description, to change the background (or theme) and to add the address of the blog created for the course.
- •Follow a minimum of 30 teachers or EdTech experts. For that purpose, a list of teachers and EdTech experts on Twitter was given to them (<http://goo.gl/CHsHD>).
- •All their tweets had to include the specific hashtag of the group (#PrimUBU15, #PedUBU15, #InfUBU16).

The teachers on the courses also participated in the community, although principally by retweeting the tweets from students, so that they were widely disseminated to reach as large an audience as possible.

## Sample

In all, 202 students following undergraduate degree courses at the University of Burgos in Pedagogy ( $n = 38$ ), Primary Education ( $n = 104$ ), and Early Childhood ( $n = 60$ ) participated in the activity. The age range of the participants was between 18 and 39 years old ( $M = 19.75$ ;  $SD = 2.7$ ). 16.3% ( $n = 33$ ) were men and 83.7% ( $n = 169$ ) were women.

## Instruments

### *Perceived learning questionnaire*

Perceived learning is considered as an alternative to standardised exams (Richmond, Gorham, & McCroskey, 1987). There is no previous questionnaire to assess perceived learning through the use of social networks, so we developed one from the questionnaire proposed by Halic, Lee, Paulus, and Spence (2010). The perceived-learning questionnaire had 5 items to evaluate a unique factor, each item was scored on a five-point Likert scale where 1 was the highest degree of disagreement and 5 the highest degree of agreement.

### *The effects of using Twitter during the course*

The questionnaire section on the effects of Twitter use during the course was developed from one designed by Arquero and Romero-Frías (2013) for the assessment of a closed social network. It was therefore necessary to adjust some of the questions, so that they were consistent with the use of an open social network, as in case of Twitter. In this study we used the items related to:

- Active student roles.
- The promotion of critical thinking.
- Collaborative learning.

All the items were answered by using a Likert-type scale with five possible responses (strongly disagree to strongly agree).

## Procedure

The study complied with the ethical values and practices required for educational research: informed voluntary consent, the right to information, data protection and guarantees of confidentiality, anonymity, and non-discrimination.

A week before the end of the course, both questionnaires were handed in person to the students. The questionnaires were administered during mandatory practical classes, to guarantee the maximum number of completed questionnaires.

The American Educational Research Association's Code of Ethics (2011) permits incentives to be offered for participation in research, as long as those incentives are neither excessive, nor inappropriate. One widely used method in Higher Education is extra credit (Roberts & Allen, 2015). In this study, the

students received an extra credit for their participation and completion of the questionnaire, as a way of indicating appreciation for their participation. Completion of the questionnaire was voluntary, in order to ensure that there were no perceptions of coercion (Roberts & Allen, 2015).

## Results

An exploratory factorial analysis was performed for the validation of the Perceived Learning questionnaire. The results showed that there was only one factor with an eigenvalue greater than 1, which explained 54.39% of the variance. All factor loadings, ranging between .53 and .81, were significant. Confirmatory Factorial Analysis showed the following indexes to evaluate the absolute fit (GFI = .997, RMSEA = .000), the incremental fit (CFI = 1), and the parsimonious fit ( $\chi^2/df = .425$ ). We can conclude from the results that the Perceived Learning questionnaire was unidimensional and had adequate psychometric properties.

An essential aspect of any innovation process is to improve student learning. The results showed that the use of Twitter generated an increase in Perceived Learning among most students (Table 1). A total of 88.1% of the students considered that microblogging has helped them to share educational experiences and, in this case, as it is through an open network, it is not exclusively with their classmates. A majority (74.7%) also thought that using Twitter can generally help them in the way they learn. They also sensed that Twitter fostered discussion (71.3%) and that it gave them feedback on their tweets (72.8%), which meant their learning experience was more rewarding. Finally, the results also showed that 67.4% of the students had done more than the recommended amount of reading thanks to the information they received via Twitter.

Table 1. Learning perceived by the students during the activity in Twitter.

	<i>M</i>	Agree (%)	Disagree (%)
Twitter has helped me to share knowledge and educational experiences with other people	4.27	88.1	3
I believe that incorporating Twitter in teaching can help my overall learning experience	3.96	74.7	6.5
I think that other people's comments about my tweets are important	3.89	72.8	5.5
The discussions on Twitter help me to understand other points of view	3.88	71.3	5
The information I get access to through Twitter has encouraged me to read more information related to the subject	3.80	67.4	8.4

The results for increased active participation among students were satisfactory (Table 2). It is notable that 74.8% of students considered that the use of Twitter had led them to become more involved in that course than in other modules following more traditional methods. A total of 77.2% also recognised that the use of the social network contributed to lifelong learning, and 78.7% agreed or

strongly agreed that it has even allowed them to look up resources related to the subject on their own. However, only 53% of the students considered that the use of Twitter had enabled them to organise the course in a flexible way. Finally, it was striking that 83.6% considered that the network had made it easier for them to contact other active teachers and/or professors not enrolled on the course, which contributed to their informal learning processes.

Table 2. The students' active role.

<b>Using Twitter</b>	<b><i>M</i></b>	<b>Agree (%)</b>	<b>Disagree (%)</b>
Has made me feel more involved in the subject than in traditional classes	3.98	74.8	6.4
Has allowed me to learn about and to use tools which are useful to keep my professional knowledge updated in the future	3.99	77.2	3.5
Has allowed me to learn by myself after gathering additional information, consulting other resources, etc.	4.01	78.7	3.5
Allows students to manage their own time and to prepare the subject contents in a more flexible way	3.51	53	11.4
Allows students to contact other active teachers/professors in an easy way	4.19	83.6	2

The main purpose of a social network is to create links between people, in our case, to put students in contact with each other and with other teaching experts. This contact promotes discussion and encourages students to take an interest in the subject contents from different perspectives (Table 3). Among the students, 72.2% agreed with the idea that critical thinking had been fostered in relation to the subject contents and 72.8% considered that this type of thinking had also been fostered in relation to the contents available on the Internet. The same percentage of students thought that using Twitter had enabled them to develop critical and reflexive attitudes towards the opinions of other classmates. Finally, the students clearly considered that the use of Twitter had enabled them to express their opinions more freely than in the classroom.

Table 3. Promotion of critical thinking when using the social network.

<b>Using Twitter</b>	<b><i>M</i></b>	<b>Agree (%)</b>	<b>Disagree (%)</b>
Has enabled me to better develop critical and reflexive attitudes towards the contents and materials of the subject	3.84	72.2	4
Has enabled me to better develop critical and reflexive attitudes towards the contents available on Internet	3.90	72.8	2.5
Has enabled me to better develop critical and reflexive attitudes towards other students' opinions	3.89	72.8	4.5
Has enabled me to express my opinions and points of view more freely than in class	4.24	83.2	2

An open social network was also used with the intention of promoting the participation and cooperation of the students with each other and with other people outside the class. Students gave high scores to such issues as sharing ideas with others, having other points of view, and disseminating one's own ideas, as in most cases, over 80% of students agreed (Table 4). The only case in which that percentage was not exceeded was when assessing whether the use of Twitter helped students to try to solve the doubts and the problems that emerge on the net. Still, 75.3% agreed with that statement and we should take into account that the network was not used to enter into direct contact with the teachers as in a tutorial. Instead, total freedom of interaction was given, i.e. students were encouraged to raise doubts and ask questions that not only the teacher and fellow students could answer, but other people outside the class as well.

Table 4. Collaborative aspects of the learning process.

Using Twitter	<i>M</i>	Agree (%)	Disagree (%)
Allows everyone to benefit from other people's published contributions	4.32	89.6	1.5
Allows students to benefit from other classmates' published contributions	4.30	87.6	.5
Encourages students to solve other people's doubts and problems	3.95	75.3	4
Fosters the dissemination of the students' own ideas and points of view, which can therefore influence other people's opinions	4.10	82.1	2.2
Helps students to consider and learn from other points of view regarding problems and cases	4.02	80.7	2

## Discussion

The aim of this study was to verify the effects that the use of an open social network has on certain aspects related to student learning. In terms of an educational experience, the results showed positive effects. This activity has been innovative for our students, because up until then they had understood the use of Twitter from the point of view of leisure and had not considered Twitter as a potential educative tool. The use of Twitter on the course appeared innovative to the students and may be a motivational factor to promote their engagement with the activity. Twitter is easy to use, which is very important in any explanation of the success of this innovative activity. A key personal factor in the acceptance and use of certain technology in the Technological Acceptance Model (Davis, Bagozzi, & Warshaw, 1989) is that its use implies little or no effort. Further research along these lines should conduct in-depth investigations into the motivational factors that underlie the acceptance and use of Twitter, such as attitudes towards ICT and perceived usefulness.

Most studies that involve questionnaires on educationally innovative activities inquire into satisfaction levels, without studying the impact on learning activities. Although it is substantially more difficult to take into account the impact that these innovative activities can have on learning, a

questionnaire on Perceived Learning was developed for our activities that involved student participation within a wide community. Thus, it appears appropriate to analyse the impact that this activity has had on perceived learning. Most of the participants indicated that their experience using Twitter was positive from an educational perspective and that it was useful in their learning. The most valued was the possibility of sharing experiences and knowledge with other people. Students also valued the opportunity of exchanging ideas with other people on the network. Thoms and Eryilmaz (2015) considered that Twitter falls short of increasing levels of perceived learning and makes no direct contribution to learning. In their study Twitter was only used to promote interaction between students enrolled on the course, and the activity required to tweet thoughts on one article and to discuss it. Instead, our educational experiment has provided students with an open learning environment in which they can relate to service teachers and EdTech teachers, and by doing so, they can engage in virtual conversations with these groups, obtain information on current professional practice and share information, in order to contribute to the debate about education. This connected environment links up with the ideas of the theory of connected learning, which takes place when a young person is able to follow an interest with the support of friends and adult advisors, and at some time is able to transfer this learning to academic achievement (Ito et al., 2013).

The policies of the European Higher Education Area have changed many educational attitudes, one of which is the role of students in the teaching-learning process. The student is encouraged to assume an active and a participative role, and Social Networks are tools that can, from an educational point of view, foster active and participative student roles. In our study, the use of Twitter has opened up the class to society, and one of the most important consequences of introducing pre-service teachers to Twitter is that it has helped them develop a Personal Learning Network and to connect with educators. Lifelong learning is essential, in order for both pre-service teachers and in-service teachers to advance in their professional development. Hence, the informal learning environment provided by Twitter can extend their undergraduate curricula and support professional development. So, as Abella and Delgado (2015) pointed out, theoretical University education is joined to the practical reality of the lecture rooms from the very first levels of initial teacher training.

Interacting with one's own classmates and with people outside the class is very enriching, as students can learn from different opinions on the subjects imparted in class. This aspect would be key from a connectivism perspective, as learning happens when there are divergent points of view (Siemens, 2004). It also contributes to the development of critical thinking, as stated by the students themselves, as such a diversity of opinions leads them to think more deeply and to exercise a more critical spirit towards the contents that they see on the Internet. As well as learning from other points of view, using Twitter has enabled them to develop critical attitudes towards opinions that might differ from their own. It has moreover enabled them to express their opinions and to debate much more freely than in class. From that point of view, the aim is, in educational terms, to take advantage of the fact that online



socialisation has become an important part of the lives of young people (Smith, Hewitt, & Skrbiš, 2015).

The use of a social network has achieved higher levels of involvement among the students on the course. Furthermore, the results of our study have shed light on how social networks have helped students to learn contents, which is the ultimate goal of any educational innovation process. Our results have also shown that using a social network has been a motivating factor in working harder in that subject and has even increased students' interest in ICTs from an educational perspective. In addition, the educational activity under development has helped students to see the social media as an educational element, which can contribute to informal learning and to lifelong education.

There are several limitations to this study. We must take into account that this research is based on a unique, self-reported questionnaire and the data were obtained in a single-context where the use of Twitter was mandatory, and the teachers established a threshold of tweets that had to be reached. These conditions mean that participants are likely to rate Twitter positively, to use it more frequently and to <sup>AQ2</sup> express fewer negative comments (Hew & Tang, Tang & Hew, 2017). Further research is needed on the moderator effect of voluntariness to use Twitter in educational experiences. Future research lines should also analyse the moderator effect of different social factors such as sex, ethnicity, social class, etc. Additionally, it should address the privacy of students and the relationship between the digital identity of the student and future professional development. This proposal is necessary, because we observed that most of our students separated their personal Twitter account from their educational Twitter account, and only used the latter for academic-related matters. Related to this, future research should develop longitudinal studies to analyse whether these educational accounts are still being used once the course is over and how the students can integrate their professional digital identity into their personal digital identity.

In summary, the results of our study on the use of Twitter have been positive. Twitter has served as a professional tool for our students, adding value to traditional face-to-face classes. Students are users of social media, but some research has suggested that younger students wish to chat with their friends in private (Gunuc, Misirli, & Odabasi, 2013) and they are not fully aware of the impact of social media on their professional identity (Daly & Mansfield, 2014). Merely because our students grew up in the era of social media, we can neither assume that they are able to use social media in effective ways, nor that they are capable of critical reflection on the impact of social media in their lives. Hence, we must continue to offer our students experiences that show the impact of social media on their professional development and on their digital identity. According to Hitchcock and Young (2016), these kinds of experiences increase the media skills of the students and their critical thinking on the implications of social media use and on the content that they share on the social media and on the Internet. We believe that we can use the characteristics offered by Twitter to create learning communities that can improve both the early and the lifelong education of our students. Twitter is a good tool for this proposal,

because there are already large communities of teachers that use Twitter (see #edchat or #edtech), and we must take into account that many studies have revealed that those students who work in a collaborative way learn better than those who work individually (Cen, Ruta, Powell, Hirsch, & Ng, 2016).

## Notes on contributors

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## Disclosure statement

**AQ3** No potential conflict of interest was reported by the authors.

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