

# Microblogging: an online resource to support education and training processes

Microblogging: un recurso en línea de apoyo para los procesos educativos y formativos

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**ABSTRACT.** The relevance and use of Social Networks (SN) in people's daily lives make them outstanding elements as valid and supportive online resources for education and training processes. Within these SN, the case of microblogging (specifically Twitter) is a potential ally to promote communication, debate, and access to information and documentation for both students and teachers. In this paper, we conduct an in-depth review of the related literature, where we analyze the scientific articles that have addressed the use of microblogging in connection with educational and training activities. The results obtained show that together with a series of benefits of the integrated use of this resource in the educational field, other possible benefits in the field of the development of meta-skills, the improvement of the motivation of the participants together with greater participation and a reflective and critical spirit are also evident.

**RESUMEN.** La relevancia y el uso de las Redes Sociales (RRSS) en la vida cotidiana de las personas las convierte en elementos destacados como recursos en línea válidos y de apoyo para los procesos educativos y formativos. Dentro de estas RRSS, el caso de las de microblogging, (en concreto Twitter) se erigen como un potencial aliado para favorecer la comunicación, el debate y el acceso a información y documentación tanto para el alumnado como para los docentes. En este trabajo se lleva a cabo una profunda revisión de la literatura relacionada donde son analizados los trabajos científicos que han abordados el uso del Microblogging de manera conectada con actividades educativas y de formación. De los resultados obtenidos se evidencia que, junto a una serie de bondades sobre el uso integrado de este recurso en el ámbito educativo, se desprenden además otros posibles beneficios en el ámbito del desarrollo de metahabilidades, la mejora de la motivación de los participantes junto con una mayor participación y espíritu reflexivo y crítico.

**KEYWORDS:** Microblogging, Education, Training, Twitter, Online resources.

**PALABRAS CLAVE:** Microblogging, Educación, Formación, Twitter, Recursos en línea.

## 1. Introduction

Teaching through online resources enables the transmission and access to information and content for people located in different places but connected through the Internet. This possibility has nowadays been increased and favored by the irruption of different so-called smart devices that can be incorporated into the training and educational processes to improve the learning experience (Dua & Baloch, 2020).

These smart devices are incorporated into the daily lives of most students thanks to their flexibility of use and autonomy. In addition, the use of these elements has been favored by improvements in connectivity between devices and to the Internet, representing a real revolution in terms of the pedagogical possibilities for learning and the democratization of access to information they offer (Hsu & Ching, 2011; Varo-Domínguez & Cuadros-Muñoz, 2013; Infante-Moro, Infante-Moro & Gallardo-Pérez, 2021).

In recent years there has been a significant boom in social networks (SN) as a tool for connection and information between people in all types of fields, including academic and educational. Through them, people can talk, debate, express their opinions and share information and documents in different formats (Barman, 2019). The incorporation of SN into education, aligned with a pedagogy that enables the empowerment of students, generates a context in which its participants are the main beneficiaries. In some way, education and the use of SN can walk together in a virtual environment, giving rise to new pedagogical models based on the students' responsibility for their learning based on new resources (Dua & Baloch, 2020; Martínez-Rodrigo & Raya-González, 2013).

Current education takes place in an environment in which students, considered digital natives, are regular and intense users of SN (Dua & Baloch, 2020; Tur, Marín & Carpenter, 2017). This is a phenomenon not only private to individuals, but also reaches other spheres of human relations such as professional and teaching and learning processes. This is because its use as an educational tool can generate numerous benefits, both for teachers and students, thanks to its potential to generate collective intelligence among its participants (Martínez-Rodrigo & Raya-González, 2013).

Among the most widely used SSRs, today are those aimed at microblogging. Previous researches highlight how microblogging is characterized by its enormous potential to promote learning due to the rapid interaction among its participants (Hsu & Ching, 2011). This is possible thanks to the ease of sharing resources among the students themselves and the potential exchange of ideas with their teachers, fostering collaborative virtual learning environments (Smordal, Rasmussen & Major, 2021) in which all members are participants (Puertas & Carpio, 2017).

The social network Twitter can currently be considered the most widespread and widely used in this microblogging category (Tur et al., 2017). Its wide presence in different media has favored the implementation of experiences around its use in educational and training environments. These initiatives are increasing in number at all levels of education and training (Baraibar-Diez et al., 2019). Among the main reasons for the widespread use of Twitter in the educational field is the fact that previous studies consider that this network has a great capacity for impact-related aspects such as the improvement of collaborative and participatory skills and involvement, improving the results obtained in the learning process (Tur et al., 2017) as well as classroom communication and understanding of the concepts taught (Baraibar-Diez et al., 2019).

This paper carries out a thorough review of the scientific literature that addresses the use of the social network Twitter as a teaching resource within the actions of teaching through online resources. The main objective, therefore, is to identify the trends in its use and the results obtained from these experiences of integration of the Twitter network into teaching. To achieve this objective, a systematic review of the scientific literature related to the subject has been carried out.

The structure of this paper is as follows. After this first introductory section, the concept of microblogging,



and specifically the reality of the social network Twitter linked to educational and training processes, are addressed within the theoretical framework. Next, the methodology followed in this article is presented to achieve the main objective proposed. The results obtained are shown together with their discussion, as well as the main and most relevant conclusions derived from these results.

## 2. Literature review

The best-known current SN are Facebook, Instagram, Tik Tok, YouTube, LinkedIn, and Twitter, the latter being the main network dedicated to microblogging. These SN allow students to participate in a shared space in which, in addition to other types of documents (in different media), they facilitate the expression of ideas, reflections, and consultations, in an easy and integrated manner. This favors its participants a greater dexterity in their thought processes and the improvement of communication and technological skills (Dua & Baloch, 2020).

Microblogging has become a way of communication and communicating between people that has revolutionized the way users interact through online channels (Varo-Domínguez & Cuadros-Muñoz, 2013). The use of microblogging in educational environments favors interaction and the formation of communities around its participants (Smordal et al., 2021). Although it has many similarities with traditional blogging, microblogging has the limitation (which is almost its great virtue) of the necessary brevity of characters when sharing and interacting through it (Hsu & Ching, 2011). The required brevity of the texts favors the synthesis capacity through a simple and intuitive use. Furthermore, the use of microblogging in the field of education and training provides a noninvasive communication channel concerning the privacy of teachers and students, favoring simplicity and eliminating the superfluous through the use of different media and smart devices (Varo-Domínguez & Cuadros-Muñoz, 2013).

Twitter is a social network based on microblogging. It has sometimes been criticized for being included among those SN that are used by young people and that can be placed in a sphere identified as more frivolous, however, its impact in other spheres and population groups shows the opposite (Tur et al., 2017). This social network is characterized by allowing its users to write and read text and content of up to 280 characters, with the possibility of expanding the information contained through links, the use of hashtags or keywords, etc. (Dua & Baloch, 2020).

The use of Twitter, by its very nature as a private social network, is not identified with a specific teaching methodology, so in the educational environment, it is necessary to establish a series of specific strategies that allow all participants to know in advance the rules of use and conduct (Smordal et al., 2021). However, the potential of this social network as a teaching tool is unquestionable, since it allows teachers, among other advantages, to emphasize concepts addressed in classes and share small pills of a formative nature without the need for students to access the virtual classroom. In a way, this social network takes advantage of the positive predisposition of students toward everything related to social networks (Baraibar-Diez et al., 2019).

In more detail, and according to Dua & Baloch (2020), the use of these tools linked to online resources will lead to a series of benefits, among which we can highlight: a) the improvement of the quality of teaching activities and teaching and learning activities, b) the improvement of the sustainability of the teaching and learning process, c) the facilitation of lifelong learning, d) the strong linkage of education and research, and e) the improvement of meta-skills such as digital literacy.

## 3. Methodology

This research has been carried out according to the methodology of the systematic literature review as shown in Figure 1. In this case, the use of microblogging through the social network Twitter in the educational field. The use of this methodology makes it possible to obtain relevant and general conclusions from the identification and analysis of all the selected documents on a given subject (Baena-Luna & García-Río, 2021; Mengist, Soromessa & Legese, 2020).

To identify the most important articles in terms of their impact, the most influential scientific databases in the field of social sciences and education, namely Web of Science (WoS) and Scopus were consulted. Access to these databases provides access to high-quality scientific papers with a great number of references (Gutiérrez & Maz, 2004; Hansen, Liu & Morrison, 2019).

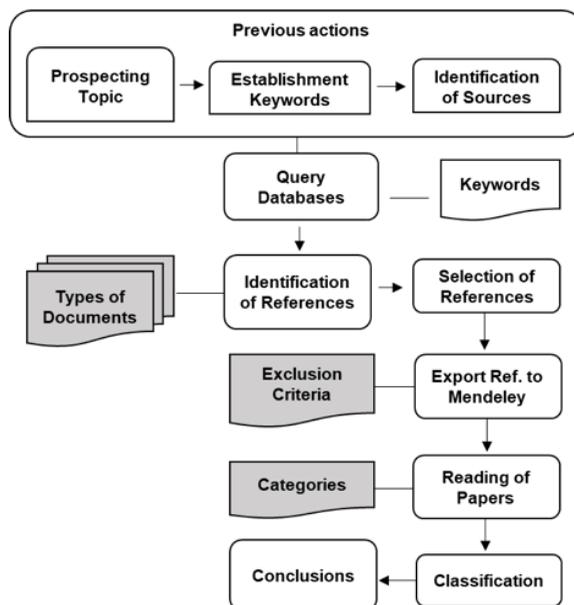


Figure 1. Summary Methodology. Source: Self-made.

The consultation and identification of the articles in the databases were carried out using the previously established keywords. The terms used in both databases were: "Microblogging" + "Twitter" + "Virtual" + "Learning". These terms have been used in English since in all the articles contained in these databases, always, in addition to another possible language, include the keywords in English along with the abstract. This is due to the consideration of English as a lingua franca (Gutiérrez, 2010), in this case within academia.

The consultations yielded a total of 135 potential research papers for study and analysis. A series of exclusion criteria were applied to this first result. Firstly, articles were considered as the type of document to be evaluated, discarding from the study the following types of documents: (1) book, (2) book chapter, (3) communications in conferences and congresses, and (4) papers in conferences and congresses.

Once the potential articles for study and analysis had been identified and delimited, they were exported to Mendeley bibliographic management software. With this action, in addition to facilitating the management and use of the papers, the number of papers was harmonized through the elimination of papers present simultaneously in both databases.

After consolidating the number of papers, we proceeded to analyze the content of the Abstract section using StArt software to establish which papers were in line with the object of our article and not to include those papers whose main objective and subject matter deviated from our object.

The exclusion criteria and actions applied to the identified papers resulted in a final number of 18 articles for analysis. These references were read by the two authors to corroborate that the papers corresponded to the subject matter addressed in these papers. In case of doubt, a third researcher external to the team of authors read the article to resolve it. The 18 articles were finally included in the analysis phase.

## 4. Results and discussion

Once the papers under study and analysis had been identified and delimited, they were analyzed as shown in Table 1. It can be seen that of the total number of papers, the category with the greatest presence is that of empirical research papers; specifically, 15 of these papers fall into this category.

Regarding the year of publication of the papers under study, the most distant and closest to the present are the articles published in 2012 and 2021, respectively. Even though the first microblogging SN began their journey in 2007, it is relevant that it was not until five years later (2012) when the first papers were published that addressed this topic in a way connected to teaching and learning processes through online resources. Concerning the affiliation of the authors of the papers, we should highlight the case of Spain with 5 papers, the United States of America with 3, the United Kingdom with 2, and finally Saudi Arabia with 2. These four countries represent more than 75% of the total number of papers analyzed, as shown in Table 1.

In the bibliometric field, it is also noteworthy that in the case of the keywords of the papers analyzed, it is the terms related to the reality of SSRs and virtual learning environments that predominate. Specifically, out of a total of 83 keywords contained in these papers, 26 are directly related to social media. This undoubtedly demonstrates the importance of microblogging applications in the context of SSRs. At this point, it should be noted that 2 of the papers analyzed do not include keywords. Specifically, these are the articles of Lyapichev et al. (2021) and Matsumoto & Kojima (2016).

About the scientific journals in which the research papers under study are published, no one stands out above the rest when it comes to addressing these issues. The 18 articles analyzed were published in 18 different journals. The fact that four of these journals are publications focused on the health field does stand out. These are the Saudi Pharmaceutical Journal, Archives of Pathology & Laboratory Medicine, Journal of Electronic Resources in Medical Libraries, and Korean Journal of Medical Education. The rest address the subject under study both in journals in the educational field and the use of technology.

Reference	Affiliations	Keywords	Journal
Badr, Ismail, Alghuraybi & Lahza (2021)	Saudi Arabia	Social Media Network; Virtual Pharmacist; Complete Medication Review; Medication Therapy Management; COVID-19; Public Health; Digitalization	Saudi Pharmaceutical Journal
Sanchis-Font, Castro-Bleda, González, Pla & Hurtado (2021)	Spain	Machine Learning; Artificial Neural Networks; Sentiment Analysis; User Experience; Virtual Learning Environments; Learning Management Systems	Neural Processing Letters
Popovic, Zarubica, Vukovic & Matic (2021)	Montenegro   Serbia	Higher Education; Blended Learning; Digital Technology; Social Networks; Students	Sport Mont
Lyapichev et al. (2021)	USA	-	Archives of Pathology & Laboratory Medicine
Ghounane (2020)	Lebanon	Covid-19 Pandemic; EFL Students; E-Learning; Google Classroom; Moodle; Motivation; Social Networks; Zoom	Arab World English Journal
León-Gómez, Calderón-Garrido & Gil Fernández (2019)	Spain	Bachelor's Degree; Master's; Initial Training; Social networks; Educational Technology	Campus Virtuales
Calderón-Garrido, León-Gómez & Gil-Fernández (2019)	Spain	Digital Educational Competition; Higher Education; Social Networks; Educational Virtual Environments; Facebook; WhatsApp; YouTube	Vivat Academia
Surjanti et al. (2018)	Indonesia	M-Learning; Effectiveness of Learning; Organizational Behavior	International Journal of Civil Engineering and Technology
Ogaji, Okoyekwu, Wanjiku, Osiro & Ogutu (2017)	Kenya	Social Media Platform; Usage; Pharmacy Students; Kenyatta University	Computers in Human Behavior
Maros & Rosli (2017)	Malaysia	Politeness Strategies; Computer-Mediated Communication; Twitter Status Updates; Communication Misfire, Malaysian Public University	The Southeast Asian Journal of English Language Studies

Herron (2017)	USA	Live Streaming; Mobile Apps; Online Broadcasting	Journal of Electronic Resources in Medical Libraries
Alsuraihi, Almaqati, Abughanim & Jastaniah (2016)	Saudi Arabia	Medical Education; Social Media	Korean Journal of Medical Education
Ricoy & Feliz (2016)	Spain	Twitter; Social Networks; Networked Learning; Higher Education	Journal of Educational Technology & Society
Matsumoto & Kojima (2016)	Japan	-	International Journal of Knowledge and Systems Science
Hennessy, Kirkpatrick, Smith & Border (2016)	United Kingdom	Neuroanatomy Education; Undergraduate Education; Medical Education; Social Media; Twitter; Millennial Generation; Neurophobia; Learning Experience	Anatomical Sciences Education
Feliz, Ricoy & Feliz (2013)	Spain	Higher Education; Online Learning; Twitter; Social Networking; Training Activities	Open Learning: The Journal of Open, Distance, and eLearning
Crane, Benachour & Coulton (2012)	United Kingdom	Attention Relevance Confidence and Satisfaction (ARCS) Model; Blended Learning; Education Information; Systems Mobile Electronic; Alerts Student Engagement; Web 2.0	International Journal of Mobile and Blended Learning
Williamson & Kelley (2012)	USA	Public Diplomacy 2.0; Social Media; Classroom 2.0	Global Media Journal

Table 1. Bibliometrics data. Source: Self-made.

Regarding the target group of the papers analyzed, most of them focus on the case of university students, both undergraduate and master's degree students. Specifically, 16 of the 18 papers. In no case does any of the papers analyzed refer to the group of doctoral students. There are two papers in which the group participating in the training activities are users of virtual educational platforms in the health care field: Lyapichev et al. (2021) y Badr et al. (2021). In this second case, although they are not students in a strict sense, they are participating in an informative process, based on training, through training actions on health-related topics. These two articles, both published in the year 2021, carry out their research in the context of the period of the highest incidence of COVID-19, during the year 2020.

The connection of the potential of the use of microblogging through the social network Twitter with the different educational or knowledge areas in the papers analyzed is diverse, as can be seen in Table 2. Outstanding among the total number of papers analyzed are the articles that study the use of Twitter in the medical-health field, specifically five papers that focus on this topic. After this first category, six papers can be identified in which the use of Twitter is analyzed in the case of university students in general, and finally, it is language learning by university students that is analyzed in a way connected to the possibilities of the social network in this field, with two papers being analyzed.

Th. Areas	References	Objective	Group
Medical-Sanitary	Hennessy et al. (2016)	To examine whether Twitter can be used to create an informal space for the subject neuroanatomy between students and teachers and whether this is conducive to learning increases student engagement and alleviates student anxieties.	Anatomy Undergraduates
	Ogaji et al. (2017)	To investigate the use and application of social media in their training activities among pharmacy students at Kenyatta University in Kenya.	Pharmacy Undergraduates
	Lyapichev et al. (2021)	Describe their experience in modifying educational approaches by overcoming learning obstacles by building a virtual educational platform and using social media, in particular Twitter.	Participants of MD Anderson Cancer Center's Hematology Educational Platform
	Badr et al. (2021)	Analyze trusted sources of health information during COVID-19 and suggest future ways for the end-use of SN for dissemination of preventive health information during a pandemic and ways to sustain it afterward.	Volunteer Users of the Pharmaceutical Service in Saudi Arabia
	Alsuraihi et al. (2016)	To explore Saudi Arabian medical students' use of SN and discover the most common resources used in medical education.	Medical Undergraduates



General - University	Crane et al. (2012)	Understand the potential benefits of using mobile applications as assistive technologies for existing e-learning as an information and notification system for learners.	University Students General
	Matsumoto & Kojima (2016)	Develop a web-based discussion support system through the use of SN.	University Students General
	Surjanti et al. (2018)	Analyze cell phone usage about e-learning through tools such as Twitter.	University Students General
	Herron (2017)	Analyze the use of microblogging together with other SN as support within streaming platforms for virtual training.	University Students General
	Sanchis-Fort et al. (2021)	Automated evaluation of the user experience in the e-learning environment using sentiment analysis techniques.	Students in Virtual Environments
Languages Learning	Maros & Rosli (2017)	Analyze English language learning through computer resources and the use of Twitter.	University Students General
	Ghounane (2020)	Highlight the learning process and the tools that educators have used to promote e-learning.	University Students General
Teacher Training and Secondary Education	León-Gómez et al. (2019)	To know the educational use of social networks in the initial training by students of the Teacher's Degree and master's degree in Secondary Education in a non-face-to-face and exclusively online University.	University students: Teacher Training degree and master's degree in Secondary Education
	(Caldorón-Garrido et al. (2019)	To know the use of social networks in the initial training of future teachers in a university that operates exclusively online, and to compare the results obtained according to gender, age, grades, and courses.	University students: Teacher Training degree
Digital Learning and SN Training	Feliz et al. (2013)	Analyze the implementation of the microblogging social network Twitter in the learning process of higher education students.	Master's Degree Students
	Ricoy & Feliz (2016)	Analyzing the use of Twitter by master's students to develop a learning community.	Master's Degree Students
Sport and Physical Education	Popovic et al. (2021)	To identify attitudes and preferences of sports science students about the use of e-learning and SN at the University of Novi Sad.	Undergraduate Faculty of Sport and Physical Education
Public Diplomacy	Williamson & Kelley (2012)	Identify and analyze innovative strategies for effective teaching of Fundamentals of Public Diplomacy content through the integration of technology.	University Students General

Table 2. Thematic areas and group analyzed. Source: Self-made.

These articles, in all cases, show what has been the starting situation and the intended objective(s) with the implementation and/or incorporation of resources based on the SN, especially those networks focused on the resource of Microblogging, as is the case of Twitter, within the learning and training processes, mainly online.

In most cases and according to the current trend pointed out by Dua & Baloch (2020), university students in general and participants of virtual platforms are considered regular users of SN, even digital natives in this type of resource, so it has not been necessary a process of prior education and training in most cases. The articles of Feliz et al. (2013) and Ricoy & Feliz (2016) do show an initial training period for the use of the resource to favor the optimization of the tool. In both cases, the implementation of the incorporation of the Twitter social network took place in the context of a master's degree related to the subject under study, so it may be that this prior learning was integrated into the training action itself.

All the articles analyzed highlight how, in a transversal manner in all the initiatives implemented incorporating the social network Twitter into the educational and training processes, the aim pursued was none other than to encourage sharing, discussion, and interaction on more general topics in some cases and concrete and specific in others, as highlighted in the analyzed articles of Ghounane (2020) y Hennessy et al. (2016). In short, as Barman (2019) pointed out, the SN in general and Twitter in particular, are resources that allow sharing of ideas, reflections, comments, etc. even documents and multimedia files that enrich the interaction between people along with improving access to new ways of having information and content available. In this regard, the article of Matsumoto & Kojima (2016) highlights the value of the social network Twitter as an element that generates debate between different ideas and positions. Even in the case of the article of Crane et al. (2012) in addition to the benefits already mentioned, the possibility of using this network as a possible notification system for students is pointed out.

Another noteworthy aspect of the analyzed articles is the fact that as Tur et al. (2017) have already pointed out, the habitual and almost intense use of the different SN by people in general, should serve as an incentive and motivating element when studying and proposing different actions in the educational and training

framework. Therefore, and based on this reality, the use of these resources should favor learning and training together with a more accessible collective intelligence thanks to the use of devices and elements that are already part of the everyday life of citizens, as pointed out by (Martínez-Rodrigo & Raya-González, 2013).

An important element when addressing the use of Twitter as an educational support resource is language learning, as pointed out by two articles that have been analyzed in this review. Although the educational topics to which the social network Twitter has been incorporated have been varied, in the case of language learning it is used as the main element of the educational process. Specifically are the articles of Maros & Rosli (2017) and Ghounane, (2020). In both papers, the authors highlight the possibilities of integrating this microblogging social network in language teaching through online resources.

COVID-19, as in all other facets of life, has also been an element of special consideration in this research. In the field of education and training, the different situations involved and the complex scenarios in which in many cases they have had to develop as a result of the regulations and recommendations issued by the health authorities and the competent public administrations, have led to moments of uncertainty and doubt when it comes to maintaining an adequate pace for each of them. In this case, two articles analyzed stand out, Lyapichev et al. (2021) and Badr et al. (2021). In them, the incorporation of the social network Twitter has been carried out thanks to the implementation and development of informative and training platforms to overcome the obstacles arising from the pandemic, and to promote learning and training in medical and health issues.

About the main advantages and possible disadvantages of the use of Twitter in an educational and training environment, despite the variety of topics of the articles analyzed together with the different territories in which the actions have been implemented, a series of elements considered relevant and of a transversal nature can be established in all the articles.

The improvement in the acquisition and development of competencies in the field of Information and Communication Technologies (ICTs) by the participants is a fact evidenced by the results obtained from the analysis of the articles. Although in many cases, a large part of the participants in these actions within educational and training environments, are considered digital natives (Tur et al., 2017), this type of action reinforces the use of SN in general and microblogging in particular as an online resource potentially linked and connected to other realities (Dua & Baloch, 2020).

Another important aspect of the use of the social network Twitter in the educational and training environment for its participants is the possibility of creating (or expanding) online support networks that favor and improve the learning and training experience, generating collaborative environments among its components (Smordal et al., 2021). This creates a friendly atmosphere that favors communication among participants (Ogaji et al., 2017; Varo-Domínguez & Cuadros-Muñoz, 2013) beyond the formal channels in the educational environment itself, coinciding in this aspect with what is pointed out by Baraibar-Diez et al. (2019). The need to express ideas and reflections through a reduced number of characters undoubtedly favors the need for synthesis and concreteness when using this channel to communicate, share information and participate in discussions.

Beyond the mentioned advantages of the use of the microblogging social network in the educational and training processes, it is important to highlight how the use of Twitter favors learning and the learning experience of its participants. The student feels that the use of microblogging in this context allows to identify and establish a common territory for students and teachers, apart from those already formally established, in which it is possible to connect, communicate, share information, have access to information, and content and participate in a space for reflection and discussion.



## 5. Conclusions

A series of relevant conclusions can be drawn from the analysis and discussion of the results obtained in this study. Firstly, a noteworthy element is a limited literature that has so far addressed the use of microblogging, through the social network Twitter, as a support resource in educational and training activities. This result contrasts with the extensive scientific production that exists on both topics separately and linked to other realities. In this case, it is relevant given the dimension that SN have for the student population and their regular incorporation and use of these in different areas and facets of their lives. This circumstance undoubtedly shows how, although SN - specifically microblogging - and their impact on educational aspects generate interest within the scientific community, no research is being carried out on their use and the results obtained when incorporating these resources into education and training processes.

Within the different articles analyzed, it can be highlighted the connection of the online resource of microblogging with educational and training processes, and how they favor the development of competencies and meta-skills in the field of ICTs. Moreover, its integrated use enables the creation of an online support network, outside formal channels, which improves the learning experience for all participants. This improvement is motivated in many cases by the accessibility and simplicity that these resources offer in terms of availability, sharing, communication, and discussion for both students and teachers, favoring motivation, a reflective and critical spirit, and active student participation.

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