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## Treatment and Evaluation of Game as a Didactic Resource in the Communication of Teachers Through Social Networks

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**Abstract:** This research presents an analysis of the value given to the game as an educational resource on social networks. The purpose of this study is to analyze the discourse on Twitter of the different educational agents (teachers and other educational professionals) to know the value given to the use of this tool and how the social network is an educational form of communication and interaction. From a qualitative methodology, a descriptive-interpretative study of the information on didactic/play strategies present in social networks is approached. The analysis is performed by the Nvivo12 software through matrices and content analysis. The results show that the game is mentioned within the speech on Twitter where it is alluded to its importance, value, application, etc. From an educational perspective, working in the classroom with the use of social networks provides some significant advantages; these networks offer interactive and effective teaching and learning tools. In addition, the integration of tools and applications. It is concluded that Twitter is an educational and formative way and where the value attributed to the game as a didactic resource is significant.

**Keywords:** *Educational game, educational resources, social networks, teacher training, twitter.*

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### Introduction

The speed of change in the information society and the emergence of new student profiles demand new pedagogical models that help improve learning, including the use of the Internet. The way people who use the Internet communicate and interact has been influenced by social networks that bring together people with common interests. As mentioned by Mestres (2011), it is a fundamental tool for maintaining contact with friends, family, and colleagues in the personal environment. These networks also make it possible to connect people with similar professional interests, establish working relationships and share knowledge and information. Currently, the Covid-19 crisis has opened an opportunity for digitalization where most institutions, including educational institutions, have been using ICTs and social networks as an opportunity for employment. The research of Agudelo et al. (2020) identifies digital solutions adopted to respond to this situation that affects us globally. It highlights the need to continue promoting policies that encourage communication and investment in digital infrastructures. On the other hand, Quijano-Escate et al. (2020) treat online learning courses in times of social isolation as an opportunity for training and self-learning. Telematic teaching until now had the function of supporting face-to-face education, but after this problem it has come to replace it and be the main channel for the teaching-learning process. There have always been web platforms where teachers uploaded content or tasks, but in this case the whole educational field has revolved around distance learning (Villafuerte et al., 2020; Wan et al., 2021).

One purpose of social networks is that they promote learning in society. Teachers and students can establish multiple links with each other. In addition to exchanging opinions, sharing information and knowledge, analyzing content etc. (Carneiro et al., 2015; Higuera-Rodríguez et al., 2018; Wan et al., 2021). In short, a way of being in contact and exchanging resources and experiences that take place in the classroom.

Another aspect to consider is that it allows the realization of different group works, either in large or small groups. Students will discover a new type of learning, called self-learning, because it is created by them (Alexander, 2006;

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Heidari et al., 2020). There are different social networks as they are: Facebook, Instagram, Snapchat, and Twitter which focus on reporting, publishing photos, news, etc. and LinkedIn which is more for professional use and job search.

The possibilities offered by social networks as a two-way model of communication generate a multitude of perspectives (Corral, 2010; De Haro, 2010). The experts agree that Web 2.0 does not become a specific technology or complex applications, but what is intended is to publicize this tool that helps to promote the active role of the subject (Valenzuela, 2013).

## Literature Review

### *Approach to the concept of social networks*

To understand the concept of social network, we must differentiate between social networks and knowledge communities, since its structure, use and functions within the educational environment become two tools with significant differences. On the one hand, in social networks users build a profile and allow the sharing of all kinds of data and information. That is why they become ideal spaces for communicative exchange between users (Dafoulas & Shokri, 2016; Galvin & Greenhow, 2020). On the other hand, knowledge communities are web 2.0 spaces, whose base is the same as social networks, but their objective and operation is quite different (Arteaga, 2018). Web 2.0 or Social Web comprises websites that facilitate the sharing of information. It allows users to interact and collaborate with each other, as content creators (Herreros, 2008). Knowledge communities are virtual collaborative spaces whose aim is to promote interaction between users whether for professional, educational or entertainment purposes. These are spaces where users share information with the rest of the Internet users, in a disinterested way and without the need to register. Without the need to create a profile, they can interact anonymously with the rest of the members of the community (Dafoulas & Shokri, 2016; Dutton & Hernández, 2012).

Social networks can become a means of communication between society, school, and family. According to De Haro (2010), the aim is to take advantage of the links generated in social networks to strengthen possible interactions between the school and social agents. For this reason, pedagogical training must seek the social context in which teaching takes place, based on diverse and flexible training strategies. To respond to the many different individual, disciplinary and contextual needs that teachers may encounter (Mayor-Ruíz, 2007). As a training strategy for excellence (Bañeres et al., 2008; Hooshyar et al., 2021), we find in the game a key and effective tool for the teacher that can be of help at all educational levels. We understand the game as a didactic strategy that facilitates an active pedagogy as opposed to a passive and verbalist learning. In addition, it improves intellectual and emotional processes, the exchange of attitudes and points of view, active participation, collective work, creativity, and imagination (Kangas et al., 2016; Kapp, 2012; Salvador, 2014).

In this sense, teaching through games is a holistic strategy that enhances class participation, students' interest, and they are more involved in their learning (Kapp, 2012). Through games, students can go through all the phases of the projects proposed in the classroom. From the stages of setting objectives and analyzing the current situation, through divergence or generation of ideas, to convergence in practical solutions. All of this also helps to break down barriers and improve communication within the group, generating new ideas, visions, and possible strategies (Dabbagh et al., 2015).

According to Mendes and de Freitas Gomides (2020), game in teaching is understood not as a purpose, but as a possible axis capable of leading to a specific didactic content, lending the "fun" action known to the learner, which serves the acquisition of new knowledge. In the literature, various terms such as "game as a didactic resource", "educational game" and "pedagogical game" are used to refer to metaphorical activities that lead to the teaching of the properties of play (Skovdal & Campbell, 2015). Luchi et al. (2017) emphasize that a game begins to be called didactic when it is used to achieve specific pedagogical objectives. In addition, games as a pedagogical tool constitute an alternative to facilitate the learning of difficult learning content, improving the performance of students in relation to new information and the teaching situations that involve them.

Game that has an educational objective is structured as a regulated game that includes moments of pre-reflective action and symbolization or abstract-logical appropriation of the experience to achieve curricular teaching objectives, whose goal is the appropriation by the player of the content, encouraging the development of creativity (Chacón, 2008). The use of this strategy pursues several objectives that are directed towards the exercise of skills in a certain area. That is why it is important to know the skills that can be developed through play in each of the areas of development of the learner, such as: physical-biological, socio-emotional, cognitive-verbal and the academic dimension (Amory & Seagram 2003). It is also of utmost importance to know the characteristics that a game must have to be didactic and to manage its classification to know which one to use and which one would be the most appropriate for a specific group of learners (Burke, 2014; González, 2015).

Once the nature of the game and its elements are known, the teacher wonders how to elaborate a game, with what objective to create it and what are the steps to do it, that is when he/she starts to wonder what the most suitable materials for its creation are and starts to ask questions (Bañeres et al., 2008; García et al., 2017). The purpose of generating these concerns revolves around the importance of using this strategy in the classroom and that it can be

created in a simple way, in addition to the fact that from some practical solutions this task can be carried out in a pleasant and comfortable way for both the teacher and the students. All this to generate effective learning through fun (Hilliard et al., 2016).

Another aspect that is considered important is that social networks are used to achieve a more open classroom concept, where architectural barriers are not an impediment to student learning. Rather, it is intended to go beyond the school (Mestres, 2011; Rehm & Notten, 2016).

#### *Possible educational applications of social networks*

According to De Haro (2010) and Vidal et al., (2011), some educational applications of social networks are: a) Elaboration between the members of the micro-story class; b) Explanation of the activities carried out in class to involve families; c) Discussing topics of interest; d) Sharing resources and tools such as links related to the subjects being studied; e) Tutoring assignments; f) Structuring of working groups; g) Groups as a place for consultation and questions; h) Subject networks; i) Classroom experiences.

Therefore, we teachers must take them into account, as they open a door to educational innovation. Social networks allow students to participate and become actively involved in their learning (Dutton & Hernández, 2012; Higuera-Rodríguez & Medina-García, 2020; Trujillo, 2014). Faced with this current situation, where covid-19 is a global problem, Villafuerte et al. (2020) have prepared a protocol for teacher action in the face of the challenge of synchronous and asynchronous teaching. It is a support for the preparation of teachers to start the process of virtual education.

#### *Related works*

The educational value of social networks has been studied in different research (Del Moral & Villalustre, 2012; Greenhow & Askari, 2017; Stilgoe, 2016; Vidal et al., 2011). Pinchuk (2016) mentions that they can be characterized as means of collaborative training activities, means of social contacts deployment, and extension of all participants' social interaction in the educational process. Furthermore, Rehm and Notten (2016) mention that social networks such as twitter contribute to the professional development of teachers. Also, Romero-Moreno (2019) mentions that they are spaces where students and teaching teams could debate and, in general, develop knowledge within a collaborative context. Cristescu and Lordache's (2017) research investigate advantages and disadvantages of its use as an educational tool. On the one hand, the advantages are that they allow users to access various educational resources online and demonstrate their ability to share information in a flexible and effective manner. On the other hand, the disadvantages are related to the learning itself as it is a complex learning where the user needs a previous training to be effective.

Hortigüela-Alcalá et al. (2019) investigated the pedagogical use of Twitter and Instagram and concluded that it improves students' motivation and learning. The results were that the pedagogical use of Twitter and Instagram had a significant influence, increasing students' motivation and participation, as well as their degree of achievement. The impact of age factors and the use of these tools outside the classroom on the body of knowledge acquired by students was significant.

Considering the different investigations that deal with the educational use of social networks, as we have previously justified, we can draw the following conclusions: there are many studies that deal with the educational value of social networks, but there is no evidence from previous studies that deal with the value of the game as a didactic resource within social networks as a way of training teachers. This is the main contribution and objective that the authors make to the scientific field: the study of the value of game as an educational resource within social networks as a way of training. Therefore, our research objective is *"To find out the treatment and value of the game as a didactic resource in the communication of teachers through social networks"*.

### **Method**

In our research, and specifically in response to our research objective, we will focus on the social network Twitter. It is a social platform of microblogging or nano blogging, that is, an online service that allows you to publish messages of no more than 140 characters, called "tweet". It is a two-way communication service with which information of various kinds can be shared easily, quickly, and free of charge.

Its interface is quite simple. It is structured in three big blocks. The one on the left shows the account details, such as: Username, Number of published tweets, followers, and followed accounts. The most discussed current trends at that time are also shown. The central block, called the Timeline, shows the tweets of the people in the accounts being tracked, ordered in sequence. The one on the right shows the account suggestions to follow.

As mentioned by Yapıcı and Hevedanlı (2014), the first value that is usually appreciated from Twitter is the informative one (to be updated instantly of the topics of interest). Furthermore, one of the most interesting characteristics of Twitter from a discursive and communicative point of view is its sense of immediacy and fluidity. It is a medium that is

perceived as a constant flow of information, momentary thoughts, and ideas. Both aspects are interesting and that is why the users are multitudinous. For our research it was interesting because through descriptors we accessed the comments of the different educational professionals, and the information was obtained instantly.

### Procedure

Through an interpretative approach, we are interested in understanding the social and educational reality of the discourse shared on social networks, in this case, Twitter. We consider that a qualitative analysis is key to understanding the reality that surrounds us (Flick, 2015) and, in our case, the value attributed to the educational game within social networks (Garretón, 2007; Ruiz, 2009; Van-Dijk, 2009).

For the analysis of results, the qualitative program QSR Nvivo12 was used, one of the most suitable programs to work with this type of data, since it helps to carry out different analyses and cross-checking between subjects and/or elements of the research. From the descriptors, different categories were created, and we were able to make different coding matrices.

To differentiate the subjects, we were interested in our research, we used the hashtags where the game was present. Through the Ncapture for Nvivo app, it helped us to recap all the hashtags used to date. The range was the last 5 years (2016-2021). To do this, we first made a search of selected terms from the theoretical framework, and then we chose the most used ones. The ones we thought would give us more information. The procedure followed for the selection of the different descriptors is presented in two phases (table 1). Descriptors were used in English and Spanish to provide more information that would otherwise not have been collected (e.g., very little information was obtained in Spanish and information was collected in both Spanish and English). Figures 1 and 2 show the hashtags (Spanish and English used).

Table 1. Selection of descriptors and stages of the search. Source: own elaboration

1st Stage	Combination (AND)	2nd Stage
Gamification		Neuroeducation
Classroom play		Learn by playing
Educational game		ABP o PBL (Problem based learning)
Game based learning (ABJ or GBL)		Game based learning (GBL)
		Flipped classroom
		Visual Thinking
		Project based learning (ABP)

First, the Hashtag was used: "Gamification", "Classroom play", "Educational game", "Game based learning (ABJ or GBL)". After the first search, these descriptors led to others, such as: "Neuroeducation", "Learn by playing", "Flipped Classrooms", "Visual Thinking", "ABP or PBL (Problem based learning)", "Project based learning (ABP)", and "GBL (Game based learning)". In the selection of the latter, only those that were linked to our subject of study and that were related to the descriptors of the first phase were chosen.

The following table presents the search results and frequency for each of the descriptors.

Table 2. Search results. Source: Own elaboration

Descriptors	Frequencies
Gamification	3000
Classroom play	11
Educational game	12
Game based learning	57
GBL	3
Neuroeducation	21
Visual Thinking	3
Learn by playing	349
PBL	5
ABP	6
Flipped Classroom	3
<b>TOTAL</b>	<b>3470</b>

The most frequent descriptor is Gamification and Learn by playing. However, GBL, Visual thinking, PBL, ABP and Flipped classroom, are descriptors that as mentioned above are derived from others and that is why for this selection only if they were linked to the first phase descriptors (table 1) have been considered.

As mentioned by Flick (2015), the credibility of qualitative research is based on the presentation and argumentation of methodological processes and decision-making that can be understood and replicated. Hence, the decision to densely describe the process of analysis followed, showing the levels of successive deepening in the study.

Table 3 and 4 shows the relationship between the meta-categories and categories, and their respective codification.

*Table 3. Definitions of the meta-categories. Source: Own elaboration*

Meta-categories	Code	Definition
Conditions	CONGENERAL	Conditions to be considered for the development of the game as a didactic resource
Training	FJD	Training in didactic game
Resources	PRE	Possible educational resources
Value	VJ	Value of game as a teaching tool

*Table 4. Definitions of the categories. Source: Own elaboration*

Categories	Code	Definition
Conception	CN	What is meant by game as an educational resource
Use	EMP	Use and application of game in the teaching-learning process
Importance	IMP	On a personal level, the degree of importance of this resource within the teaching and learning process of the students
Motivation	MOT	Level of motivation to teach through games
Teaching experience and use of game	EXPDO	Describe the impact that the teaching experience may have on the application of game as a teaching resource
Types of games as a didactic resource	TJD	It refers to the types of games as a didactic resource that they know and/or use in the classroom
Paths of training received	VFI	References to training received (modalities, contents, impact on teaching, assessment, and suggestions for improvement)
Training aspects	AFOR	Describes the impact of play on the learning of different subjects and types of content (conceptual, procedural, and attitudinal)
Spaces and conditions	ESPyCOND	Knowing what types of conditions and spaces must be provided to carry it out.
Student reaction	REA	Diverse reactions that students show to gaming situations
Levels and subjects	NIV	To know which levels and subjects work with this type of resources

#### *Description of the Twitter qualitative sample*

The participants of the tweet are professionals of the educational field (teachers of different stages, psychologists, etc.). They were intentionally selected because we wanted them to be from the educational field. This sample was selected based on the tweets chosen in the process mentioned above. To obtain the information of each participant, a manual process was made to obtain each subject who wrote a tweet with one or more of the descriptors. To do this, it was necessary to access user profiles individually to obtain this information from their biography.

Access to user profiles was obtained with public domain information always respecting the privacy of the users.

The following table shows the total number of users analyzed. They are distributed in 2 general profiles: Teachers and other education professionals. Within each one of them, the educational stage that they develop their work or specific job is specified.

Table 5. Selected sample. Source: Own elaboration

Professional development	Quantity
<b>Teachers</b>	
- Infant education	33
- Primary education	47
- Secondary education	56
<b>Other's education professionals</b>	
- Psychologists	13
- Associations	15
- Conferences and meetings	7
<b>Total</b>	<b>171</b>

The sample obtained from associations, and conferences and meetings, covers both teachers and other professionals in the field of education.

## Results

The results section is divided into two sections: First, frequency analysis through matrices that show an overview of Twitter discourse through categories and subjects. Second, each category is analyzed individually.

*Frequency analysis: overview of Twitter discourse through categories and subjects*

- *Meta-category Frequency Analysis*

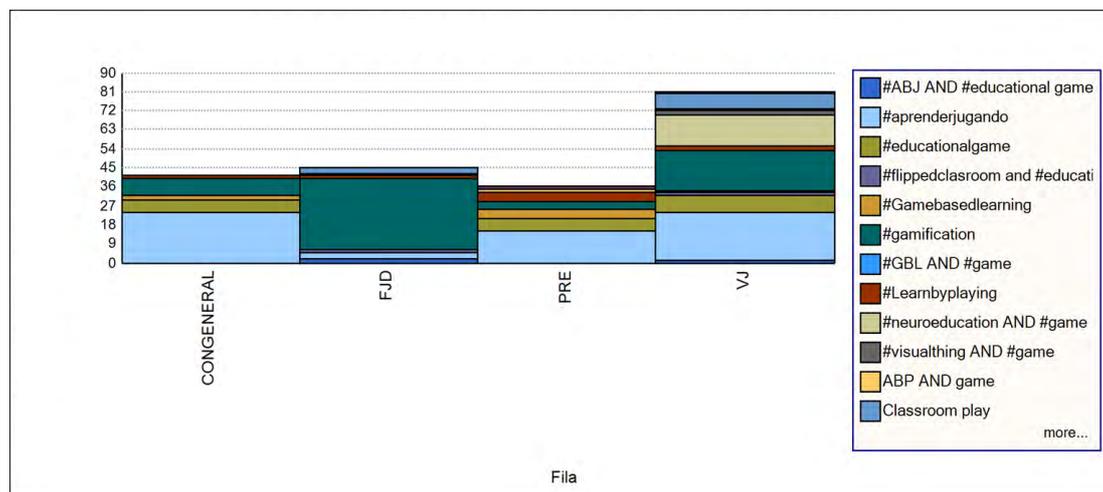


Figure 1. Overview of meta-categories. Source: Own elaboration

In figure 1, the different meta-categories are shown on the left side and the internal elements on the right side. That is, the documents generated from each descriptor used, from which the information of the different tweets has been obtained.

In this figure, the most commented meta-category in the discourse of teachers and professionals on Twitter has been the Value of the game as a didactic resource (VJ). This is especially relevant among teachers who carry it out and give reasons about the importance of its use in the classroom. With this, they make more and more teachers interested in implementing this resource and put it into practice for the meaningful learning of their students. The most used descriptors are *Learn by Playing*, *Neuroeducation and Play*, *Gamification*, *Educational Play*, and *Classroom Play*.

Another dimension to be highlighted is the possible didactic resources (PRE) used in a playful way in the classroom. This meta-category emphasizes both physical and electronic resources that can be found in the classroom. In this one can appreciate that the most used descriptors have been *learned by playing*, the most significant, *classroom play*, *ABJ and educational game*, *PBL and educational game*, *gamification*, *educational game*, and *ABP and educational game*.

The CONGENERAL meta-category deals with the conditions that must be considered for the development of the game as a didactic resource. The most used descriptors are *learning by playing*, *game-based learning*, *game-playing and educational game*.

The meta-category Training in the use of games as a didactic resource (FJD) is the least commented. The most used descriptors are *gamification and learn by playing*, and *classroom play*.

The use of a methodology based on playful components such as rewards, points, levels, etc., can lead to an enriching and motivating teaching/learning process for students.

*#Learnbyplaying Today, the delivery of more than 55 thousand "Game Corners" ' throughout Chile began. In this way, we strengthen learning through play! (profe\_RamonRG)*

The use of strategies such as gamification, escape room and breakout (opening a box with different types of locks) increases classroom productivity, creativity and critical thinking and problem-solving skills. Situations must be created where the student must intervene and face different situations in his life.

*"The #gamification and how to play in a #school increasing #productivity" #training #capacities (ManuelJesusF)*

*Escape Room y BreakOut educativos, new #VisualThinking or the program #profesinnadores CC helps to improve @porlainnovacion student learning (Josek\_net)*

*They demand that we train the new generations to face problems that we still do not know, we must create scenarios that help students to build mechanics that they can transfer to other life situations (Negre)*

Furthermore, this educational resource can be adapted to any curricular content, encourages collaboration and teamwork and students become the protagonists of their own learning by making their own decisions.

*[...] the questions on the form were varied, but could they all have been about a particular subject? About the French Revolution? The multiplication tables? Political economy? (Negre)*

*The use of this tool enhances collaboration and work in (Goroji)*

*The students are participants in their learning. They are the ones who make the decisions (Leonidasarjona)*

On the other hand, they talk about experiences, and the realization of courses and workshops as their main training to use the game in the classroom. They are developed in a practical way and using technologies that help develop their digital competence.

The first experiences of in-service teacher training in the use of manipulable didactic resources for the construction of concepts in different areas show that teachers require preparation in the use of educational games. One of the fundamental causes is the fears and insecurities produced by the lack of mastery of contents and concepts, as well as the demand for logical reasoning that requires the construction of concepts from teaching experiences. Users talk about the need for teacher training in the use of play as a teaching resource in the classroom. There is a need to introduce methods that respond to the new objectives and tasks, which highlights the importance of activating teaching, which is the ideal way to raise the quality of education. In addition, they propose a series of courses and workshops to serve those teachers who want to work in a more creative and playful way.

*We teachers must learn to use the game in the classroom. We need good preparation (Manuparadas)*

*Methods must be introduced to respond to the new objectives (Bgros)*

*"Course: game and learn. Elaboration of a gamification project in the classroom" (aaronasenciofer)*

*"Course: "the game and the fiction as generators of emotion and learning" (@AMEendee)*

The contents are worked on in a general way and each teacher can use it in a specific area or content.

*WORKSHOP ON #EDUCATIONALGAMIFICATION. "From teacher to teacher". We're going to set up our own educational game-playing (ClassroomCrafts)*

- *Frequency analysis of categories*

Figure 2 shows all the categories in the horizontal part and the different internal elements (descriptors) in the vertical part on the right.

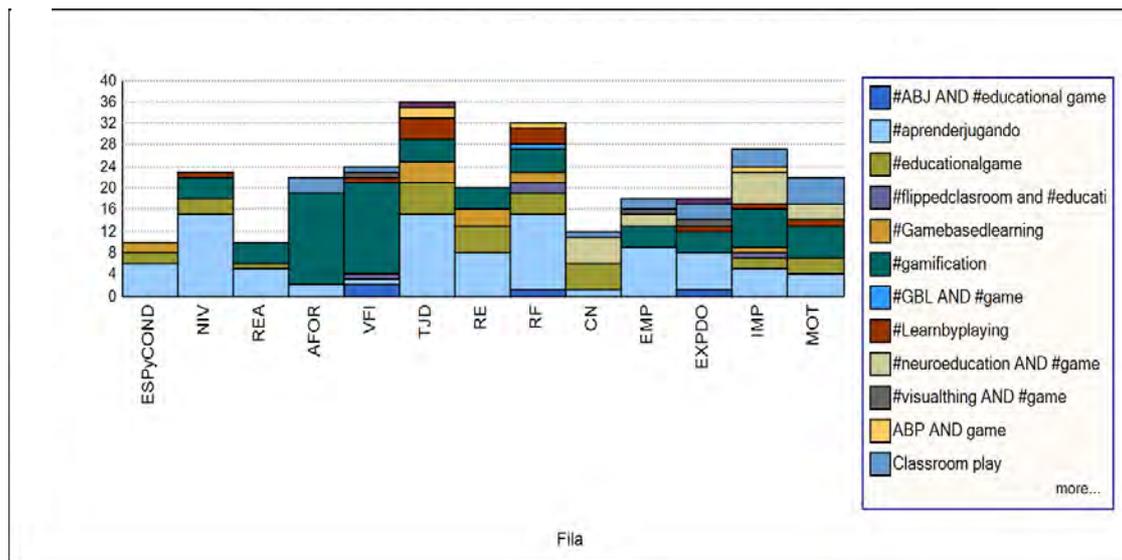


Figure 2. General frequency analysis. Source: Own elaboration

For the analysis of the categories, each one of them and each one of the internal elements that were analyzed were selected. As shown in figure 3, the Twitter discourse of the different education professionals shows that the main resource they talk, and exchange is the type of game as a didactic resource (TJD). They know and/or use in their classrooms, either physically or electronically to be able to implement the game as a didactic resource. In addition to the different levels and subjects (NIV) that can be carried out. Other important aspects that have been discussed in the speech have been the importance given to the educational game (IMP). The level of involvement in the teaching and learning process of the students, as well as the contents that can be worked on through it (AFOR). Also, the possible ways of training received (VFI) such as courses, conferences, seminars, articles, experiences, etc.

The importance of using the game for learning is that it is a way that implies a mechanic of training and improving every day, helping to promote positive values such as collaboration and group participation.

*"It's not just playing a game, it involves a willingness to train every day and respect your opponents, win or lose" #values #gamification #collaboration #learning (Boost\_)*

*We don't play to learn; we learn by playing. Without emotion there is no learning and play is emotion in its purest form (Manuparadas)*

It is innovation, it requires the continuous encouragement of the creativity of both the teacher and the student. It helps children to think and develop their critical spirit. Students remind the teacher to teach them to think because their learning will be meaningful.

*This tool allows innovation and creativity to have an important place in the educational program (Mineeduc)*

*"Students remember the teacher who teaches them to think" Towards a student-centered school model #ICT game (Bgros)*

*To teach is to remind others that they know as much as you do (Ludinarius)*

Twitter users see the importance of applying this tool in the educational field. Their motivation increases as they use it because they see the results of their work more and more.

*I increasingly like to use the game in the classroom #pocoapocoseaprende (ManueljesusF)*

*I've started the pre-gamification process [...] And today the atmosphere was so good that the class hour flew by. [...]* (BermudezLiliana)

In addition, they are not discouraged from using it because users are encouraged to use it and share their experiences by giving feedback and recommendations for improvement.

*Did you teach to hook your students? Think in terms of play and develop children's emotional skills. #Leaving out with #LearningFree #LearnbyPlaying (Kapormm)*

*I really liked your scheme about #cooperative. It is essential to know this methodology when using others like #gamification I recommend you put a Creative commons (dparente)*

Another aspect to consider is the students' motivation to learn. This makes teachers motivated to continue using this tool.

*Students remember the teacher who teaches them to think (Bgros)*

*#Happy the teacher to all the teachers who teach you playing and laughing, but also to those who make you understand (Josek\_net)*

Teachers are also motivated by skills and abilities that can be fostered in addition to the intellectual, such as emotional skills like empathy and teamwork.

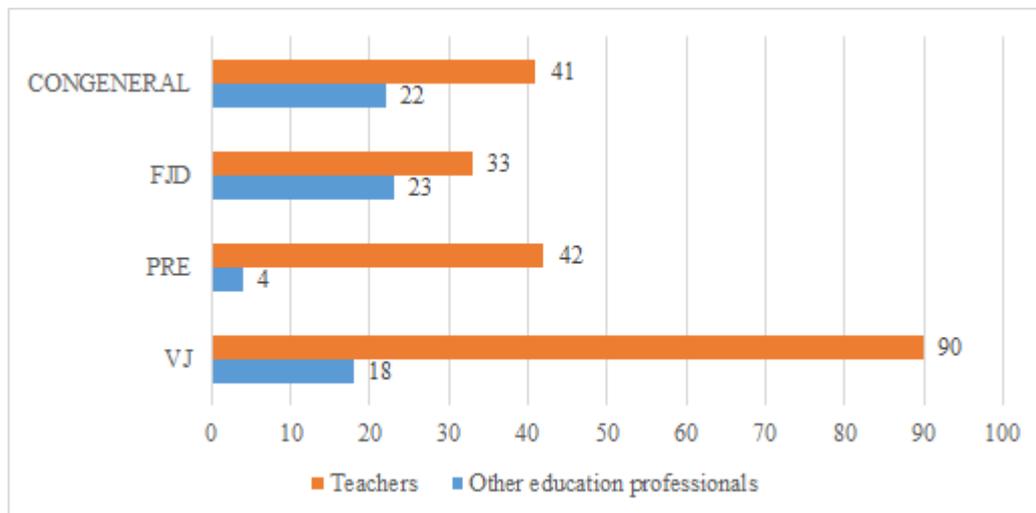
*Through #play, #pupils [...] develop #emotional skills such as #empathy, adapting to unexpected situations and encouraging teamwork. Some #progresses that they put into # practice in their classes. #Learn by playing (CDAlamedaOsuna)*

The most commonly used descriptors in the different categories are educational game, learn by playing, game-based learning and gamification.

It was considered appropriate to present this type of frequency to see which were the most used descriptors within the Twitter discourse to know which were the most useful to respond to our research objective.

#### *Analysis in relation to the subjects*

Another analysis that was considered appropriate was related to the subjects and the content that each one deals with on Twitter. To help their presentation, like the previous figures, two types of analysis were proposed. One concerning meta-categories, and the other concerning categories. The following figures present the data corresponding to each of them (Figure 3 and 4).



*Figure 3. Relationship between meta-categories and subjects. Source: Own elaboration*

Figure 3 shows the relationship between the subjects of the two selected groups (teachers and other educational professionals) and the meta-categories analyzed. Teachers talk in their speeches on Twitter mainly about the value of play as a didactic resource. However, they also talk in a significant way about educational resources, about their training with respect to this tool and about the conditions that must be provided to use it in the classroom. While the subjects within the sample "other educational professionals", mainly talk about the training with respect to the game as a didactic element, the conditions and the value given to it, leaving in a lower percentage to didactic resources to be able to carry it out.

Figure 4 shows the most commented categories in relation to the subjects selected from the two groups. The first group "Teachers" corresponds to Infant, Primary and Secondary teachers. While the second group "others education professionals" corresponds to psychologists, associations, conferences, and meetings. The following figure shows the subjects dealt with by each of them.

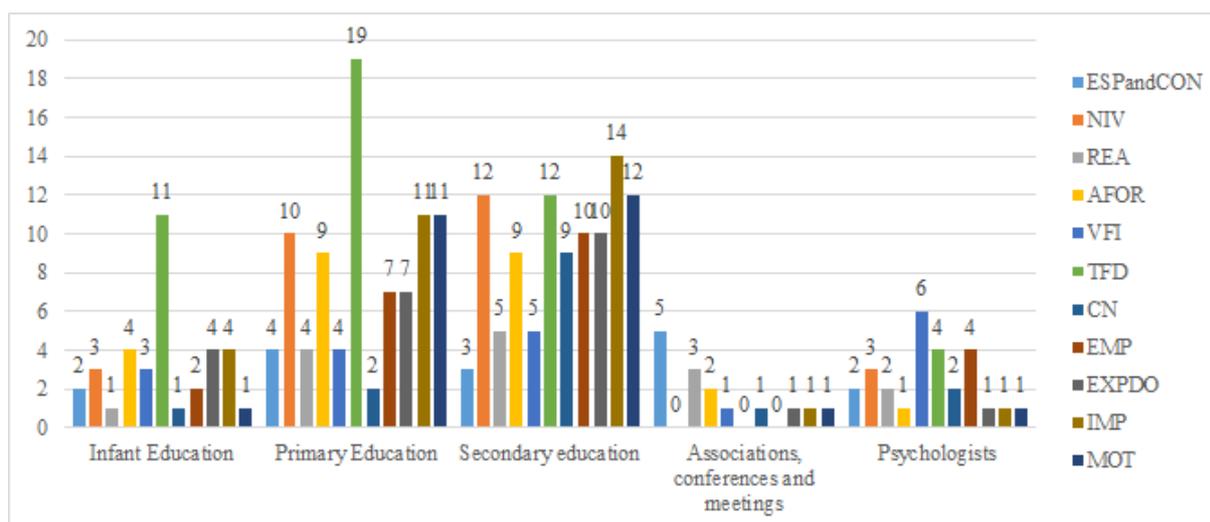


Figure 4. Relationship between Twitter subjects and categories. Source: Own elaboration

As mentioned above, figure 4 shows for each of the selected subjects, the categories within the discourse most commented on in each of them. In infant education teachers, the most commented category is TJD (types of games as a didactic resource), involving the other users of the different games they use in their classrooms. At the same time, they deal with topics related to educational aspects (AFOR), teaching experiences (EXPDO) and the importance of their use in student learning (IMP).

For primary education teachers, it is still, as in the case of infant education teachers, the category of games as a didactic resource (TJD) that is most in demand in the discourse on tweets. However, the categories regarding the different levels (NIV), educational aspects (AFOR), importance (IMP) and motivation (MOT) become especially relevant in this group of teachers. There are differences with respect to other categories less treated in their discourse.

Secondary education teachers treat the subject in a more equitable way, with special emphasis on the importance of their use (IMP), motivation (MOT), types of games (TJD) and levels of use (NIV).

With respect to the group of "other educational professionals", the associations are involved in the discourse, but in a not incredibly significant way. The most discussed topics are the spaces and conditions (ESPandCON) that must be given to use the game as a didactic resource, and the students' reaction (REA) with its use.

The conferences and meetings focus their discourse on the training paths received (VFI), that is, on the different courses, conferences, workshops, etc. that are given both to make teachers aware of their use, and to train them and improve their professional development.

Psychologists also focus their discourse on the paths of training received (VFI), although they also mention the types of games as a didactic resource (TJD) and the use of game in the teaching-learning process (EMP).

## Discussion

The aim of this study is to find out the treatment and value of the game as a didactic resource in the communication of teachers through social networks. The results show that through the discourse of the different educational agents among which the teachers of the Secondary and Primary stage stand out, the value given to the game as a didactic resource is incredibly significant. This value is essential because it has a playful and fun aspect that captures the attention of students and motivates them. These data are contrasted with the results of Huizenga et al. (2017), and Mohsen et al. (2019) where the value of the game is shown within the educational setting. According to Rabbimov, (2020) play is a very useful tool in education and the cognitive development of students, as it favors the creation of situations of enquiry, exploration, and study, which are fundamental for an appropriate teaching and learning process. From the theory, it is mentioned that the formation in this type of active methodologies is acquired from the practice and the reality of the classroom (Higuera-Rodríguez, 2019). Furthermore, from a permanent formation far from the university (Muñiz et al., 2017). It is a place for the exchange of information and knowledge, for reflection or feedback on teaching practice (Kelly & Antonio, 2016; Wan et al., 2021).

Another aspect to point out among the results of our research is that the possible didactic resources for their implementation in the classrooms are mentioned, being the game an especially important part within the discourse. Gamification at its best has advantages for the educational process of our students. Research by Iquise Aroni and Rivera Rojas (2020) indicate that the use of gamification is relevant and beneficial to the learning process.

Different uses of play as a didactic resource have been confirmed. In contrast with the theory, its applicability in the educational classroom can be corroborated (Higuera-Rodríguez, 2019; Nelson, 2014), being an especially useful tool for working in the different educational stages and for student learning. Nelson (2014) research mentions different resources among which the game stands out. In addition, they offer different types of didactic games and possible applications. Hence, we find the use of play through digital resources most up to date (Kuz & Giandini, 2018) or through more traditional play experiences such as those developed using the resources offered by the natural environment (Coco et al., 2021).

According to the results obtained, it was found that the training of teachers in the use of games as a didactic resource is not very relevant. Works such as that of Iquise Aroni and Rivera Rojas, (2020) state that this is due to the difficulties in professional training and the absence of its implementation by the educational centres.

However, nowadays, given the conditions promoted by Covid 19, it is an aspect that is of special interest, since there are some research that highlight the importance of training teachers in gamification tools to promote and improve student learning and increase their motivation, as reflected in the studies developed by Castañeda-Vázquez et al. (2019) y Moreno Fuentes (2019). In line with these questions and with our findings is the work of Nieto-Escamez and Roldán-Tapia, (2021) which mentions among its conclusions that the students' perception of gamification, implemented in times of Covid 19, is positive, valuing it as a novel, useful and fun strategy, highlighting it specifically in these times of pandemic as a resource to promote social support.

Moreover, it should not be forgotten that gamification strategies such as Escape room and Breakout, for example, promote collaborative and group work among students. And our findings have been found to increase classroom productivity, creativity, problem solving and critical thinking. This can be corroborated in the research conducted by García-Tudela et al. (2020) where they implement Escape room as a collaborative tool that can also facilitate the learning of mathematics. Some of the most significant dimensions of our research mention the importance and motivation of this educational tool. From the literature, it is verified that the reaction of the students is positive in relation to the use of the game as a pedagogical tool. Our findings, therefore, are reaffirmed with those of the research by Ruiz-Bañuls et al. (2021) who conclude that the use of gamification strategies in primary school is beneficial in academic performance and motivation. The research from Ministry of Education of Brazil (2008), and Jover and Rico (2013) mention the different capacities that are promoted in the students through this resource, encouraging their motivation and interest. For this reason, many teachers decide to implement it in their classrooms because it motivates students.

However, teachers are still in a situation of uncertainty and insecurity when it comes to applying game-based teaching methodologies, as shown in research such as that carried out by Gil and Prieto (2020), since it is still a challenge at present because gamification is confused with other teaching strategies due to the lack of visibility in teacher training plans. Specifically, the work of Sánchez Mena and Martí Parreño, (2017) show the lack of resources, student disinterest and organizational difficulties in putting them into practice as obstacles to their implementation. However, education professionals should adopt an optimistic and proactive attitude towards the development of active and playful methodologies, following the results of our work or those presented by Aksela and Haatainen, (2018) which show the opinion of teachers regarding the development of playful teaching strategies, highlighting such optimal aspects as: usefulness, personalization and versatility in the teaching-learning process; motivation for all educational agents; collaboration and the sense of belonging to the educational community.

### Conclusions

This work presents an important novelty by using a current resource such as Twitter as the axis of a purely didactic analysis. The originality of this issue advances as this research develops, by observing the deficits present in the literature on the approach to this topic.

Social networks are a means of learning. Both teachers and students, as well as any professional in the educational field, use them either as a means of interaction with other professionals, for training and to be in continuous contact with the innovative resources that teachers are implementing in their classrooms. Also, to expose ideas about different resources and receive learning feedback that strengthens ties with people from other cities, but who are interested in innovation and the use of active methodologies and resources, tools, etc. The treatment given to the game as a didactic resource within the discourse on Twitter responds to the fact that it is an especially important resource in the teaching-learning process, since it promotes motivation and significant learning. In addition, great importance is given to the training of teachers in the use of this resource. Through Twitter it is a way of learning since many resources and types of didactic games are offered where teachers share their experiences and other teachers can see their effectiveness. In short, it is a resource that can be used at different educational levels such as infant, primary, secondary and university.

### Recommendation

In view of the results and considering the limitations of our study, it is advisable to continue researching this subject through the different educational agents to find out their opinions and interests. In-depth research into the different

variables of motivation, training, etc. would be necessary to have a more generalized and exhaustive study. The study of the different factors and variables that help to promote the educational use of social networks is recommended as a line of future research. A study to gather the opinions of different educational agents to find out in depth their motivation and interest in the educational use of Twitter. It would also be interesting to carry out a comparative study between educational stages to find out the differences expressed by teachers regarding the use of Twitter as a teaching resource.

### Limitations

Some of the limitations found in the development of this research would be the deficiencies found in the scientific literature regarding the research focused on the value of the game as a didactic resource through the discourse on Twitter. In short, the main limitation of our study focuses on the scarcity of national and international studies that address the central theme of our research and that serve as a reference to develop a discussion of the data that contrasts them in a deep and adequate way. The novelty of the topic is a limitation of the study.

### Authorship Contribution Statement

Lina Higuera-Rodríguez: Conceptualization, design, analysis, writing, supervision. Marta Medina-García: Writing, editing/reviewing, supervision. Estefanía Martínez-Valdivia: Editing/reviewing, supervision.

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