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# Virtual Community of Practice and Professional Communication: Perceptions of University Educators

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### ABSTRACT

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The purpose of this research is to analyze the perceptions of university teachers about a virtual community of practice that supports professional communication. The study is framed within the interpretative paradigm, the descriptive qualitative approach and the phenomenological method. Twenty-five teachers from a public university in the city of Cúcuta (Colombia) participated in the study. A semi-structured interview was used as a data collection technique and the data were analyzed through a coding and categorization process with the support of Atlas.ti software. The findings show the identification of three emerging categories. It is concluded that the virtual community of practice that supports professional communication requires critical success factors of reciprocal responsibility and joint initiative that lead to the configuration of its identity, and in which cooperation opportunities are valued, a social network that is formed together with the periphery as a circle of means to create knowledge and learning, as well as the perception of the member's identity that guarantee trust and the administration of the same.

**Keywords:** a virtual community of practice, professional communication, professional development.

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### INTRODUCTION

Nowadays, teaching is increasingly complex and the educator's skills must multiply to master processes associated with teaching, learning, didactics and technology (Avendaño-Castro *et al.*, 2022; Díaz-Güecha *et al.*, 2020; Gómez-Valderrama *et al.*, 2020; Hernández, 2020; Hernández *et al.*, 2019; Chaparro *et al.*, 2018). In each of these processes, communication manifests itself as a transversal element that moves in the spaces of a hyperconnected society, even, beyond the limitations of time and space through social networks, and digital media that extend throughout life for the development and

professional growth of an educator in communities of practice (Prada *et al.*, 2022; Alawamleh *et al.*, 2022; Espinel-Rubio *et al.*, 2020; Peñaranda *et al.*, 2019; Benitez *et al.*, 2018; Järvelä *et al.*, 2017; Altınay-Gazi & Altınay-Aksal, 2017).

Muñoz *et al.* (2013) argue that “the teacher's practice and its shared analysis in groups of teachers are recognized as a fundamental way of their learning” (p. 15), which is supported by communication and interaction with the other, moreover, produces the training itself and the purpose of training (Tardif, 2004; Goodyear *et al.*, 2019; Fernández-Batanero *et al.*, 2020; Sims & Fletcher-Wood, 2021). Educator must “place themselves in the position of learning from practice, while conceptualizing the resource itself as a tool for training and professional development, particularly in shared work settings” (Muñoz *et al.*, 2013, p. 34).

In this way, it is possible to infer, on the one hand, that the understanding of the profession is related to the professional communication that occurs with practitioners in the same field (Eslava *et al.*, 2018; Chacón-Guerrero *et al.*, 2017), and on the other hand, a shared work environment could be a community that unites representatives of a profession (Niebles-Núñez *et al.*, 2019; Sixto-García, 2017). It is noteworthy that this type of community is referred to in different ways in research (Gijbels *et al.*, 2021). In the work of Wenger (1998) as well as Wenger and Snyder (2000), they specify it as a community of practice. While Sanz and Pérez-Montoro (2009) refer to a thematic network or a group of interest in a subject, all of which signify a community of individuals who unite the same profession, being “communities of practice as a social fabric of knowledge” (Sanz, 2010, p. 13).

On the other hand, in higher education, telematic networks are established for e-university, in other words, to improve cooperation between professors from different faculties, even, universities, and make the study process innovative in communities of practice, differentiating the purpose of communities of practice with those of social networks, because in the second according to Amorochó, Gómez and Andrade (2010) the sense is to exchange information and to create personal contacts, while the first is related to the knowledge that is managed in an organization and to the development of the capabilities of the members through learning and the exchange of experiences of cooperation and collaboration (Ayala & Barrera, 2018; Zea & Acuña, 2017).

Also, there are two possibilities for the functioning of a professional or practice community: physical meetings and/or virtual activities. Physical community meetings mean the actual presence of all members, while a virtual community includes a professional community where communication is supported by information technology regardless of space or time constraints (Memmi 2006), so it is accessible and open to all its members, and this means the permanent availability of professional communication opportunities (Boyd & Ellison, 2007).

Virtuality in the community of practice generally means asynchronous communication mediated by information technology tools. Although the problem is not so much the lack of skills, knowledge or resources for innovation and its management, their dispersion and asymmetric location, since in the opinion of Sandia *et al.* (2018) communication and community of practice are to “ensure more and better innovative educational practices” (p. 615).

Studies have shown that actors in higher education use digital tools and services to organize their personal lives in a learning environment (Martín *et al.*, 2017) and practice, even outside the institution as an alternative to build spaces for innovation (Pereira-Medina, 2021), since these networks are vital for the construction of “life” and “for professional development” (Alemán, 2016, p. 193).

Likewise, the potential of virtual communities of practice is to stimulate discussion in an environment of democratic relationships by influencing the identity of the participants (Salazar & Rivera, 2020). At the same time, they reduce physical and social contact, which greatly enriches communication and its impact on professional development. However, it is considered that to create a virtual community of practice that supports sustainable and professional communication among members, it is important to understand what educators' expectations are and what place they occupy in an online community that supports communication (Sanz, 2010).

In the context of the study, an example of these communities is that of the teachers attached to the Department of Systems and Computer Science of this university share their knowledge and experience in teaching cloud computing, as ambassadors of the Amazon Web Services Educate - AWS program, the world's largest academic cloud computing learning communities, thus creating a knowledge network that promotes educational environments for professional competencies in Information and Communication Technologies (ICT). Undoubtedly, there are challenges and commitments for the transformation and improvement of the quality of universities, and one factor is the configuration of networks at different levels -national and supranational- and on topics of the international trend with the support of technology.

The exchange of knowledge between different people must meet certain conditions, one of these being exposure. It is essential to belong to a common network, in other words, to a community of practice, which promotes the process of combining, delimiting and involving both codified and non-codified knowledge, since knowledge management in networks is achieved by socializing, externalizing, combining and internalizing tacit and explicit knowledge (Hernández *et al.*, 2021; Torres & Rojas, 2017; Avendaño & Parada, 2013; Avendaño & Parada, 2011).

This research draws on the experiences lived and constructed by teachers at a public university, about professional communication in communities of practice. It seeks to understand the comprehensive perception of the subjects from their experiences in the community of educators, needs and expectations, and in particular, the communication shared among the subjects and their information relationships in a framework of generation, appropriation and dissemination of knowledge - internalization, socialization and combination of knowledge- (Nonaka & Takeuchi, 1995). The objective of the study is to provide an analytical view of the perceptions of educators belonging to a public university in the city of Cúcuta (Colombia), on a virtual community of practice that supports professional communication.

## **THEORETICAL FRAMEWORK: PROFESSIONAL COMMUNICATION AND VIRTUAL COMMUNITY OF PRACTICE**

Communication is one of the basic needs of biological organisms. From a human point of view, communication satisfies important social needs, which include belonging, involvement, being influenced by others and influencing oneself. Different authors emphasize the continuous and holistic self-development in communication, which takes place as a result of information exchange, interaction and relationship building, and is expressed in adaptation to the environment (Aguado, 2004; Fogel, 2017; Dimpleby & Burton, 2020).

In communication psychology, the impact of communication on a person's identity, processes, and cognitive and emotional abilities are defined (Braithwaite & Schrod, 2021; Berger & Roloff, 2019). Professional communication is essentially derived from the demands and conditions in which the given professional performance takes place, as well as, in the role it plays in the development of the professional performance and the achievement of its goals, as communication between people who

share professional problems transforms one's understanding of one's profession for greater effectiveness (Meloncon & Warner, 2017; McKee & Porter, 2017). Studies and research on communities of practice also bring together many of the key phenomena there under the concepts of communication (Atehortúa & Giraldo, 2010; Garzón, 2020).

Communication among educators in university organizations is relevant to professional development (Garzón, 2020) because it facilitates and enhances the construction, formulation, conceptualization, and presentation of ideas that significantly support both personal and professorial development: professional communication includes those related to work and profession, that is, communication-related to daily activity within the framework of the exercise of the profession.

Interpersonal and intrapersonal conversations, as well as, clear expression and understanding of one's ideas, and thoughts are important both in professional collaborative learning and in the process of reflection and knowledge management in communities of practice. The role of information technology in collaborative learning is important, being significant the technological possibilities as the coordination of activities and the support of the participants in the virtual environment focused on the sharing of experiences and knowledge (Sanz, 2010).

A community of practice is defined as a group of people united by social and professional relationships who have similar knowledge and skills to create new common knowledge. This is described by Wenger (2001), one of the most authoritative authors on the subject of communities of practice, who points out that it is a network of individuals of common interest, and can be delimited by domain, community and by practice. He understands the phenomenon of shared knowledge, knowledge creation, and social networks resulting from communication in the community of practice.

The virtual community of practice encompasses several concepts in its use ranging from the virtual online community of practice to the online community of practice, a collaborative network, a thematic network or simply a group. Kimble *et al.* (2001), in their point out that the main channel of communication in a virtual community of practice is the Internet, and despite the lack of physical contact and exposure, friendship and networking, it allows to communicate, share knowledge and promote the work of the community using information technology tools (Salazar & Rivera, 2020).

Lambert and Bouchamma (2021) argue that Wenger's work on communities of practice is based on the social theory of learning, determined by four basic components: meaning, practice, community and identity. It is an informal model of professional development where meaning gives meaning to one's own practice, experiences or actions, and practice refers to mutual engagement in action supported by resources and work contexts. Thus, the construction of meanings related to experience is possible through practice. On the other hand, community accounts for the group of people focused on achieving projects, established in the construction of interpersonal relationships and belonging, and identity describes the impact of the learning experience on the participant, as the knowledge that is transformed into a learning process contributes to the identity of the person through the community of practice.

In a virtual community of practice, communication is central and communication also determines the sustainability of the operation, so its importance cannot be underestimated in the creation and operation both synchronous and asynchronous from one member to one, from one member to many, although, communication becomes more immediate, less attention is paid to errors (inexperience) and personal ways of communicating are better understood. Also, communication between members becomes freer but also deeper, and communication activity also increases offering mutual help and support and sharing meanings and identity building (Atehortúa & Giraldo, 2010).

Wenger's focus on the developmental phases of communities of practice confirms the above and adds that, during this period, members find the potential and need for the community of practice, which in turn enhances communication and member contributions (Wenger 1998; 2001; Wenger & Snyder, 2000). Also, as in non-virtual communication, personal qualities and pleasures become determinants in the quality of communication, and therefore, communication (interaction) in a virtual community of practice also depends on people's suitability and willingness to communicate.

In our understanding, the interaction mediated by communication between the individual and the community plays an important role in learning. Learning in the community is not reduced only to factual knowledge and adaptation, but is a synthesis or a result of the emergence of new knowledge through the exchange of knowledge and decreases as it is acquired and retained, that is, by the direct and indirect participation of the subjects.

From the point of view of knowledge and knowledge creation in communities of practice, it is expected that every participant is very active (direct participation) and, therefore, all knowledge is quickly exhausted, but in the same community there is the periphery (indirect participation), in other words, the presence of inactive participants.

In this regard, Lave and Wenger (1991) value the periphery or legitimate peripheral participation in community learning. The existence of the periphery has its importance for bringing new ideas and new zone of possibilities in the learning process (Gómez-Valderrama *et al.*, 2020; Hernández, 2020). The core of the community accepts a passive role, monitoring them and guiding those indirect participants who join the community, under the premise of “mutual commitment [...] joint initiative [...] shared repertoire” (Arquero *et al.*, 2014, p. 202). All of the above leads to the conclusion that there is a relationship in which communication supports learning and knowledge creation in a virtual community of practice, both at the community level that does not refer to the acquisition of abstract knowledge, but could be described as the interaction of community and personal knowledge.

## METHODOLOGY

The research from the ontoepistemological perspective was based on the hermeneutic interpretative paradigm and the descriptive qualitative approach. The phenomenological method was used to understand the interiority of the subjects and of the relationships established in the context with other social actors, in addition to understanding the social phenomena from the individual's perspective and which, in turn, are determinants for the understanding of each person's life (Martínez-Miguel, 2017). In this way, the method allows representing the meaning of the experience of those who have lived it.

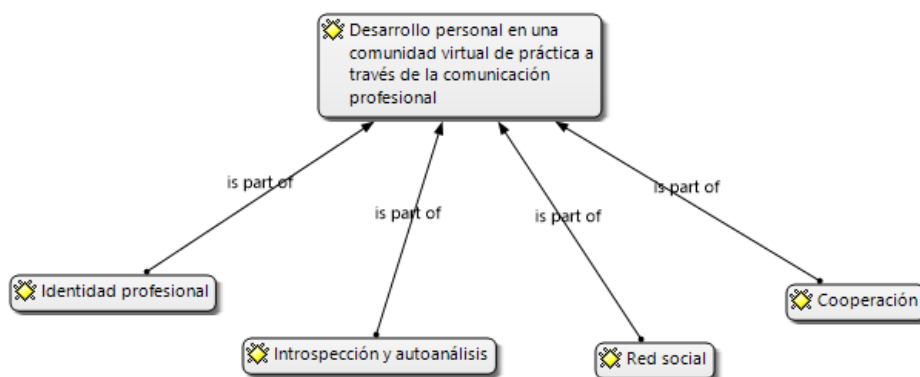
The research setting corresponded to a public university located in the city of Cúcuta (Colombia). Twenty-five university teachers participated in the study, who were selected under the criterion of participation in the community of practice of the university on Facebook where topics such as teaching supported by virtuality, virtual environments, and the use of ICTs, among others, are addressed. The information was collected through a semi-structured interview, which was validated through expert judgment and subjected to a pilot test to identify its potential and opportunities for improvement. The interviews were applied and with them, the transcription, reduction, protocol description and construction of analysis categories were made from the integration of all the global structures, confronting the stories with the theory. For the analysis of the data, the Atlas Ti software was used.

**RESULTS**

Three emerging categories were identified from the analysis of the systematization of the data and the analysis of the results: 1) Personal development in a virtual community of practice through professional communication, 2) Knowledge creation in a virtual community of practice through professional communication, and 3) Virtual community of practice of educators. These elements are described in Table 1. **Table 1.** Emerging categories and axial codes.

Category	Axial codes
Personal development in a virtual community of practice through professional communication	1.1 Professional identity 1.2 Introspection and self-analysis 1.3 Social network 1.4 Cooperation
Knowledge creation in a virtual community of practice through professional communication	1.5 Knowledge acquisition 1.6 Knowledge creation 1.7 Knowledge sharing 1.8 Knowledge preservation
Virtual community of practice of educators	1.9 Communication. 1.10 Knowledge

**Category: Personal development in a virtual community of practice through professional communication**



**Figure 1.** Personal development in a virtual community of practice through professional communication. The virtual community of practice as a functional entity has the purpose and goal of taking care of the exchange of information, interaction and communication that arises in its environment and of the members who base their objectives on the same community whose purposes end up managing professional communication. At the same time, the interaction between people creates the basis for a positive atmosphere, which facilitates community action.

Through interaction, both individuals and the surrounding community get to know each other but require resources such as knowledge and professionalism. The data show the significant impact of professional communication on the professional development of educators in the university setting and, in particular, on professional identity, reflection, social networking and cooperation.

**Professional identity**

Professional communication plays an important role in the creation and constant updating of professional practice. In the course of the interview, the teacher's vision and understanding define how his or her identity is perceived in terms of his or her attributes, beliefs, values, motives, and experiences

about his or her profession. Professional identity can be fostered in participants through activities of debates and discussions of issues, including group coaching and reflective practice with other colleagues. As expressed by informants:

As a learner and trainer, I currently see in the community of which I am a member that I can learn. Learning in the sense that it can help me to become aware of my practices, of my theoretical knowledge, connect it and to create completely new knowledge for me from it (I-18).

I can see how others do the same for their continued learning and professional development (I-13).

Educators relate to the importance that is achieved through professional conversations as a way to support their professional development:

[...] it would be an opportunity to talk to people who do the same in terms of ICT-supported teaching, research in this field, to know how they do it and how they approach it, that's the value [...] It's a meeting [...], as well as communication, exchange of information and, so to speak, support [...] (I-7).

Teachers perceive, experience and understand professional communication in the same field of values, as well as the development and directionalities in the area of their knowledge. In this regard:

If we can interact with the same community, we will have a broader and deeper understanding of the training area. [...] you may be able to work better and more efficiently (I-4).

As can be seen, an identity is further cemented while seeking professional development that is linked to professional learning. According to the experience of the informants, collaborative learning comes from the different knowledge and experiences of the members of the team:

[...] is very important as an exchange of information and learning among all, now we are focused and collaborating in teaching in time of pandemic and post-pandemic until normality is restored and students can learn better in this modality, but things are still the same [...] (I-15).

Understanding a profession provides the basis for planning, shaping, designing and evaluating one's professional development. Professional identity means the individuals' perceptions and attitudes towards their profession. Based on the information provided by the informants, it can be affirmed that professional communication allows for a clearer understanding of the profession and the identity of the participants (Salazar & Rivera, 2020), as well as, the opportunities for their professional development. Since, identity is formed through members' experiences (Lambert & Bouchamma, 2021). While individuals are also part of a collective world. The way one thinks and acts (this is how we understand ourselves and our experiences) is influenced by the relationships and the institutional and cultural structures we have for the construction of identity (Atehortúa & Giraldo, 2010).

Therefore, through the process of self-identification, not only the identity is formed but also the social environment is reorganized to understand the profession and therefore, professional development. Moreover, it identifies internal groups, differentiates them from external groups and finds role models to imitate or reject, as well as having the opportunity for professional interactions with others, as long as they are aware of their learning opportunities and development needs as stated by Muñoz *et al.* (2013), who recognize as a fundamental way of their learning the practices among groups of teachers.

Hence, a virtual community of practice could be a solution for the professionalism of teachers working in a very small group or professional communication.

### **Introspection and self-analysis**

In a virtual community of practice, reflection takes place when members are aware of it and can support it by organizing discussions. To experience the possibility of a reflective internal examination of communication at the professional level is to perceive the need to give content and meaning to activities in personality development. It is distinguished when university professors say:

For me, it will be a place where I can find out what others are doing, and discuss and share my knowledge... It is important to share positive experiences during training activities and reflect on them. (I-22)

And if I think I am doing something wrong, there should be a safe place where you can discuss it. Also, say the good things (I-9).

The need to share professional practices and feedback offers community members the opportunity to learn from self-analysis. These teachers consider the following:

For me, this would be a place where I can find out and compare what I am doing and what others are showing to make a differentiation, discuss them and share them for everyone's knowledge and my own. (I-2)

[...] the virtual community of practice aims to exchange their experiences, reflect and self-analyze [...] (I-6).

The reflection and analysis of experiences in a reliable community of practice are given by the good management of feedback comments (successes or failures) to examine intra and interpersonal experiences that affirm or reject the subjects' reflective practice in favor of their professional development:

[...] I feel that it has made me think and look at my profession much more. I have felt that I can enrich myself to be even better. I see that it is very important to understand the context (I-13).

The impact of professional communication on both learning and self-analysis creates a kind of synergistic effect, in which new knowledge is created, as communication with peers broadens the picture of the world and thus enables personal development. Also, positive interactions for informal development are experienced through professional conversations. In that sense, if the bonds that the subjects strengthen with other members in the community of practice are very strong, new opportunities to work together will likely be found, that is, the community will start a new life (Wenger, 2001), which becomes a value in itself with strong connections.

*Social network:* Social networking means the establishment of contacts with other people, groups or communities. Educators consider it important to have connections with other educators, justifying the social network as a support for their professional activities:



Well, in a way, it's very important that you have a network that you know and that you do things with. In the teaching community it's important that they know you and you know people, then you develop these connections between people and it's very easy to ask for some help [...] (I-17).

The value shared in the community not only allows to evaluate the quality of information but also the personal connections and relationships that arise in professional communication, which makes it much easier to get to know each other personally. At the same time, it develops the capacity to accept new things, the ability to use them and the skill to understand and give feedback according to the information received. In that sense, professional communication orients relationships and connections according to the influence of professional contacts resulting from personal contacts that support professional development.

Amorocho *et al.* (2010) consider the connections between the social network and trust in the community of practice to be significant. They recognize that personal social relationships in the community generate trust and willingness to contribute. Data from this study also show that educators experience the potential of a social network in a community of practice, which is expressed in both professional and personal acquaintances to manage knowledge among colleagues and with the development of members' communicative abilities.

### **Cooperation**

The educators interviewed highlighted cooperation as an element in joining the virtual community of practice. They emphasize that:

The community would have a relatively large potential to create opportunities for cooperation: it could act as an information bank with people's data and contacts. No matter what form of cooperation: training together, writing an article, etc. (I-13).

The possibilities of cooperation are a potential for the dissemination of work, which predicts not only cooperation but also collaboration in professional practice:

Collaboratively displayed material expands the area of knowledge - great things come from cooperation! (I-1).

The university professors under study understand that cooperation in the virtual community of practice is given from the communication and collaboration of the members through the activities carried out, in the fact that the knowledge of all members is applied in the cooperation, which makes the activity productive both in terms of results and in the context of the process:

Another good thing is that there is information on the different topics. So, if I need to search for someone specifically, I can get that information from there [...] (I-18).

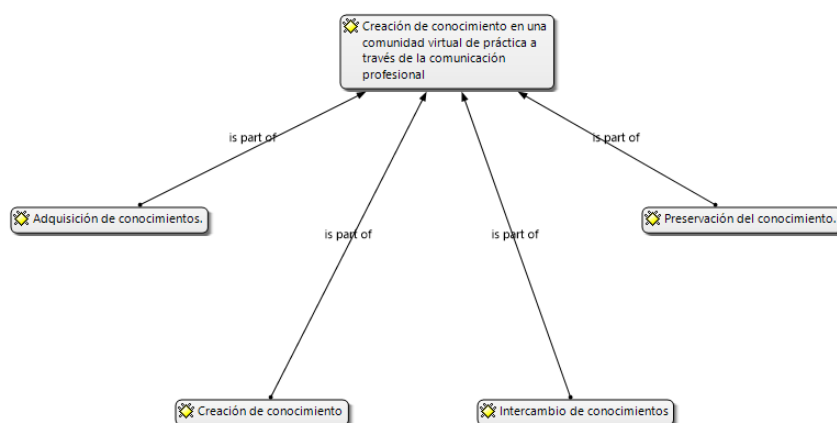
From these arguments, it is inferred that the virtual community of practice not only enables cooperation as a specific outcome for professional communication (Zea & Acuña, 2017) but emphasizes collaboration and evaluates opportunities for collaboration that generates innovation and knowledge creation through group learning. Thus, cooperation and collaboration in such a community drive professional development and the value of this community in the context of collaboration.

All of the above leads to the conclusion that personal development in a virtual community of practice is sustained primarily through trust and professional communication, as new knowledge emerges for the members, expressed in the progress of professional practice, identity and understanding of their profession, reflection and cooperation in a network of contacts (Amorocho *et al.*, 2010).

Personal development is given from the interaction of knowledge in the community and staff, in the need to deepen, investigate, discuss and seek solutions, which in turn, enables the continuation of professional development through the identity of the community that is related to the knowledge that promotes in the context with the development of the capabilities of the members and in the exchange of experiences of cooperation and collaboration (Zea & Acuña, 2017), as there is a relationship between communication and personal development in such groups or community in the management of discussion threads, information and informative events.

### Category: Knowledge creation in a virtual community of practice through professional communication.

The knowledge resources possessed by organizations and the capacity to acquire, preserve, transfer, apply and recreate knowledge have become key elements in the construction of the knowledge capital of organizations and organizations of any kind (including universities). The results of the study show this and are synthesized in the category shown in Figure 2.



**Figure 2.** Knowledge creation in a virtual community of practice through professional communication. Acquiring, creating, sharing and preserving knowledge results in intellectual capital through the acquisition and management of knowledge as an important way for organizations to grow and maintain their competitive advantage, project management and daily operations, being this explicit knowledge and tacit knowledge. In this regard:

we would be more comfortable with a virtual community of practice with the materials and contacts that are available... Not just to the university website, where you can also get the indexed journals, but you need all kinds of materials and information (I-23).

Individuals and organizations know. When knowledge is involved in large-scale social activities, there is a knowledge economy in its acquisition. Strictly speaking, individuals acquire knowledge and organizations can support their members by providing a suitable environment to build a community or network of resources sufficient for the process of knowledge acquisition and creation to be concrete and the results to be public.

### Knowledge acquisition

Knowledge has gradually become the management resource of organizations, how to acquire, develop, integrate and innovate knowledge. That is, how to effectively manage the knowledge resources that

have become part of the organization's knowledge whether it is business or public. Although, the data show that the expectations of the members of the virtual community of practice are mainly related to personal values and the importance of self-benefit in such community. Promoting knowledge flow improves the efficiency of knowledge acquisition by members:

[...] the value is there immediately, and that is what I use and look for in this space. That, if new information, a new method or a strategy is needed I can look for it [...] It is so interactive the environment that is presented that in one way or another we acquire knowledge (I-14).

Boyd and Ellison (2007) point out that the more cohesive a group is, the more personal resources are invested in the functioning of the group. The individual contribution of each group member is a prerequisite for group cohesion, as its members feel the need for connection in the community, but do not realize that connection and their contribution gives the emergence of group coherence and togetherness. Thus, they see the possibilities of a virtual community of practice to support their personal and professional development:

I would like to read research related to the learning of initial training students in a virtual community of practice for educators... It would be interesting to take research from there, discuss it and debate it openly... as it is substantial materials, references, and sources, as well as evaluate the outcome of the curriculum (I-4).

Knowledge acquisition emphasizes the availability of educational materials, and research articles, among others, as a factor in joining the virtual community of practice. Sandia *et al.* (2018) highlight the community's opportunities to acquire knowledge and clearly define it as the essential individual good. A functional demarcation emerges in the organization of the community of practice to carry out the tasks of knowledge acquisition, circulation, integration, development and innovation, including, determining how much knowledge there is, and what is the direction and strategy of future knowledge development (Rincón *et al.*, 2022). Therefore, when creating a vision of the future of these communities it is necessary to consider allocating research, planning and promotion of work related to the development of intellectual assets of the virtual community and the technological possibilities to enable the acquisition of knowledge.

According to the data, educators' expectations regarding knowledge acquisition in the virtual community of practice are the following: 1) methods and trends for teaching supported with technologies; 2) research articles on E-learning, distance education in post-covid times, ICT and learning communities in the university context; 3) study materials on social networks, situated, distributed and open learning, among others.

### **Knowledge creation**

The individual's notions and understanding - tacit knowledge - in interaction with the knowledge in the community - environment - originate the creation of knowledge (Nonaka & Takeuchi, 1995; Wenger, 1998). These are supported as a result of existing professional communication on specific topics and are complemented in discussion with others. In this way, one's knowledge is considered a valuable part of the community of practice:

It happens because everyone contributes something of their knowledge... of their knowledge and notions; and in the end, there is this synergy that creates new knowledge concerning what is discussed and talked about” (I-25); “in the community, you can share your thoughts and what you have just

researched. [...] I myself share information on various topics and my knowledge acquired from experience” (I-8).

As can be seen, the university professors under study have an understanding of the basic principles of knowledge creation and are mostly open to this process. Knowledge creation means participation and exchange within a given profession. Therefore, in the process of knowledge creation, the contribution of each member of the profession becomes important:

[...] it is necessary and useful to have updated information. Also, certain members and users must be more critical members to be active. I think some people are so active that they are often confused with the administrator of the group because they create content [...] (I-13).

The most critical members may refer to other more experienced participants in different communities in which they act as a critical mass. According to the argument of Gómez-Valderrama *et al.* (2020) about the relationship between indirect members of communities with strong ties, some indirect participants seem to be hidden but are on the periphery of the community, and yet their contribution, even if minimal, is an important part of knowledge creation. Indirect participants are members who also have access to other communities of practice, which means that their contribution is precisely to bring new knowledge and innovation to the community.

Probably, the knowledge in a community of practice is often tacit, which also means know-how that is usually neither directly taught nor publicly expressed, but at the same time is very valuable as a knowledge capital. Hence, professional communication is a key factor in converting tacit knowledge into public, explicit and informed knowledge. Tacit knowledge is a personal knowledge that is difficult to express in formal language, is rooted in individual experience, and contains intellectual factors such as personal convictions, beliefs and value systems. Therefore, professional communication and mutual conversations are valued because they are an opportunity to convert valuable tacit knowledge into understandable knowledge through knowledge interaction, as common knowledge of a profession can be created (Nonaka & Takeuchi, 1995; Torres & Rojas, 2017).

### **Knowledge sharing**

When knowledge is shared, first it can be for problem-solving or decision making. It has a purpose, second, people do not share their knowledge for the sake of sharing. Third, knowledge sharing supports knowledge interaction because only in the process of interaction can common knowledge be created. Although, the sharing and exchange of knowledge could provoke conflicting opinions among subjects, then, the creation of knowledge could be hindered. The effect of knowledge sharing is quite limited.

Thus, knowledge sharing is sometimes not easy to transmit and internalize in people, even turning it into a file to share with others, the cost required in time and dedication is quite high and the results that can be obtained may be only a small part. In this regard, it was found that the dissemination and sharing of materials are difficult because the material is part of their research:

Sometimes, as a teacher, you feel that over the years you have collected, compiled, found, fretted over good material, and it is as if it were your know-how, and you do not share it (I-14).

But the data also show that educators are interested in sharing materials and distributing or disseminating materials because it is a way to show themselves as an educator, researcher or innovator.

When I started training in e-learning I did not know virtual education, so I used communities of practice such as the Unesco Chair in Distance Education, where I obtained materials that I used in the training (I-13).

I consider my materials and ideas to be intellectual property. To some extent, it is important to expect to publish in scientific journals, because I believe that I should not distribute my property to someone else like that [...] (I-19).

Similarly, educators distinguish a problem in knowledge sharing and try to find solutions:

You want to receive, but you don't want to give anything. I guess there is no solution for this, ...you have to try to understand and broaden the understanding of what, if you do something, it is not only for you but also for a wider benefit of the community because now the world is open, everything is open (I-11).

### **Knowledge retention.**

Knowledge preservation is a significant value of a virtual community of practice. On the one hand, there is the collection of knowledge, dissemination or preservation of their materials, and on the other, reading articles and professional discussions or debates as an opportunity to broaden their understanding and find opportunities for their professional development. This is what the informants say:

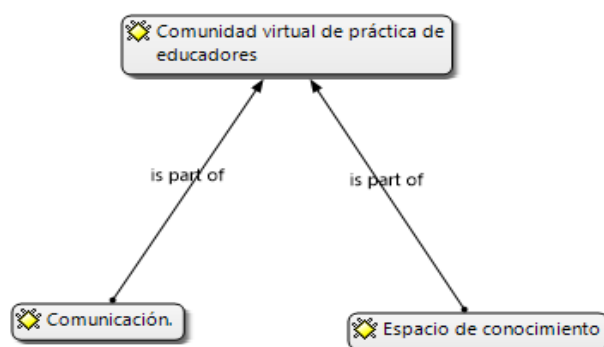
Uploading files is very important. I want there to be the possibility to read some interesting studies, for example. It could be systematized by: directories, by topics, a kind of library. There should be a leader, a moderator (I-3); If I have something of my own, it is very good if it is in one place so that I can access it and others as well. This is a very good way to have visibility and all the material in one place (I-6).

With the four modes of knowledge creation, the virtual community of practice needs to construct four knowledge contexts to promote knowledge creation for personal development. These four situations are the information (acquisition) context, creation, the interaction and sharing situation, and the application and preservation situation. Since the key to knowledge creation lies in the application and transformation of tacit knowledge and the communication of tacit knowledge is the starting point for knowledge creation in such a community, where the construction of a creative context becomes the essential theme of knowledge creation for personal development.

In our opinion, on the one hand, the organization must provide a work environment and a culture of professionals that is personally stable and conducive to the interaction of the members and, on the other hand, also ensure that the members of the community have adequate interpersonal communication skills to achieve resonance, mutual care, trust, demands for affection and commitment that result from information exchange, interaction and relationship building (Navarro & Pémberton, 2012).

### **Category: Virtual community of practice for educators**

Figure 3 shows the semantic network of the category virtual community of practice of educators, made up of two axial codes.:



**Figure 3.** Virtual community of practice for educators. **Opportunities for professional communication**

The data reveal several technological and non-technological factors that indicate the support that communication gives to the virtual community of practice is central, as there are technological factors such as forums and the like that influence communication within the non-technological factors that are the prior knowledge of the members and the administration of the community:

Offers, training opportunities, external partner offers, learning opportunities, but this seems like a full-time job for someone. There seems to be a moderator who manages the information and the organization technically (I-16).

[...] functions similar to a forum to ask questions. In other words, I don't send an e-mail saying I have a problem, but I put this question in the forum and someone who can and knows how to answer it (I-5).

It is observed, on the one hand, that the members of the community experience a very high potential for the transfer of information and, on the other hand, their expectations are high. In addition, they believe that the presence of a moderator is necessary because, in their opinion, it improves active communication. However, they see themselves as passive observers rather than active participants.

On the one hand, the openness of discussions and debates is beneficial, but on the other hand, it can be an obstacle. The diversity and comprehensiveness of the discussions and the possibility of involving the potential of very different specialists are considered favorable. In the case of closed discussions, it seems that informants feel more confident and more difficult problems and questions are encouraged, but open or closed, it depends on the objectives of the community of practice in particular.

Lave and Wenger's (1991) original theory of community of practice is also based on the closed community concept. However, if the goal is to enhance specific activities with professional communication in a virtual community of practice, a closed community is seen as a solution in focusing on a person's identity, processes, and cognitive and emotional skills (Martinez, 2012).

From the point of view of the knowledge of the virtual community of practice, the following technological possibilities emerge forums, bookmarks, user preferences for viewing and selection of browsing topics, uploading files with the possibility of commenting and public user profiles. Thus, it is evident that the members of the virtual community of practice under study require both professional support and management by the organization of the creators of a community of practice that supports professional communication.

### **Opportunities that support knowledge creation**

Once knowledge has completed the process of mutual creation between people, the next process of knowledge creation is knowledge externalization, an interactive context that involves distinguishing and empowering appropriate team members to ensure they can use dialogue and reflection, and encouraging members to be creative and discover new ideas for knowledge creation in an environment with the necessary tools along with collaboration and cooperation:

If I want to know what community members think about a specific topic or what they have experienced, or I want to map people's opinions, can I get their individual opinions? (I-12).

The exchange or circulation of interpersonal knowledge is a part of knowledge creation and is closely related to the establishment of knowledge communities, both sharing and acquiring knowledge and, above all, the opportunity to collaborate professionally:

If it is closed, there is much more trust, but much less potential to complement and add value. I would like to say it would be open. But there is always also a mixed version, that some part is open and if you want to access some more specific material, you have to fill in a profile to give information about yourself. Maybe then you feel safer sharing some materials. Maybe this is the best option (I-6).

The focus of analysis of knowledge exchange or circulation lies in the repetition of knowledge. Its effectiveness depends on the strength of the mechanism of the knowledge provider participants. Thus, it agrees with the approach of Nonaka and Takeuchi (1995), Wenger (2001), Sanz (2010), and others, that the source, contents or production process of individual original tacit knowledge comes from the creation of mutualization of interpersonal communication in context. However, it follows that not all knowledge arises from the assimilation of professional communication in a creative context and that a considerable amount of knowledge within the culture of the community of practice itself arises from the original experiences, ideas, or research findings of a few.

The effectiveness of knowledge creation in the community of practice still depends on the orientation of the intention of knowledge creation for personal development, as the subjects under study experience a semi-closed virtual community of practice. Thus, the stimulation of the volatile or chaotic environment and the diverse talents of the members depends on whether there is a mechanism of recognition of the value of knowing whether the community would be open to the participant, but the narrower sub-communities would be closed. According to informants, open communities are innovative, but not very effective, while closed groups are highly connected and effective.

This could be because there is a culture that interacts in social networks, hence, there are problems in a virtual community of practice developed on Facebook that support professional communication. The informants state that:

One thing is that I don't mind going on Facebook [...], I can't go deep. Consequently, I still find this virtual world too disruptive to embrace while dealing with my professional development, although good discussions of topics of interest are raised. And this is also the main reason why I have not been very active as a member myself (I-10).

The identity of the community is also related to the identity and belonging of the participants. It can be said that the more professional you see yourself in the virtual community of practice environment, the more professionals will want to belong and contribute to it:

If the community is so open [...] the opportunities for cooperation are quite limited because the identity of the community could be lost (I-8).

Lambart and Bouchamma (2021) argue that the community, its identity and the meanings of explicit knowledge are only the tips of the iceberg of the knowledge pool of members and individuals who make life about a particular area of knowledge. An individual may employ professional communication (in forums or discussions) within the community either at the expert level or as a consumer. Moreover, some members are consumers outside the same virtual community of practice and priorities are very clearly related to belonging, which in turn is related to identity, thus their contributions are important and represent an area of learning possibilities (Gómez-Valderrama *et al.*, 2020; Hernández, 2020).

Therefore, it turned out that educators need, first, an area of cooperation in the virtual community of practice that would not be open to all, but that requires mutual commitment and a shared repertoire (Arquero *et al.*, 2014), as well as a half openness, where the community would be open, but closed under certain conditions; and second, factors that promote professional interaction such as community identity, trust and even a good administration and management of information threads and discussions (Atehortúa & Giraldo, 2010).

## CONCLUSIONS

Virtual communities of practice have become an extension of the environment of many professional associations, where it is possible to pursue personal and professional goals. In this educational reality where professionals are inserted into a virtual community of practice that supports professional communication, they adapt their knowledge and practices to suit the development of the educational context in which they are active, as well as their personal lives.

From the findings, it is clear that the virtual community of practice that supports professional communication describes a structure of the environment that is supported by cooperation and communication with the use of rational and self-managed thinking of the members to positively impact the community and its members.

The virtual community of practice that supports professional communication consists not only of technological tools and opportunities to establish the necessary technological environment but also requires critical success factors of reciprocal responsibility, joint initiative and shared compilation that resembles that of the community and the construction of its identity, in which opportunities for cooperation are valued, a social network that is formed together with the periphery as a circle of means to create knowledge and learning, as well as the perception of the identity of the member (educator), which ensure trust and management of the same. Also, the perception of the member's identity and his attitude are determinants for his integration and contribution to the activities, which not only affects the membership and the desire to support but also gives the individual confidence to participate in discussions and debates through professional communication.

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