

# Potential of Collaborative Professional Learning mediated by ICT

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## Abstract

The Covid-19 socio-sanitary crisis represented a great challenge at a political, social, economic level and, above all, in education. However, initiatives and proposals for educational innovation continued within the framework of professional collaboration between educational agents. Therefore, this study aims to carry out a descriptive and purposeful analysis of the potential of Collaborative Professional Learning (APC) mediated by ICT during the pandemic. For this, qualitative research was carried out through a semi-structured interview with eight international experts in education, which was processed through the Atlas.Ti software version 7.5 in Spanish and subjected to a thematic content analysis. The results revealed three emerging categories: educational research based on intergenerational, intercultural and interdisciplinary collaboration; intra- and inter-institutional community resilience; and social-emotional development needs for effective online collaboration. The importance of ICT-mediated Collaborative Professional Learning is concluded as a sustainable and dynamic strategy for educational innovation, since it fosters the investigative, resilience and socio-emotional skills of the teacher to learn to be, learn to live together and learn to transform into complex scenarios as emergency remote education has been.

## Keywords

Collaborative Professional Learning, educational innovation, ICT, Covid-19

## 1. Introduction

The environment around us has proven to be very uncertain, despite this, we must adapt quickly. However, beyond a sudden and forced adaptation, a planned transformation is urgently needed, mainly in educational systems, which are the basis of great changes. This transformation should lead us towards quality education, for which it is necessary to have "qualified teachers" [1]. If the quality of the teaching of teachers depends on their preparation and commitment, then how can we contribute to a better qualification and continuous training of this teacher? Perhaps the difficulty in answering this question is because we are focusing only on how the teacher teaches and we are forgetting to question ourselves about their own learning process. Therefore, it is worth asking: how does this teacher learn?

In this regard, Unesco explains, in goal 7c, that the person is a citizen of the world, and declares international cooperation in favor of teacher training [1]. Hence, collaboration represents an important strategy in the continuous training of teachers. For this reason, we consider it necessary to delve into some fundamental concepts of collaborative work between teachers or also known as Collaborative Professional Learning.

Collaborative Professional Learning (APC), or CPL for its acronym in English, represents a teacher training strategy framed in Teacher Professional Development (DPD). Likewise, it is based on the main idea that the teacher learns in interaction with his peers by exploring new

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ways of teaching, evaluating and reflecting on what happens in the classroom with the purpose of proposing improvements in his pedagogical practice [2].

Thus, from this analysis of theoretical support, approaches are projected around Collaborative Professional Learning, which have to be crossed with the data collected in the field work through interviews, in order to obtain new ideas force that support the APC as a sustainable and dynamic strategy of the continuous training of the teacher.

## 2. Methodology

This article proactively analyzes Collaborative Professional Learning (APC) as a sustainable strategy for the continuous and permanent development of teachers within the framework of educational quality. For this reason, a qualitative study divided, initially, into two phases is deployed.

### 2.1. First phase

In a first phase, the documentary review and research systematization regarding the nature, conditions and educational policies that support Collaborative Professional Learning were developed. Articles published in educational journals extracted from databases of academic prestige were reviewed, as well as institutional documents governing national and world educational policy. This phase was complemented with a reflexive hermeneutic process of the information that was emerging around the APC [3]. This review of the literature allowed us to know the founding concepts of the APC to be able to elaborate a matrix of questions for the interview with the experts.

### 2.2. Second phase

The second phase of the research included fieldwork based on qualitative interviews with experts from five countries (Colombia, Ecuador, Spain, Mexico, and Peru), to explore their perceptions of the APC. Qualitative interviews are professional conversations with a purpose and design oriented to social research [3].

This second phase was developed in three fundamental stages: planning of field work, execution of field work and process of coding, categorization and triangulation of information. For a better understanding and scientific credibility, each stage of the process is described below.

In the first stage, called fieldwork planning, the design and construction of a battery of twelve questions and cross-examination was carried out in coordination with the research team, made up of doctoral students in Education as part of the training process of a course on educational problems. Also, communication was established with eight academic professional experts who have vast experience in the field of education and who experienced remote education during the health emergency. Via telephone and zoom, the day and time for conducting the interviews was coordinated with them, taking into account the time difference between the interviewer and the interviewee, since the experts are of national and international origin. To maintain the anonymity and privacy of the identity of the research participants, they were assigned codes.

Table 1 shows the list of interviewed experts and each one's mini curriculum to demonstrate the suitability of their participation to give an opinion on collaborative professional learning.

**Table 1**  
**Coding of the experts interviewed**

Code and country of origin	Expert description
EXP 1 Country of origin: Brazil	Doctor of Pedagogical Sciences. Teaching researcher. Active member of the Red de Estudios sobre Educación.

EXP 2 Country of origin: Colombia	Ph.D Universidad de los Andes, Colombia. Fulbright Scholar at the University of Illinois, USA. Advisor to the General Directorate of the Instituto para la Investigación Educativa y el Desarrollo Pedagógico - IDEP
EXP 3 Country of origin: Peru	Associate professor at the Universidad Antonio Ruiz de Montoya, candidate for the Doctorate in Education at the Universidad de Valencia. Director of the Institute for Research and Educational Policies of the Universidad Antonio Ruiz de Montoya.
EXP 4 Country of origin: Peru	Professor at the Universidad Femenina del Sagrado Corazón in the graduate school. Academic Degree of Doctor of Education Sciences
EXP 5 Country of origin: Mexico	Doctor of Educational Sciences, with a master's degree in Teaching and Educational Administration (UABC) and a Bachelor of Educational Sciences from the Univeridad Autónoma Baja de California
EXP 6 Country of origin: Peru	Doctor in Educational Sciences at the Universidad Nacional de Educación. DM Specialist Training in Derrama Magisterial. Degree in Education specializing in Social Sciences and Philosophy from the Universidad Inca Garcilaso de la Vega.
EXP 7 Country of origin: Ecuador	Ph.D. Doctor in Pedagogical Sciences from the Universidad Central "Marta Abreu" de Las Villas. Master's in educational sciences, Didactic mention. Principal Professor of the Universidad Técnica de Manabí (UTM), Ecuador.
EXP 8 Country of origin: Spain	Doctor in Philosophy and Educational Sciences from the Universidad de Salamanca. Professor in the Department of Didactics, Organization and Research Methods of the Universidad de Salamanca, Spain.

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In the second stage, called execution of the field work, the interviews were carried out, which were individual, qualitative, and semi-structured, due to the fact that guides and lists of questions previously designed by the research team were used. The questions were open, that is, they provided the opportunity for the informant to delve into their answers. The experts gave their consent to record the interviews for later analysis. During the interview, they were told that their participation was anonymous, voluntary and confidential, and that the results obtained would be used solely for research and academic purposes as part of a training course.

Finally, the coding process was carried out, as well as the comparison, relationship, classification of the codes, categorization and triangulation of the data from the different interviews carried out with professionals in the field. To maintain the anonymity and privacy of the identity of the research participants [4], they were assigned codes. The information processing was carried out using the computer program Atlas.ti version 7.5 in Spanish, which replaces the tedious task of manual or artisanal coding, facilitates the organized storage of information in various windows and, therefore, the processes of triangulation, the writing of the families, the memos and the networks of codes and the categories ordered in windows in an

articulated way [5, 6, 7].

Coding consists of identifying and recording one or more passages of the transcribed content that coincide in the same theoretical or descriptive idea. The development and choice of subject codes will depend on the purpose of the research. Triangulation, according to [8], is a process that dialectically gathers and crosses information about the phenomenon being studied and that was generated through data collection instruments.

In this case, the triangulation was carried out between the information obtained from different angles such as the documentary review and the empirical data collected in the field work. Likewise, throughout the research process, the hermeneutical-dialectical approach has been followed, as well as the use of methods such as analysis-synthesis and inductive-deductive [9] to interpret the information. In this way, the construction of three emerging categorizations was obtained, that is, thematic units according to the research objectives.

Figure 1 details the encoding process, categorization, families, memos, networks and emerging categories.

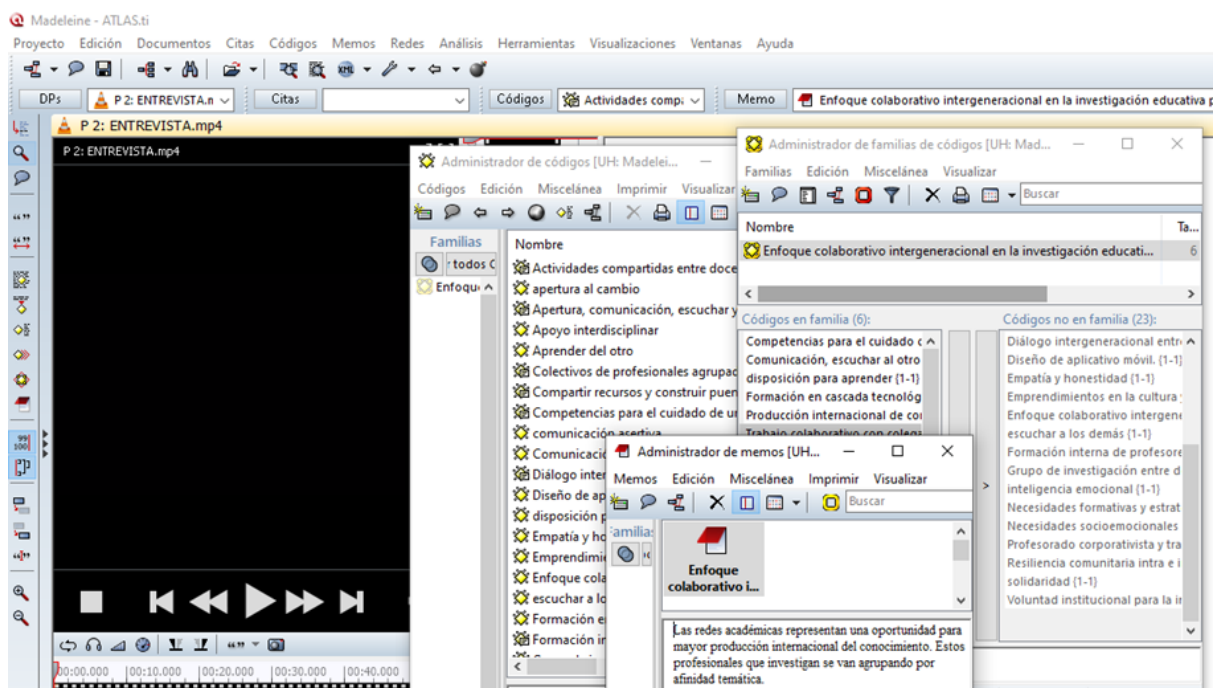


Figure 1: Process of coding, categorization and triangulation in the computer program Atlas.ti

### 3. Results

The results will be described based on three emerging categories: (a) Collaborative intercultural, intergenerational and interdisciplinary approach in educational research for social transformation, (b) Intra- and inter-institutional community resilience for teacher training in contexts of vulnerability, and (c) Socio-emotional skills in the citizen educator for effective online collaboration.

### 4. Intercultural, intergenerational and interdisciplinary collaborative approach to educational research for social transformation

Experts value collaborative professional learning as an opportunity to promote research between academic networks made up of teachers at the national and international level and grouped by thematic affinity. These investigative networks have expanded and strengthened due to the

increased use of ICTs, which -in turn- have been necessary to continue developing in virtuality. In this way, the networks enable meeting spaces between professionals from different countries, which represents an enriching source of experiences and knowledge for educational innovation. Next, the narration of the experts on the potential of the APC mediated by ICT around educational research is presented, it should be noted that the code of each expert has been placed in parentheses.

The experts consider the intercultural nature of research to be a first potentiality, which has been strengthened thanks to the mediation of ICT during the pandemic, since experts from different countries come together in the same virtual communication space to discuss their experiences and propose solutions from their educational realities.

"(...) we are accessing a level of international knowledge production through academic network structures that we did not have before, (...) networks are a fabulous creation of international knowledge production" [EXP1]

"(...) groups of professionals from different countries are linked by the major issues that they address in their research" [EXP3]

Likewise, in the group of experts, the intergenerational nature of the research was considered advantageous. It was evidenced that more and more collaborative research practices are emerging between teachers and students, or between older and younger teachers. This is really important when taking into account that uncertain situations such as the pandemic and the post-pandemic require, in turn, new ways of understanding and dealing with the problem.

"(...) the professors who publish the articles with their own students, in fact, are shared activities" [EXP3]

"(...) make younger generations more protagonists, more active and have their space (...) that is what we must go towards, towards intergenerational dialogue in teaching (...) and young teachers listen to teachers older" [EXP6]

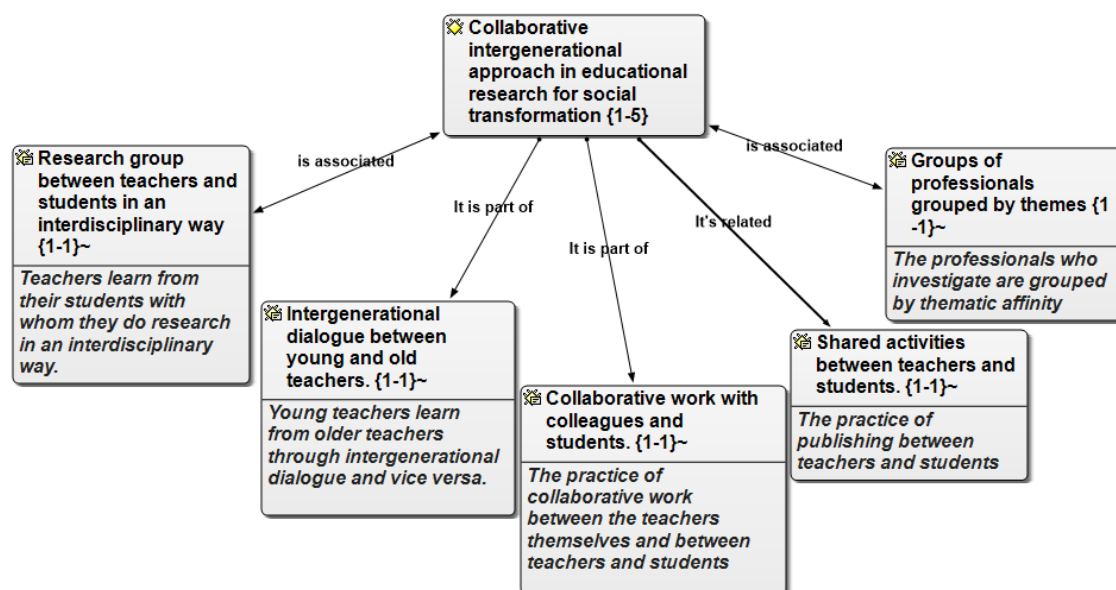
Finally, another potential of APC assisted by technology has been the interdisciplinary nature of research, since academic networks allow professionals from different specialties to synergize for the proposal of innovative solutions.

"(...) universities have also been generating a process of research group with students or teachers in an interdisciplinary way (...)" [EXP3]

"(...) of course, also seek support, not only from other colleagues in our career, because we can do collaborative work with colleagues, but we can also do it with other professionals" [EXP7]

"(...) the learning communities and then with my group of colleagues regardless of whether we are from the same discipline, I can learn from the other and I can see how the other is doing things" [EXP2]

The results of this category allow us to infer that research among teachers was enhanced by using the ICT-mediated collaboration strategy, since it provided spaces for reflection among professionals of different cultures, ages and disciplines. These spaces become hotbeds of innovative research proposals for social transformation, above all, to face the challenges of pandemic and post-pandemic education (Figure 2).



**Figure 2:** Intercultural, intergenerational and interdisciplinary collaborative approach to educational research for social transformation

## 5. Intra- and inter-institutional community resilience for teacher training in contexts of vulnerability

In the interview with the experts, the opinions showed that collaborative professional learning mediated by technology promotes the creative and proactive attitude of the teacher in service to compensate for the shortcomings of the educational system arising from inequity or adversity such as the pandemic caused by Covid-19.

The experts highly valued the inter-institutional support, that is, between the various educational institutions that, through local initiatives and digitally, contributed to the training of their teachers, who - for reasons of vulnerability - do not receive benefit from the strategies external state.

"Then you have to train them to go, of course, meeting those needs of Latin America, that need of rurality (...) where we still find teachers without training and if we have them in training, much less without overcoming or updating teachers" [EXP7]

"(...) there are countries that have trained 100 or 200 technology experts to now train teachers massively digitally (...)" [EXP1]

The results also evidenced intra-institutional school support spaces, that is, within the institution, which allowed them to generate innovations to improve their pedagogical practice. Thus, initiatives such as educational innovation circles or the design of mobile applications were generated to face the challenges of emergency remote education.

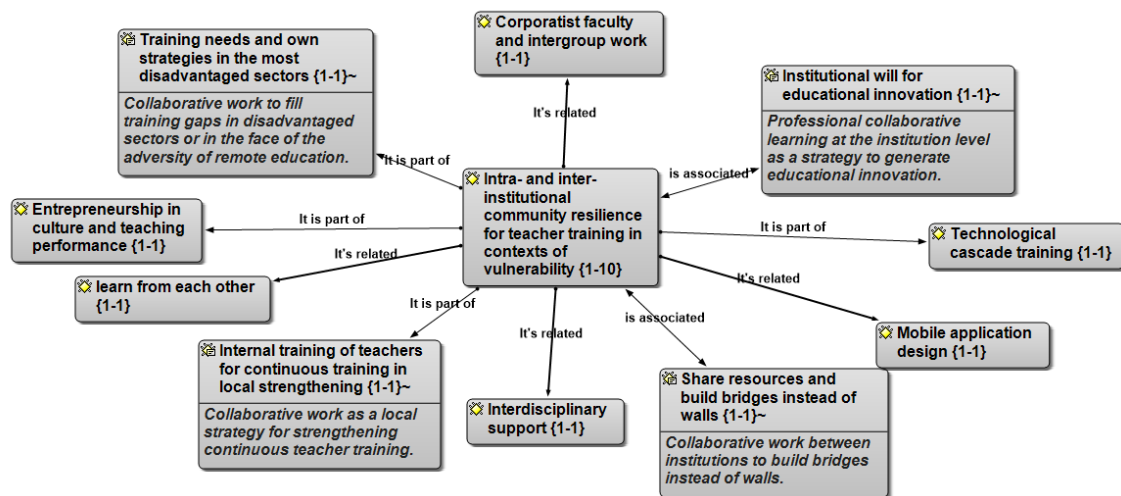
"(...) each teaching group of the institution develops a process of internal training of its teachers (...) in such a way that continuous training is not only based on external strategies but rather local strengthening" [EXP3]

"(...) we work in a space called educational innovation circles (...) I think the pandemic has taught us that, but more is this institutional will, of the teacher, eh of those who support teaching to be able to generate these elements ( ...) I make a video and make it available to all my classmates so that it can be disclosed (...)" [EXP2]

"They designed a mobile application that they called EDUCA SM, (...) now they were not experts in this handling, they required the support of a school teacher who does handle ICT, (...) they put together a team of four people with which gave life to this project, otherwise it would not have worked (...) a committed team is required, willing to learn, willing to teach" [EXP4]

In this way, the results that made up this category allowed us to deduce that collaborative

work mediated by technology enhances the capacity for inter-institutional and intra-institutional resilience in the most vulnerable sectors such as rural areas and also those sectors that were affected by remote education during the pandemic allowing to generate collaborative innovations in the pedagogical and digital plane (Figure 3).



**Figure 3:** Intra- and inter-institutional community resilience for teacher training in contexts of vulnerability

## 6. Socio-emotional skills in the citizen educator for effective online collaboration

Online collaboration requires and at the same time reinforces socio-emotional skills in the interacting agents. Thus, the experts highlighted the importance of skills such as empathy, to understand and help colleagues who have difficulty adapting to new scenarios, and assertiveness, to express our shortcomings and see opportunities for improvement.

"(...) now we have to mobilize competencies that we did not take into account before, I think that competencies such as solidarity, such as emotional intelligence, such as caring for oneself and caring for others as part of caring personal (...)" [EXP1]

"The same challenges in terms of building a learning environment, for example, are happening, because I kind of pay attention to it, because there is an exercise of empathy there in the group that makes me open up with much more transparency, with much more honesty to put my difficulty there, to say: I don't know how to handle this, I don't know how to do this, but I see that my colleague does it better and if my colleague is also willing to open up and tell me how he does it, fine" [EXP2]

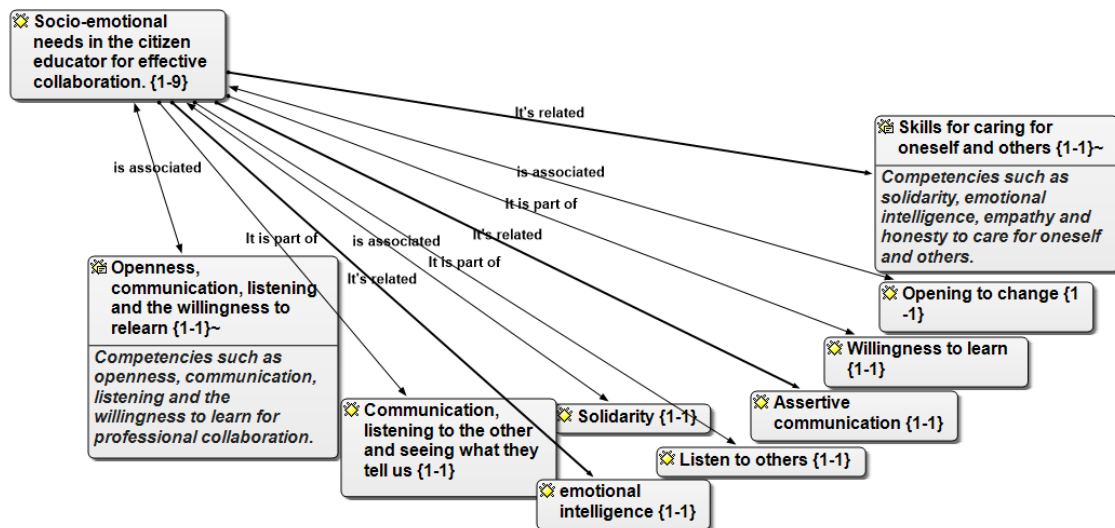
Likewise, the experts positively valued skills related to communication and active listening, both of which represent skills that encourage the teacher's flexibility to change and improve their way of teaching, as well as accept suggestions from other teachers.

"(...) what else can I do to ensure collaborative learning among teachers, because first of all openness, establish communication, listen, openness to change, modify my teaching strategies (...) the other is to always be with that willingness to constantly relearn" [EXP5]

"(...) the conditions to ensure collaborative learning is communication, the openness to change, to modify, to listen to the other (...) and another of the things to ensure this collaborative learning is to be able to listen and to be able to see what they tell us" [EXP4]

Thus, the in-service teacher who learns in collaboration with others and through ICT-assisted environments demands not only operational skills for the use of technology, but also socio-emotional skills such as empathy, assertiveness, active listening, communication, among others (Figure 4).





**Figure 4:** Social-emotional skills in the citizen educator for effective online collaboration

## 7. Discussion and conclusions

The results of this research refer to three potentialities of ICT-mediated Collaborative Professional Learning. This potential, in turn, has a direct relationship with relevant learning that qualifies the teacher for a quality education.

The intercultural, intergenerational and interdisciplinary collaborative approach of educational research for social transformation is linked to learning to live together [10]. Collaboration is not only an exchange of experiences and information, but an opportunity to strengthen the investigative competence of the teacher, seeking social transformation, based on intercultural and intergenerational dialogue for problem solving within professional learning communities [11]. As [12] maintains, teacher training should include “innovation opportunities for all agents involved in a collaborative process with shared goals” (p.65). Likewise, the figure of the teacher as the only one who does research and the student who only receives knowledge must change for a proactive and collaborative participation of both, since learning is bidirectional, from the teacher to the student and from the student to the teacher [13].

Intra- and inter-institutional community resilience for teacher training in contexts of vulnerability is related to learning to transform oneself and one's environment [14]. Professional collaboration emerges as an innovative and sustainable community resilience strategy for strengthening the continuous training of teachers that is supported by the proactivity, responsibility and creativity of the teacher himself, who seeks solutions to face the adversities of an educational environment with disadvantages [15]. Collaboration between teachers makes it possible to meet educational needs in vulnerable sectors such as rural education or remote education due to the Covid-19 health emergency, but from a new approach, where globalization, connectivity and interaction through networks become an ally in a global and local context [16, 17]. Likewise, Freire cited in [16] defends the importance of a liberating educational strategy based on collaboration, where mutual help is valued and not individualism, critical spirit and creativity are encouraged, and not passivity. Thus, school support networks within each institution to generate remote teaching strategies [18] are an example of educational community resilience, where social commitment and collective actions are necessary to transform adversity into growth [19]. For this reason, the experts agree that “building bridges and not walls” must be part of a national and global educational policy, where collaborative work between institutions and different pedagogical professionals is promoted.

Finally, the social-emotional skills in the citizen educator for effective online collaboration are linked to learning to be [10]. A holistic approach to collaborative work is needed that is not limited to addressing technical or operational skills of the teacher. The effectiveness of ICT-mediated



Collaborative Professional Learning also depends on the development of the teacher's socio-emotional dimension through skills such as communication, active listening, empathy and assertiveness, as key elements for effective interaction. Social and emotional skills will allow the teacher to open to a dialogue of self and inter-reflection [7]. However, the isolation experienced by the pandemic could be a difficulty in establishing these social relationships and emotional bonds [20]. For this reason, it is urgent to generate not only space-time conditions or technical collaboration capacities in teachers, but mainly dynamics based on the philosophy of collaborative work, where one can reinforce socio-emotional skills [18, 21, 22], from the integration between technology, pedagogy, and content [23], recognizing new pedagogical dynamics of educational virtualization that integrate technology into the sociocultural context where learning is generated [24].

From all of the above, it is concluded that ICT-mediated Collaborative Professional Learning represents not only an educational innovation strategy, but is also a dynamic element of relevant learning [25] such as learning to live together, learning to transform oneself and others, and learning to be, as it reinforces qualities such as empowerment based on research, proactivity to take on challenges with a resilient attitude, and socio-emotional skills for better interaction with peers online.

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