The socioeconomic conditioning of collaborative learning in a complex perspective in virtual higher education in Arequipa

Los condicionamientos socioeconómicos del aprendizaje colaborativo en una perspectiva compleja en la educación superior virtual en Arequipa

在 Arequipa 虚拟高等教育复杂视角下的协作学习的社会经济条件

Социально-экономические ограничения совместного обучения в комплексной перспективе в виртуальном высшем образовании в Арекипе

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Abstract

Education in Arequipa faces special contingencies, caused by COVID-19, which implies processes conditioned to a virtual higher education, generating scenarios that make it necessary to rethink the engagement strategies among its protagonists, studying the interactivity of the students and the feedback from teachers on the subject of scientific research, at the School of Communication Sciences of the National University of San Agustín. The objective of the research is the study of the implementation of collaborative learning in an interactive culture of the teaching-learning process from a complex approach, identifying the current socioeconomic conditions. The applied research methodology is mixed, qualitative-quantitative, transversal, non-experimental, which allows us to recognize collaboration as a fundamental part of the evaluation, which also encourages greater interactivity, generating a constructive climate in the educational process. It is concluded that collaborationist methods, in addition to helping to create new knowledge, strengthen the sense of teamwork from different disciplines, even within socioeconomic conditions.

Keywords: Collaborative learning, complex, interactive thinking, pedagogical innovation, virtual higher education.

Resumen

La educación en Arequipa se enfrenta a contingencias especiales, ocasionadas por la CO-VID-19, lo que implica procesos condicionados a una educación superior virtual, generando escenarios que hacen necesario replantear las estrategias de compromiso entre sus protagonistas, estudiando la interactividad de los estudiantes y la retroalimentación de los docentes en la asignatura de investigación científica en la Escuela de Ciencias de la Comunicación de la Universidad Nacional de San Agustín. El objetivo de la investigación es el estudio de la implementación del aprendizaje colaborativo en una cultura interactiva del proceso enseñanza–aprendizaje desde un enfoque complejo, identificando los condicionamientos socioeconómicos actuales. La metodología de investigación aplicada es mixta, cualicuantitativa transversal no experimental, que nos permite reconocer a la colaboración como parte fundamental de la evaluación, que, además incentiva una mayor interactividad generando un clima constructivo en el proceso educativo. Se concluye que los métodos colaboracionistas además de coadyuvar a crear nuevo conocimiento, fortalecen el sentido del trabajo en equipo desde diferentes disciplinas, aun dentro de condicionamientos socioeconómicos.

Palabras clave: Aprendizaje colaborativo, pensamiento complejo, interactivo, innovación pedagógica, educación superior virtual.

摘要

Arequipa的教育面临由COVID-19疫情导致的特殊情况,其高等教育过程取决于虚拟教育的条件, 因此有必要重新考虑圣奥古斯丁国立大学传播科学学院的科学研究学科的教学主体之间的互动策略,研究其学生的互动性以及老师的反馈。研究的目的是通过确认与之相关的当前社会经济条件因素,从一个复杂的角度分析在教学过程的互动文化中实施协作学习的过程。我们应用了定性定量的混合的横向非实验性的研究方法,这使我们认识到协作是评估的基本组成部分,此外在教育过程中营造了建设性的氛围,鼓励师生互动性。研究结论得出,在社会经济条件下,协作方法除了有助于创造新知识,还可以增强来自不同学科的团队合作意识。

关键词:协作学习,复杂的思维, 交互的, 教学创新, 虚拟高等教育。

Аннотация

Образование в Арекипе сталкивается с особыми обстоятельствами, вызванными COVID-19, что подразумевает процессы, обусловленные виртуальным высшим образованием, порождая сценарии, которые делают необходимым переосмысление стратегий обязательств среди его участников, изучение интерактивности студентов и обратной связи с преподавателями в рамках предмета научного исследования в Школе коммуникационных наук Национального университета Св. Августина. Целью исследования является изучение внедрения коллаборативного обучения в интерактивную культуру процесса преподавания-обучения с позиций комплексного подхода, выявление современных социально-экономических условий. Применяемая методология исследования является смешанной, качественно-количественной трансверсальной неэкспериментальной, что позволяет нам признать сотрудничество как фундаментальную часть оценки, которая также способствует большей интерактивности, создавая конструктивный климат в образовательном процессе. Сделан вывод, что коллаборативные методы, помимо помощи в создании новых знаний, укрепляют чувство коллективной работы представителей различных дисциплин, даже в условиях социально-экономических ограничений.

Ключевые слова: Совместное обучение, комплексное мышление, интерактив, педагогические инновации, виртуальное высшее образование.

Introduction

The educational system of higher education in Arequipa, in recent years has been incorporating new pedagogical strategies, furthermore in this epidemic trance of Covid-19, it has forced to rethink didactics in such a way as to achieve the expected competencies, from this work we have proposed a collaborative system in a complex approach, considering that in addition to the recognized heterogeneity, a more systemic look is required, even more if the problems are perceived as complex, García (2006a) affirms that "the determining characteristic of a complex system is the inter-definability, and the mutual dependence of the functions that these elements fulfill within the total system" (p. 1). On the other hand, Garcia (2006b) himself, in a more expanded publication, points out that complex systems in empirical reality lack precise limits, both in their physical extension and in their problems (p. 48). To this extent, the research proposal goes beyond disciplinary analysis, especially when it comes to the subject of Scientific Research in the Communication Sciences career, both in the specialty of Public Relations and Journalism.

From the perspective of the research lines of each discipline, it limits problem solving, furthermore when social phenomena do not have a strict connotation in their analysis, Tobon (2007), recognizes that "from the complex approach, education is not exclusively reduced to form competences, but rather aims to form integral people, with a sense of life, artistic expression, spirituality, self-awareness, etc., and values" (p. 15). For this reason, we consider the proposals both in professional training and in alternative solutions to social problems from a communication perspective require interdisciplinary competition.

Meanwhile, the first objective is to implement collaborative pedagogical strategies that optimize professional training from a complex perspective considering virtual education, to improve the competitive level of the communication professional, as well

as identify the socioeconomic conditions that influence the application of an interactive collaborationist approach in a virtual education system, in higher education at Universidad Nacional de San Agustín in the Career of Communication Sciences.

If we consider that the current situation of compulsory isolation requires greater interactivity, both at the level of the teacher with the students and between students, collaborative learning has a greater advantage, since as Suarez (2020) points out in "this type of learning is part from the area called active learning, framed within the constructionist approach, which seeks to involve students in learning through their collaboration through activities aimed at solving problems, group discussion and reflection activities to promote critical thinking" (p. 124) . In turn, if we place ourselves at this moment where the use of the internet as a single platform is compulsory, the constructivist approach must seek the greatest advantages in the learning process, thus Tecnologico de Monterrey (2018) proposes that collaborative learning "Allows the student to get involved in their own learning and contributes to the achievement of group learning, which gives them a sense of achievement and belonging and an increase in self-esteem" (p. 2).

The analysis of the collaborative strategy according to De la Cruz (2015) recognizes that in collaborative learning "the members perceive that each one can achieve a teaching-learning objective, if and only if the other classmates reach theirs, and together they build their knowledge by learning from each other. Unlike the previous ones, there is a positive interdependence, a sense of participation and co-responsibility for my learning and that of others" (p. 17). On the other hand, Coloma and Tafur (1999) deem that "considering that prior knowledge facilitates learning is an essential feature of constructivism and that it supports meaningful learning (p. 220).

An aspect that should not be lost sight of is what Ciccarelli and Chomnalez (2017) propose, which refers to "organized activities of sensory perception are known as gnosias. Its organization requires four fundamental factors: 1) motivation, 2) coincidence in time of sensory stimuli, 3) repetition and 4) reinforcement" (p. 262). In the research, the four elements of its application were taken into account, apart from the fact that socioeconomic conditions are often decisive.

Collaborative learning has been used in the classroom for quite some time, the strategy of working and learning together is not a new concept, although in the context of the Covid-19 pandemic it has acquired renewed importance by being associated with virtual learning, therefore that you must have some considerations to understand it better.

An analytical proposal of collaborative learning Calzadilla (2002) raises, pointing out that "collaborative learning is another of the constructivist postulates that starts from conceiving education as a socio-construction process that allows knowing different perspectives to address a certain problem, developing tolerance around to diversity and expertise to develop a joint alternative" (p.3). From another perspective, "collaborative learning is, above all, a carefully designed system of interactions that organizes and induces reciprocal influence among team members" (Collazos & Mendoza, 2006, p. 64).

It is also necessary to clarify that "collaborative work, in an educational context, constitutes an interactive learning model that invites students to build together, for which it demands to combine efforts, talents and competences through a series of transactions that allow them to achieve the goals in concert" (Maldonado Pérez, 2007, p. 268). However, it must be taken into account that "encouraging collaborative learning

implies giving up control and management of information; tolerate different times and methodologies that are better adapted to the styles of each group; trusting the capacities of individuals to interact positively, responding to pre-established instructions; and come along without monopolizing through occasional intervention" (Scagnoli, 2006, p. 46).

From another perspective we find that "collaborative learning is considered as a joint construction of meanings and a relationship and interaction based on dialogue, reflection, consensus, participation, communication and shared responsibility, the purpose of which is to create relational spaces or of interpersonal coexistence that constitute a particular educational community, which allows overcoming the risk conditions existing in the context" (Vasquez et al., 2015). It is also necessary to point out that "the purpose of collaborative learning is to contribute to the student becoming more and more aware of the existing borders between the various communities of specialized knowledge, to which he will be exposed during his university training" (Gonzales & Diaz, 2005).

From the concepts exposed, it can be seen that the role of the teacher, who in traditional education dominated the educational process, radically changes from an absolute dependence on the teacher to be the guide of the process. "The teacher, instead of supplying knowledge, participates in the process of generating knowledge together with the student; in a constructed and shared way" (Garcia, 2008). On the other hand, students take control of their learning and are integrated into collaborative work, where the notion of authority is not imposed, but the great challenge is to argue points of view, justify and try to convince their peers (Maldonado Pérez, 2007). Furthermore, "there is a wide body of psychoeducational studies and research that shows that, under certain conditions, peers can also act as a source of adjusted educational help, and that they can provide specific and original forms of help that hardly appear in the relationship, essentially asymmetric, between teacher and students" (Onrubia, 2007).

Collaborative learning is joined by work in virtual classrooms that is presented as: "a new paradigm that relates learning theories to technological instruments, based on a sociocultural vision of cognition, which advocates the essentially social nature of the learning processes" (Garcia-Valcarcel et al., 2014). ICTs are widely valued because they facilitate the work of students, who are very familiar with virtual environments and that in addition to favoring interaction and social skills allow reflection on problem solving and generate autonomy and responsibility. With the rapid development of new technologies, education has been greatly favored in group work and collaboration among peers "and although the applications are increasingly simple to use, and our students are already digital natives, it is necessary to give them training in terms of digital literacy" (Garcia Sans, 2008). Similarly, "virtual educational environments allow students to reinforce their skills in research and construction of their own learning, and also favor the acquisition of new knowledge and skills" (Scagnoli, 2005)

According to Onrubia (2007), four axes can be identified for a quality teaching practice, taking into account the incorporation of ICT into quality university teaching: 1) the degree of adjustment of the help offered by the teacher to the characteristics and student performances; 2) the consideration of classmates as explicit sources of adjusted help through the implementation of forms of work and study based on collaborative learning between students; 3) the planned, explicit and systematic promotion of greater responsibility, regulation and control of students over their own learning processes, with the aim of increasing their capacities for autonomous and self-regulated

learning; and 4) the use of authentic tasks as a basis for joint activity between teacher and students throughout the teaching and learning processes (p. 27).

The current situation affects the assumption of social responsibilities that imply sustaining viable and innovative cognitive strategies, a recent article it said, "the disposition to methodological innovation is one of the competences of the teacher and the professional who seeks to develop quality teaching or work" (Lorenzo Moledo et al., 2019, p. 41), this being a fundamental requirement for good academic work.

In the emergency context, it is necessary to rethink effective cognitive strategies, in this sense, the commitment to interactive learning is enriching, Aparici and Silva (2012) propose four principles of interactivity, 1) intervention by the content user, 2) the transformation of the actor, 3) individualized dialogue with connected services and 4) reciprocal actions in dialogic mode with users or in real time with devices (p. 5). In the same analysis, the authors emphasize the need to look for other pedagogical models and proposals, noting that students create, modify, build, become co-authors and have a series of elements for the construction of collective knowledge (p. 6) In this sinuous line of interactive constructivism, Perraudeau (2001), alluding to Jean-Louis Le Moigne affirms that "the real, the knowable, can be constructed by its observers, who from that moment are their constructors" (p.38), strengthening the idea of constructivism as a current pedagogical approach.

Technology should not be an obstacle to academic interactivity or collaborative work, technology plays a fundamental role, in such a way that "virtual environments facilitate and encourage self-learning because each individual can investigate by himself/herself, without waiting for the teacher provide information resourwces" (Scagnoli, 2005). This situation has made universities increasingly interested in training their teachers and students in the use of new technologies, creating virtual classrooms in which there are resources that facilitate the learning process. Furthermore, "when collaborative learning takes place in the virtual environment, the student has a set of technological tools that favor the achievement of this process (Guitert & Pérez-Mateo, 2013, p. 25).

In virtual classrooms, it is also necessary to specify that "collaboration is seen as one of the distinctive and necessary characteristics in learning in virtual environments" (Hernández et al., 2014, p. 26), the communication and interaction tools that are available in the virtual environment makes it possible and even encourages collaboration between students who take advantage of these tools for joint learning. In this way, "when the concept of collaborative learning is extended in the virtual environment, the concept remains, but the conditions, and therefore the possibilities, change substantially" (Guitert & Pérez-Mateo, 2013, p. 25), so "there is consensus in the scientific community about the importance and congruence between e-learning and collaborative constructivist approaches" (Fernández & Valverde, 2014, p. 98).

Complex thought is a current proposed by the French philosopher and sociologist Edgar Morin, who challenges the traditional classification that science makes of knowledge, dividing it into well-defined, autonomous and separate sectors from other disciplines, to propose the reintegration of objects of knowledge, reintegrating them in the unit to which they naturally belong. In the thought of Morin (quoted by Arango-Forero, 2013) "Classical science has disintegrated society; parcel, demographic, economic studies, etc., have disintegrated the global problem and even man, since, in essence, man could be considered an object unworthy of specialized knowledge, almost an illusion" (Arango-Forero, 2013, pp. 679-680). "In this way, science fell into the paradigm

of simplicity, disregarding the principle of universality that suggests that the whole is perhaps much more than the sum of its parts" (p. 680).

The fragmentation of knowledge for educational purposes has had harmful effects, since from the point of view of the students, the different fields of knowledge are often seen as isolated entities and very little connected to each other, which limits their investigative possibilities and thus also restricts the development of their competences by not being able to cover other areas of knowledge in their research work that would allow them a better approach to the investigated problem. "In light of this problem, then, the importance of an education that truly reflects the global and complex world in which we live arises. An education that takes into account this systemic perspective will address human needs and problems from their true dimension: it will value the multiplicity of constitutive elements that make us human beings, as well as the diversity of relationships we have with each other, with the rest of the species and with the world in general (this will evaluate our true human condition)" (Pereira, 2009, p. 71).

"To try a holistic understanding of reality is to favor a structural analysis, not fragmentary, of a relationship, maximized in its own complexity, between the whole (which is in each part) and its parts (knowing that each part is also in the whole). In such a way that, as the Gestalt and structuralist tradition says, the whole is always more, much more than the sum of the parts. I don't think there could be a better maxim or scientific statement to remind us of the epistemological meaning and scope of an expression that articulates notorious theoretical references in the way of understanding and representing educational processes" (Santos Rego, 2000)

The study of communication has not been exempt from different interpretative perspectives from various disciplines, which have not only contributed to the theoretical body of communication but also to its epistemological basis, and this in turn has integrated them and given them meaning. "In its application for admission to the social sciences, it carved out its own garden of knowledge, sowing fruits from other disciplines. Sociology, psychology, linguistics, semiotics, political science, political economy and economics itself provided postulates and reflections that supported the conceptualization of the communicative paradigm. But also in the field of the humanities, anthropology, history, philosophy, theology and literature have nurtured the ground for the recognition of communication as an object of scientific exploration" (Arango-Forero, 2013, pp. 681- 682). As communication is transversal to all fields of knowledge, it cannot be understood in isolation but in connection with all of them. In this sense, perhaps on the criticisms that the cultivators of formal or hard sciences still attach to communication lies its own richness , its own intellectual heritage in the light of a reflection on complex thought, since it does not exclude or delimit but rather integrates and analyzes, studies and harmonizes postulates that, coming from their own scientific origins, could seem simplistic (Arango-Forero, 2013, p. 682).

Methodology

It is an empirical applicative research with a descriptive character, as Bernal (2016) points out, in which the characteristics of the object of study are detailed (p. 143), without consequent explanations, in turn we assume a mixed character, since information is extracted based on subjective motivations of the student with the social problem, outlined through a format that allows us to organize the information and a semi-structured interview. A continuous intentional sampling was applied (Esteves Fajardo et al.,

2018, p. 61), composed of 90 students from the eighth semester of the Communication Sciences Career, both from the Public Relations and Journalism specialties; with the participation of two teachers of the Scientific Research subject. An observation guide was designed that allows us to identify the topics and lines of research that involve disciplines that generate the complex system.
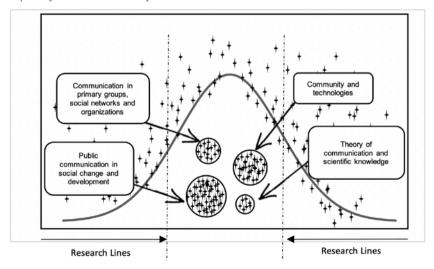
In the first stage, the research topics proposed by the students are freely identified, grouping by affinity according to the 4 lines of research of the career and then the proposals that do not have direct links and those that in some way have affinity; in the second stage, the socioeconomic difficulties of the students are identified and how these generate difficulties in the collaborative organization in the research proposals. The perceived limitations are demonstrated in the dispersion of proposals outside the research lines.

Results

The competencies raised in the professional profile of Communication Sciences, can be recognized four lines of research that are limited to the entire professional training process, 1) Communication in primary groups, social networks and organizations, 2) Public communication in the change and social development, 3) Community and technologies (ICT), and 4) Theory of communication and scientific knowledge. The research application begins with an introduction where it is specified that after having satisfactorily completed seven semesters of academic training in the communication career, students are free to identify problems in our society where their abilities and skills allow them to propose solutions. This is how 90 research proposals are registered.

In this first stage, among the significant findings, it could be noted that 46 (51%) of the problems identified are within clearly defined lines of research, 18 (20%) are directly linked to the career, 26 (29 %) are far from the research lines of the career.

Figure 1

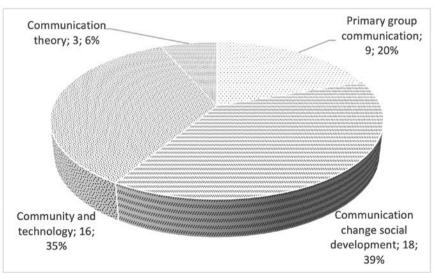*Proposals framed in the 4 Lines of Research in Communication Sciences*

What figure 1 shows is the level of dispersion of the research proposals put forward by the research students of the communication career, in turn the agglomeration of proposals within each of the research lines is also shown. Among the external problems with few links or related to interculturality, informality, poverty, citizen security, urban transport, prostitution, and environmental pollution, among others, stand out.

It is worth noting that the proposed research topics are evident in the context of current society, Juarez & Comboni (2012) point out that the complexity of the problems requires an interdisciplinary contest, "Complex thinking breaks with the unilinearity, the unilateralism of scientific thought; to integrate in a complex way, in the sense of weaving together (complexus) elements from the systemic, cybernetic and information theory concepts, recovered in favor of any study of the human experience being done in a multifaceted and multi-referential way " (p. 43). In this sense, a mono-disciplinary proposal would be unable to solve problems such as informality, since it requires economic, social and communicational perceptions; according to the complexity of the specific problem.

Among the 4 lines of research identified, public communication in social change and development stands out significantly, with 18 proposals that make up 39%, in turn, the Community and technologies is the second line with interest of communication students 35%, in this case is justified by recognizing the innovative process in communications through the use of information technologies. In third place, communication is located in primary groups, making 20% and finally the line of communication theories with 6%.

Figure 2

Research proposals within the research lines of the Communication career

Among the most notable problems in journalism are related to the treatment of information in different media, digital journalism and the use of information technologies and in Public Relations, internal communication, social responsibility and the reputation of companies stand out.

From collaborative work, when motivation and effective feedback are generated, but without recognition in the qualification process, the response is different from what occurs in person; and we comment on this to the extent that our 20 years of experience in teaching work, the answer is very different, trying to form groups, students always tend to group in greater numbers, in this case the answers are perceived in Table 1.

Table 1

Formation of voluntary research work groups

Description	Amount	%	Reasons
Research proposal individually		28 (31%)	Liaisons are difficult It is better to work individually You are free to modify your work What they are working, their occupations They have infected relatives
Research proposal between two students		47 (52%)	It's easy to coordinate between two The connection is irregular; it prevents meetings with more than 2 people They are projected to carry out their thesis, between two the sustenance is feasible
Proposal to form a group of three or more		15 (17%)	There is more academic work It facilitates better research proposals Better distribution of tasks

The second investigative stage propose collaborative work, for this introductory review of proposals by blind peers is proposed, each work is reviewed by a colleague, who examines by evaluating. The evaluation function is considered according to Neus Sanmartí (1995), who affirms that it is the recognition of the changes that must be introduced in this process so that each student learns in a meaningful way (p. 10), which means identifying gaps and inconsistencies in the proposal, recomposing the investigative work, generating interaction and in some cases controversy about research proposals without identifying the author.

For the interactive analysis carried out in the virtual classroom, the four aspects raised by Alvarez (2017) were taken into account: 1) the flow of content transmission: 2) the open exhibition: 3) the controlled dialogue and 4) the dialogical inquiry guided by teachers (p. 100). The first aspect was carried out at the beginning of the classes, considering the current situation of pandemic, it was motivated by the presentation of cases and recent publications of the teacher, the answer was that 68% of the students responded favorably, the interaction in class although was not through the microphone, the response in the chat was fluid.

In the second aspect, referring to the student's academic answers, or as the author calls open exposition, two aspects were noted, on the one hand a group of students (28%) showed leadership trying to answer voluntarily consecutively and on the other hand they perceives another group of students (50%), they note their socioeconomic

weaknesses, intermittency of the network, virtual capacity limitations, family problems, student work, illnesses, as can be seen in figure 3, in turn a sector of students are apathetic to participation, they do not express problems either, however their participation is very sporadic (22%).

In the third aspect, of the controlled dialogue, 50% showed evidence of their socioeconomic weaknesses, which can be seen in figure 4, so it is assumed that, although they are on the network, their direct or in real time contribution had been complicated, some of them are listening to the class, but they are fulfilling other tasks, attending to their work or others as illustrated in figure 4.

Figure 3

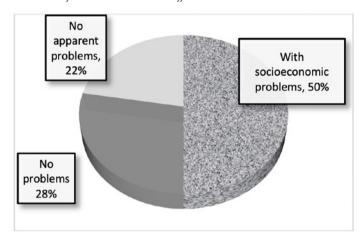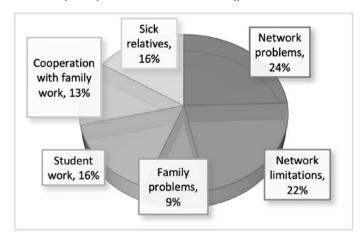*Distribution of the total students with difficulties*

Figure 4

Distribution of 50% of students with socioeconomic difficulties

Regarding the fourth aspect, we worked simulating an anonymous evaluation, that is, the proposals were evaluated in class, organized randomly by the teacher, who presents it, in turn the students take charge of a proposal, evaluating and rethinking the research, as already mentioned, 50% accepted the work but not in real time, due to the considerations indicated in figure 4, so it was left to send it through Moodle, which has repercussions in the non-application of interactivity which was the objective of the research, which shows external limitations in the study.

Discussion and Conclusions

The objective of the research has been to implement collaborative strategies from a perspective of complex thinking in special pandemic circumstances; Theoretical references allude to a conventional situation, the innovative proposals of higher education in the Peruvian university have followed an implementation process through the University Law (Law No. 30220, 2014), where modifications such as curricular change are promoted by competencies, the same as (Villardón-Gallego, 2016) points out, evolve as the economy changes (p.15), that is, the adaptation of higher education to the new scenarios experienced by the economy and technology mainly .

The discussion of the collaborationist strategic proposal obeys a critical vision of established practices and the concern to improve them (González Castro & Cruzat Arriagada, 2019), the current context presents socioeconomic limitations that prevent the development of fully collaborative strategies, as shown the results of the research, where 50% of students present problems external to the teaching-learning process. Roselli (2016), affirms that: "The idea of collaborative learning implies a general transformation of the didactic attitude, that is, the modification of the very foundations of teaching and learning" (p. 232), Another of the findings of the The research is the conditioning of the use of the network, both in the intermittence of the information flow, the weakness of the virtual signal, the deficiency of the equipment and the expertise itself in the institution's system.

In turn, Pereira (2009), points out that: within the Social Sciences, the so-called "systemic approach" no object or event (that must be analyzed by science) is isolated or unrelated, but rather appears within a complex system, from where it establishes a range of relationships with other objects, either "internal" or "external" (p. 68). The research shows that the lines of research proposed by the faculty represent 71% of the research topics for Communication Sciences students, 29% have a complex perspective, that is, it raises problematic issues of society that require the interdisciplinary contest.

It is concluded that the socio-economic conditions generated by the COVI-19 pandemic and the mono-disciplinary approach, in the development of scientific research in Communication Sciences, impede the development of a collaborative strategy in the teaching-learning process to the full, therefore It is suggested to expand the lines of research, taking into account the research proposals and the limitations identified in the information flows in the use of the virtual network.

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