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COLLABORATIVE LEARNING IN VIRTUAL CONTEXTS: A READING FROM THE CONCEPTIONS OF UNIVERSITY STUDENTS

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Abstract

Digital technologies require an innovative approach that expands their action towards social interaction and adapts to the changes in the new roles of education that demand collaborative learning. This text shows the results of a study that aims to identify the conceptions of university students about collaborative learning supported by digital technologies. The research paradigm is framed in the quantitative - descriptive transversal approach following a field design, with a sample of 200 students chosen in a non-probabilistic way. The results show that with the development of group activities, students improved their technological competences becoming managers of their own qualification thanks to the interaction with their peers and the recognition of the application of their competences in the solution of daily problems.

Keywords: Collaborative learning, higher education, digital technologies, virtuality.

Resumen

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Las tecnologías digitales requieren de una mirada innovadora que amplíe su accionar hacia una interacción social y que estas se adapten a los cambios en los nuevos roles de la educación que demanda un aprendizaje colaborativo. El presente texto muestra los resultados de un estudio que buscó identificar las concepciones que tienen estudiantes universitarios sobre el aprendizaje colaborativo apoyado en tecnologías digitales. El paradigma de investigación se enmarca en el enfoque cuantitativo - descriptivo transversal siguiendo un diseño de campo, con una muestra de 200 estudiantes elegida de forma no probabilística. Los resultados demuestran que, con el desarrollo de las actividades grupales, los estudiantes potenciaron sus competencias tecnológicas haciéndolos gestores de su propia cualificación gracias a la interacción con sus compañeros de trabajo y al reconocimiento de la aplicación de sus competencias en la solución de problemas cotidianos.

Palabras clave: Aprendizaje colaborativo, educación superior, tecnologías digitales, virtualidad.

I. INTRODUCTION

The changes generated nowadays give relevance to learning for social development, but they also question the institutional capacity to fulfill its objectives and functions worldwide, starting from problems in the organization and functioning within education, where aspects such as the participation of students and teaching staff in classroom activities, the educational project and curricular guidelines (Coll, 2014), can be included within the topic of collaborative learning that will be discerned through this document.

The aforementioned configured social changes are a sum of historical facts such as the French Revolution, which have given another sense to the school, making it "[...] to pass methodologically speaking from the classical structure of bookish, individual and banking training, to a more open, social and dynamic group training process" (Rubia and Guitert, 2014, p. 10), where technology began to be strengthened in the collaborative field from the 1990s in order to find a common conception of the problems through coordination, synchrony and teamwork. In addition, the cited authors mention that if the ideal objective of education is a synergetic and model society, it should promote equality through communication and the agreement of interrelation behaviors. Thus, 4 basic aspects of collaborative learning are proposed:

[...the necessary situation that allows collaboration between people of the same status (a teacher and his students, for example); the interactions that must facilitate collaboration, for example, when there is negotiation instead of instruction; the learning mechanisms themselves, supported by dynamics of assimilation and accommodation, for example, from the perspective of group agreement on what is learned; and finally, the effects of collaborative learning that is supported by different dynamics of recording the action of learning and that build results beyond the final ones of the mastery of the content being learned (Dillenbourg, cited in Rubia and Guitert, 2014).

It seems that for Hernández et al. (2014), the key to understand what collaborative learning is, are the exchanges and community work after the pursuit of learning objectives, aspects that can be favored by the planning, which, within the virtual environment, must contemplate technological resources, a methodology and the structuring of the work groups, in addition to the drafting of agreements in the group. On the other hand, these authors state that collaborative learning must articulate the competencies to be developed within the program as a learning objective to the collaborative method to be used and this to the learning activities postulated in the objectives; in addition, they mention the selection of the method and typology that serves for the resolution of complex problems that require complex answers - variation of actions and decisions -; the communication resources with the students about collaborative work, and the characteristics and process of formation of the group (Hernández, 2014).

Authors such as Calzadilla (2002), focus on those complex tasks that respond to complex problems from the collective and attribute to weighting and balance the effectiveness of the constitution of happy groups through emotional perception, where collaborative learning, as an enabler of the cognitive structure, will be favored. Thus, this author affirms that

There is an incidence of emotional intelligence in the behavior of the individual's work in organizations, and that they significantly influence interpersonal relationships to create a climate that activates creativity and opens up scenarios of participation in decision making that promote better management as a product of synergic teamwork (Calzadilla, 2002, p. 3).

Thus, digital tools require an innovative approach that expands their action towards social interaction in order to adapt to changes in the roles of education that demand collaborative learning, which makes visible the need for training in the management of these tools (Gómez-Valderrama et al., 2020; Gonzáles, 2006; Hernández et al., 2016; Prada et al., 2019) (Medina Romero et al, 2021). In this sense, Fernández et al. (1999) considers the need to define software technologies as those "[...] coming from the area of Computer Supported Cooperative Work (CSCW), to organize and define resources, spaces and activities shared by groups of individuals" (p. 14), which can be seen in turn as an educational approach, together with Groupware, which refers to group work, where people collaborate with each other through computer networks, increasing communicative, coordination and cooperation effectiveness. The just cited author also presents the spatio-temporal classification of these Johansen applications, namely: "same time - same place", "same time - different place:", "different time - same place:", "different time - different place:" (p. 15). Finally, this author concludes that:

Current systems offer, to a greater or lesser extent: (1) access/exchange of material through electronic books that display on screen information accessed sequentially or with very simple hypertexts; (2) teacher/student communication for question/answer exchange and exchange of material; (3) complex hypertexts that attempt to organize information according to the learner's needs; and (4) group work in systems that allow for multi-student tasks with or without teacher assistance, synchronous and/or

asynchronous communication of the entire group, more sophisticated help systems, and group task management (p. 20).

The above reflects how collaborative work is presented in various forms such as the transmission and reception of information shared through these media in a practical way; the exchange of perceptions, notions and experiences, as well as academic material; organization of group needs and joint tasks and work. So, talking about collaborative learning in virtual contexts has certain challenges, which, although they imply an arduous task for the design of applications and for those who apply them, can also facilitate a new way of interaction, where students and teachers feel comfortable and manage to articulate ideas, perceptions and resources, in an effort to bring their academic practice to the needs of today and as contingency and practicality in social networks built after productive interactions.

Currently, education is going through one of the most critical moments in terms of innovation and collaborative learning, the appearance of a virus called Covid-19 that initially concentrated in Asia and Europe, but quickly spread to all continents, leading to a confinement ordered by governments worldwide in order to reduce the high number of infections and deaths due to the disease (Avendaño et al., 2021).

Due to the above, educational institutions were forced to design strategies supported by the use of technological tools that would allow the continuity of training processes through the implementation of virtual classrooms, videoconferencing applications, among others (García, 2021; Ortiz-Arismendi et al., 2019; Prada Núñez et al., 2019; Rodríguez Ibáñez, 2018) that will encourage not only the generation of new knowledge and the efficient reception of information for students, but also vital aspects such as their motivation by measuring their level of satisfaction with respect to the new methodologies imposed by the institutions, thus identifying the real perception of both trainers and students, aspects of great importance to measure the quality of the training processes (Morales & Acosta, 2021; Gamboa, 2016).

METHODOLOGY

This research conforms to the characteristics of the quantitative approach at a cross-sectional descriptive level following a field design (Gamboa, 2019), since the data are collected from a non-probabilistically-chosen sample (voluntary sampling) of students from the Faculty of Education of a public university in northeastern Colombia. They were invited to fill out an online form, then the data collected were processed in order to analyze the validity of the scale used since it was an Ad hoc instrument, and then processed descriptively by determining percentages and frequencies in each item on the various response options.

As already mentioned, a questionnaire was designed consisting mainly of three sections: it begins with a brief demographic description of the student, followed by twenty-three items which are evaluated using a five-level Likert frequency scale with the characteristic of having two levels of positive

perception (Always and Almost always), an intermediate level (Sometimes) and two levels of negative perception (Almost never and Never).

During the data collection window, a sample of 200 students was formed, who received the invitation to fill out the instrument through the academic program director who shared the link from the institutional account of their program. At the end of the collection period, the Excel file with the data was downloaded from Google Form and then exported to SPSS v25, the software used to process the data.

A documentary review applied to the Scopus database on the variables ICTs, Collaborative Learning and Student Perception used in research papers published in high impact journals indexed in that platform during the period 2016-2021 is also carried out in order to determine the topics in which there is greater participation in the study of students' conceptions of collaborative learning supported by the use of technological tools.

3. RESULTS

As mentioned in the previous section, the instrument is composed of three sections and the results will be presented in that order.

Section One: Informant Profile

Regarding the characteristics of the group of informants, 65% are between 18 and 20 years of age, with a predominance of the female gender, which is consistent given that they are enrolled in the Bachelor's Degree programs in Early Childhood Education and Social Work, whose students are mostly women. Regarding the academic semester they are currently studying, it was identified that approximately 78.5% of them are enrolled between the third and fifth semester.

Table 1. *Demographic and academic profile of the informant*

Variable	**Response levels**	**Frequency**	**Percentage**
Age	Between 18 and 20 years old	131	65.5%
	Between 21 and 23 years old	64	32.0%
	Between 24 and 26 years old	5	2.5%
	Total	**200**	**100.0%**
Genre	Female	176	88.0%
	Male	24	12.0%
	Total	**200**	**100.0%**
Academic program attended	Bachelor's Degree in Natural Sciences and Environmental Education	27	13.5%

	Bachelor's Degree in Mathematics	29	14.5%
	Bachelor's Degree in Early Childhood Education	87	43.5%
	Social Work	57	28.5%
	Total	**200**	**100.0%**
Current academic semester	Third	73	36.5%
	Fourth	65	32.5%
	Fifth	19	9.5%
	Sixth	23	11.5%
	Seventh	10	5.0%
	Eighth	10	5.0%
	Total	**200**	**100.0%**

Second Section: Perception of ICT-mediated work.

It is important to point out that the reliability of a scale corresponds to a measure that makes it possible to evaluate whether the instrument used measures the construct for which it was designed and whether this measurement is stable over time. To this end, the Cronbach's Alpha statistic is determined using SPSS software, which reports a value of 0.896 for the scale with 23 items evaluated using a Likert scale with five levels. This value is slightly below 0.90, a value that according to Celina Oviedo and Campo Arias (2005) would be the maximum admissible, and if it were higher, it would be interpreted as evidence of the presence of redundant items, i.e., that some items are measuring the same characteristic of the construct.

Once the relevance of the instrument used has been verified, the study can move on to the descriptive analysis of the instrument, for which the two levels of positive evaluation (scores 5 and 4) have been grouped into a new category called Always, the intermediate level remains the same, and the two levels of negative evaluation (scores 1 and 2) are grouped into the category Never. This process is done in order to simplify the interpretation of the results in light of the fact that all the items have been written in the affirmative form.

Figure 1. *General average on the use of collaborative work activities during the non-presential period. In Spanish original language.*

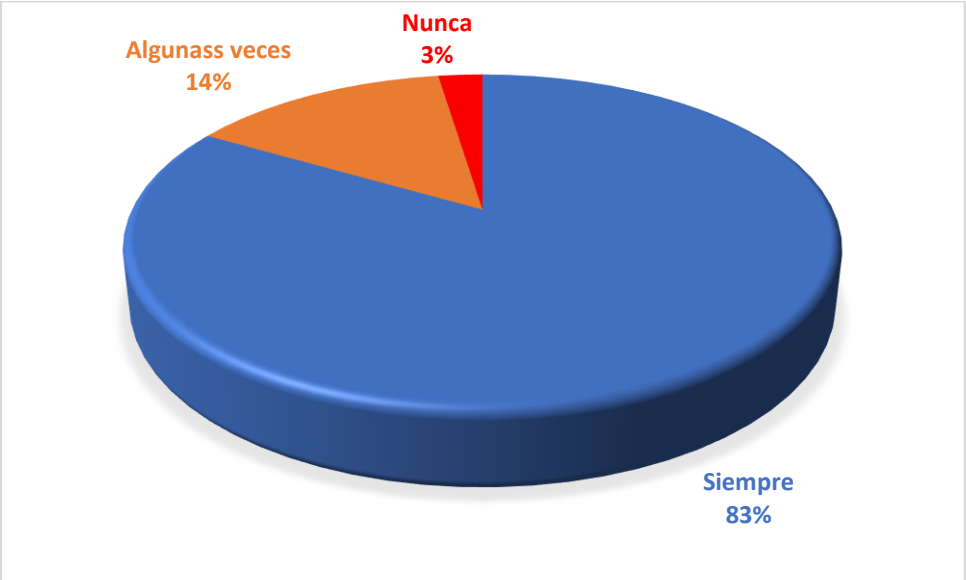


Figure 1 shows that in the opinion of 83% of the students surveyed, there is a favorable perception of the adequate use and implementation of activities that enhance collaborative work during the pedagogical development of academic activities assisted with technological resources.

Table 2 shows a detailed review of the various aspects that were investigated in the student informants. The students recognize several strengths in the activities promoted by the teachers during this time of non-face-to-face activities, among which the following stand out:

- The material provided by the teachers defined clear goals, with precise instructions, relevant activities and consistent timing.
- The organization of the activities through work groups based on collaborative work allowed students to get closer to their peers despite the lack of presence, generating spaces where roles were organized, tasks were defined, responsibilities were assumed and everyone contributed to a common goal, achieving the delivery of activities where everyone was a builder of the same.
- With the development of these activities, the students enhanced their technological skills, making them managers of their own qualification thanks to the interaction with their co-workers and the recognition of the application of their skills in the solution of everyday problems.
- Finally, regarding the role of the teacher, it was evidenced that in the opinion of the students evaluated, they considered the teacher to be a companion in the process that ensured that they remained on track towards the learning objectives, since he defined clear rubrics, clarified the doubts that arose in the process in an adequate manner and made an adequate assessment of the contributions made by the students in activities such as the discussion forums.

Table 2. *Detailed description of the valuation*

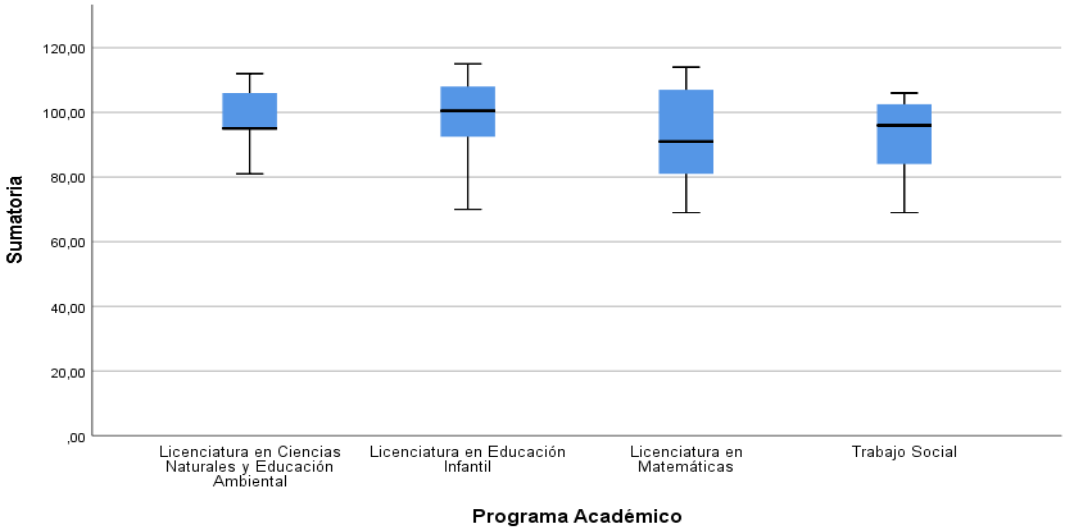
Item	Always	Sometimes	Never

The reference material recommended in the subjects was useful for the development of the activities proposed.	86.0%	13.5%	0.5%
The activities developed enhanced the interaction among the group members.	83.5%	15.0%	1.5%
The objectives of the activities to be developed in the collaborative work are clearly and precisely stated.	81.5%	18.5%	0.0%
The time programmed for the development of the collaborative work was sufficient.	76.5%	21.5%	2.0%
The work team formed allowed him to feel accompanied and to feel part of a group.	85.0%	15.0%	0.0%
The collaborative work group should be of five students.	73.5%	29.0%	7.5%
You commented on the contributions of your peers in the forum.	68.0%	16.5%	15.5%
Actively participated in the construction of the final product of the collaborative work.	89.5%	8.5%	2.0%
Each participant had a role and a responsibility in the development of the collaborative work.	92.5%	7.5%	0.0%
Their peers made comments or corrections on their contributions.	64.0%	20.5%	15.5%
The virtual collaborative work methodology allowed him to feel active in the construction of his own knowledge.	81.0%	16.5%	2.5%
You feel more proficient in the use of computer tools after completing the process.	81.0%	18.0%	1.0%
It is good for your training to see different solution alternatives when dealing with a problem.	96.0%	4.0%	0.0%
The topics covered in the collaborative work are useful to you in your professional life.	94.0%	6.0%	0.0%
Real-time interaction with group participants (chat, telephone) is of vital importance.	88.5%	11.5%	0.0%
The work forums present the necessary tools to develop a good collaborative work.	78.0%	20.0%	2.0%

The teacher favored collaborative work with appropriate contributions.	87.5%	12.5%	0.0%
The teacher adequately resolved the doubts presented by the students.	85.5%	14.5%	0.0%
The role of the teacher as a motivator in the collaborative work was important.	89.0%	11.0%	0.0%
The evaluation of the collaborative work was carried out following the rubric.	80.0%	18.5%	1.5%
Individual participation in the work forum was well evaluated.	88.5%	9.0%	2.5%
The quality of the contributions presented in the forum was taken into account.	86.0%	13.5%	0.5%
The evaluation rubrics clearly detail each of the items to be evaluated according to the work guide.	83.5%	16.05	0.5%
Overall average	**83.4%**	**14.2%**	**2.4%**

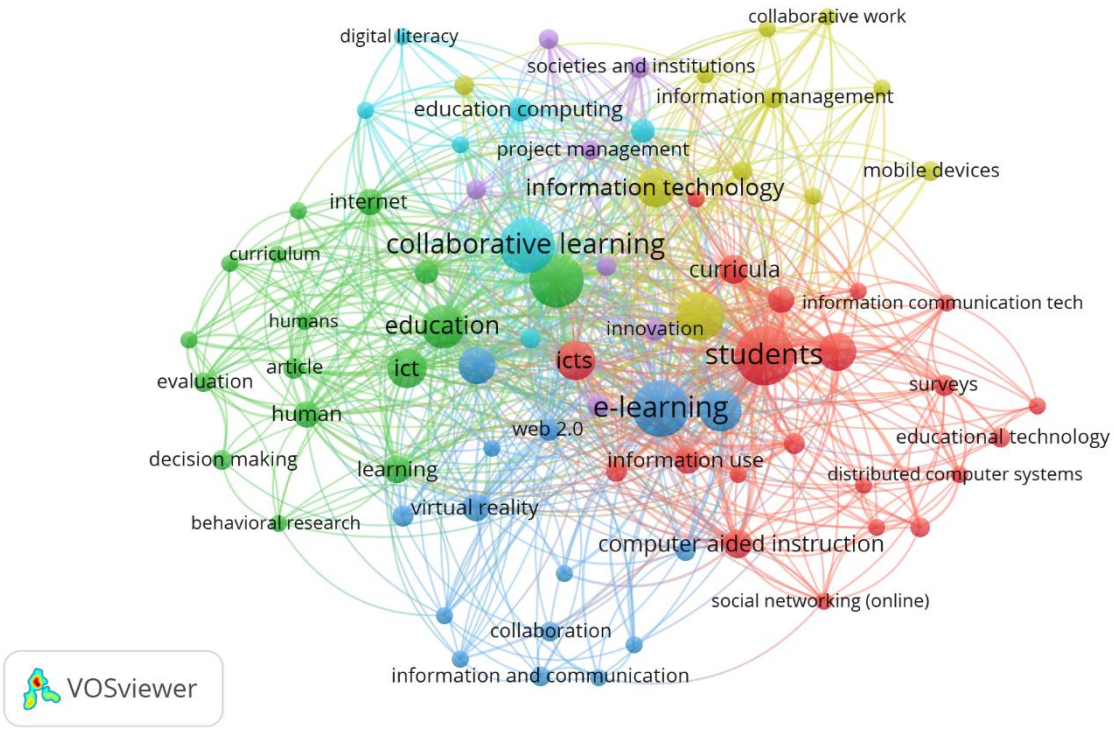
Finally, the purpose is to verify if there are differences between the scores given by the students surveyed according to the academic program they are currently studying. For this purpose, the sum of the twenty-three items associated with the Likert scale was made, then this sum ranges from 1 to 115 points, with an average score of 69 points. By means of Figure 2, it can be verified that since the four diagrams overlap, it can be concluded that there are no significant differences in the opinions of the students regarding the collaborative learning activities developed within each undergraduate program. From the same figure, it can be observed that in all cases the average is much higher than the mean of the scale, which evidences the level of favorability regarding the enunciated items. In this sense, the students of the Bachelor's Degree in Early Childhood Education have very similar opinions (shorter diagram), in contrast with the students of the Bachelor's Degree in Mathematics whose opinions are more diverse and is reflected in the length of the box and with the lowest median score of all the groups.

Figure 2. *Box-and-whisker plot with respect to the academic program attended by the student. In Spanish original language.*



Cooccurrence of keywords key

Figure 3. *Co-occurrence of words*



Source: Own elaboration (2022); based on data provided by Scopus.

A documentary review was carried out on the variables ICTs, Collaborative Learning and Student Perception, with the purpose of establishing the co-occurrence of keywords used more frequently in the research published on topics related to the one proposed in this article and thus to know the strategies that have been implemented at the scientific level to measure the perception of students regarding the use of digital tools to support collaborative learning. Thus, Figure 3 shows how the keywords Collaborative Learning, Education, Information and Communication Technologies (ICTs), Behavioral Research, are part of the main group of identified research, which were a total of 164 documents that met the search parameters mentioned above. In this way, it is established that, in effect, educational management constantly seeks to measure the perception of students regarding the use of technological tools to promote collaborative learning, since this constitutes important material in the construction of improvement plans in different processes and contributes to innovation in the teaching-learning processes.

4. DISCUSSION AND CONCLUSIONS

The study was able to reveal important elements regarding the positive conception that students have of collaborative learning in non-face-to-face contexts. It can be concluded that the activities carried out in the period of time analyzed -second semester of 2021- significantly enhanced collaborative work in students. In this context, it is relevant to cite studies such as those of Gutiérrez and Gallego (2017), Prada, Gamboa and Avendaño (2021) who affirm that collaborative learning in virtuality scenarios generates an important space for group cohesion, likewise a more open and affective communication is presented, as long as it is adequately guided by the teachers.

The role of teachers is fundamental to trigger learning in collaborative work spaces. In this sense, the results reveal that teachers manage to provide students with guides and orientations with clear objectives and goals, precise instructions, pertinent activities and coherent times. It is evident then, according to these conceptions, that one of the important elements for collaborative learning to develop effectively is the good school management of the teacher (Avendaño, Hernández & Prada, 2021). With respect to this evidence, it is necessary to point out that one of the relevant elements for the teacher to build meaningful virtual environments that promote collaborative learning is educational innovation in non-traditional education supported by digital technologies (Sabulsky & Ayelén, 2017; Lupión & Martín, 2016; Vargas, Gamboa, & Prada, 2021; Rosas, 2006).

Among the most valuable results of the study, what can be called a glimpse of virtual otherness stands out (Mesa and Leal, 2014; Moncada and Sánchez, 2017; Bohórquez and Muñoz, 2021). Where students appropriate digital technologies and unconsciously approach their peers despite the non-presence, generating spaces where roles are organized, tasks are defined, responsibilities are assumed and everyone contributes to a common goal from their own space and from the space of the other (Vanegas, Bernal & Gamboa, 2022).

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References

Avendaño Castro W. R., Hernández, C. A., & Prada, R. (2021). Uso de las tecnologías de la información y la comunicación como valor pedagógico en tiempos de crisis. *Revista Historia de la Educación Latinoamericana, 23*(36), 135-159. https://doi.org/10.19053/01227238.116

Avendaño Castro, W. R., Luna, H. O., & Rueda, G. (2021). Educación virtual en tiempos de Covid-19: percepciones de estudiantes universitarios. *Formación Universitaria, 14*(5), 119-128. http://dx.doi.org/10.4067/S0718-50062021000500119

Bohórquez Martínez, N. D., & Muñoz Romero, M. C. (2021). *La alteridad como problema en el proceso educativo: reflexiones desde el confinamiento* (Doctoral dissertation, Corporación Universitaria Minuto de Dios).

Calzadilla, M. E. (2002). Aprendizaje colaborativo y tecnologías de la información y la comunicación. *Revista Iberoamericana De Educación*, *29*(1), 1-10. https://doi.org/10.35362/rie2912868

Celina Oviedo, H., & Campo Arias, A. (2005). Aproximación al uso del coeficiente alfa de Cronbach. *Revista colombiana de psiquiatría, 34*(4), 572-580.

Coll, C. (2014). El Sentido del Aprendizaje Hoy: un Reto para la Innovación Educativa. *Aula de Innovación Educativa, 232*, 12 -17. http://hdl.handle.net/2445/65763

García Sierra, M. J. (2021). Aprendizaje colaborativo en el aula virtual de los estudiantes de un Centro de Educación Técnico-Productiva, Huaral, 2021.

Gómez-Valderrama, C., Hernández-Suárez, C., & Prada-Núñez, R. (2020). La zona de posibilidades en el proceso de aprendiencia del residente digital: Un análisis cualitativo en la Red de experiencias Matemáticas de Norte de Santander: zona de posibilidades en el proceso de aprendiencia del residente digital. *Educación Y Humanismo*, 22(38). https://doi.org/10.17081/eduhum.22.38.3688

González, C. (2006). Tutorización, evaluación y aprendizaje colaborativo en el aula virtual: un enfoque práctico. *Moodle Moot 2006*. https://www.researchgate.net/profile/Carina-Gonzalez-Gonzalez/publication/258222833_Tutorizacion_evaluacion_y_aprendizaje_colaborativo_en_el_aula_virtual_un_enfoque_practico/links/00b495276a28ab1e3b000000/Tutorizacion-evaluacion-y-aprendizaje-colaborativo-en-el-aula-virtual-un-enfoque-practico.pdf

Gutiérrez-Santiuste, E., & Gallego-Arrufat, M. J. (2017). presencia social en un ambiente colaborativo virtual de aprendizaje: Análisis de una comunidad orientada a la indagación. *Revista Mexicana de*

Investigación Educativa, *22*(75), 1169–1186. https://webebsco.unicartagenaproxy.elogim.com/ehost/pdfviewer/pdfviewer?vid=5&sid=b8a50d33-8805-4d56-aa36-b1a4f436b665%40sessionmgr4006

Gamboa, A. (2016). Calidad de la educación superior. Pretensiones y realidades institucionales. Bogotá, Colombia: Ecoe Ediciones

Gamboa, A. (2019). Tradiciones y problemas de la investigación educativa. En: Chévez, C. & Melengue, J. (Eds.), Tendencias y desafios de la investigación educativa: aproximaciones teóricas y metodológicas (25 – 33). El Salvador: INFOD.

Hernández, N., González, M., Muñoz, P. (2014). La planificación del aprendizaje colaborativo en entornos virtuales., *Revista Científica de Educomunicación Comunicar, 42,* (XXI) 25 – 33. http://dx.doi.org/10.3916/C42-2014-02

Hernández Suárez, C. A., Arévalo Duarte, M. A., & Gamboa Suárez, A. A. (2016). Competencias TIC para el desarrollo profesional docente en educación básica. *Praxis & Saber*, 7(14), 41-69.

Lupión Cobos, T., & Martín Gámez, C. (2016). Desarrollo profesional docente de profesorado de secundaria en una experiencia de innovación mediante investigaciones escolares. *Revista Eureka Sobre Enseñanza y Divulgación de Las Ciencias*, *13*(3), 686–704. https://doi.org/10.25267/Rev_Eureka_ensen_divulg_cienc.2016.v13.i3.13

Miguel Ángel Medina Romero, Ismael Fernando Valencia Bustamante, Ibeth Catherine Figueroa Sánchez, Paola Elizabeth Pajuelo Garay, Jacksson Yamil Montoya Asprilla, José Manuel Medina. EFFECTIVE COMMUNICATION IN THE CLASSROOM: SPEAKING TECHNIQUES FOR UNIVERSITY TEACHERS. Journal of Positive Psychology & Wellbeing. 2021, Vol. 5, No. 4, 2402 – 2414

Mesa, J. E. R., & Leal, L. A. (2014). De la educación virtual a la virtualización de procesos educativos; una transición en el contexto de las formas emergentes de cibercultura. Análisis. *Revista Colombiana de Humanidades, 46*(84), 125-142.https://www.redalyc.org/articulo.oa?id=515551535007

Moncada, C., & Sánchez, M. (2017). *Didáctica digital: aproximaciones para una apuesta pedagógica desde la alteridad virtual.* Bogotá, Colombia: Editorial Universidad Manuela Beltrán

Nodarse, F. A., Añorga, R. G., Hernández, E. S., de Armas Vázquez, Y., & Montenegro, S. L. (1999). Un entorno para aprendizaje colaborativo: Sistemas hipermedia y aula virtual. *IE Comunicaciones: Revista Iberoamericana de Informática Educativa*, 2 (14), 14 – 20. https://dialnet.unirioja.es/servlet/articulo?codigo=4794506

Ortíz-Arismendy, A., Ramirez, M. E., & Diaz Vargas, M. E. (2019). El portafolio digital como herramienta de apoyo en el proceso de enseñanza. *Revista Perspectivas*, 4(2), 20_30. https://doi.org/10.22463/25909215.1967

Prada Núñez, Raúl, & Hernández Suárez, César Augusto y Gamboa, Audin Aloiso (2019). Usos y efectos de la implementación de una plataforma digital en el proceso de enseñanza de futuros docentes

en matemáticas. *Revista Virtual Universidad Católica del Norte,* (57), 137-156. https://www.redalyc.org/articulo.oa?id=194260035010

Prada, R., Gamboa, A., & Avendaño, W. R. (2021). Apropiación de competencias comunicativas y tecnológicas en maestros en formación de un programa acreditado de alta calidad. *Boletín Redipe, 10*(7), 132-143. https://doi.org/10.36260/rbr.v10i7.1354

Rosa Magaly Morales Chincha, & Paola Andrea Acosta. (2021). El aprendizaje colaborativo en el aula virtual en tiempo de pandemia 'Plan padrino'. Fedumar Pedagogí-a Y Educación, 8(1), 32-38. https://doi.org/10.31948/rev.fedumar8-1.art5

Rodríguez Ibáñez, R. E. (2018). La realidad virtual en la migración de plataformas educativas de 2D a 3D en los escenarios de las Universidades de San José de Cúcuta. *Revista Perspectivas,* 3(2), 86–96. https://doi.org/10.22463/25909215.1592

Rosas Chávez, P. (2006). Gestar y gestionar la virtualidad: un análisis desde la práctica y las instituciones. *Apertura: Revista de Innovación Educativa, 6(*3), 24–35.

Rubia, B., & Guitert, M. (2014). ¿La revolución de la enseñanza? El aprendizaje colaborativo en entornos virtuales (CSCL). *Comunicar, XXI* (42),10-14. https://www.redalyc.org/articulo.oa?id=15830197002

Sabulsky, G., & Ayelén Arevalo, E. (2017). Profesores memorables, entre la vocación y la práctica hay lugar para las TIC. *Cuadernos de Educación,* 15(15), 258–272.

Vargas Minorta L, Gamboa Suárez AA, Prada Núñez R. (2021). Pedagogía por proyectos y secuencia didáctica: una alternativa para el desarrollo de competencias comunicativas. *Revista Boletín Redipe, 10*(10), 115–124. https://doi.org/10.36260/rbr.v10i10.1470

Vanegas, J., Bernal., M. & Gamboa, A. (2022). *Pensar el poder: entre luces y sombras.* Bogotá, Colombia: Nueva Juridica.