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Cooperative learning in higher education: a literature review on its influence on university students

Aprendizaje cooperativo en la educación superior: una revisión de literatura sobre la influencia en estudiantes universitarios

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Abstract

This systematic review analyzes the impact of cooperative learning on university students between 2019 and 2025. Using the PRISMA methodology, 20 studies indexed in Scopus, SciELO, and Latindex 2.0 were selected, focusing on three dimensions: social skills, positive interdependence, and stimulating interaction. The findings, supported by theories such as self-determination, symbolic interactionism, and the zone of proximal development, show significant improvements in active participation, group cohesion, and socio-emotional development. This type of learning was shown to enhance 21st-century cross-cutting skills—teamwork, effective communication, and leadership—as well as successfully adapt to virtual and hybrid environments, even during the pandemic. The studies highlight its effectiveness in fostering shared responsibility, critical thinking, and collaborative knowledge building. However, challenges in its implementation were identified, such as teacher resistance to methodological changes and the need for training in cooperative strategies. The evidence suggests that its institutional adoption requires curricular innovation, ongoing teacher training, and technological support. This review provides a foundation for the design of educational policies that prioritize inclusive pedagogical models, aligned with current labor demands and university social responsibility.

Keywords: cooperative learning, higher education, systematic review.

Resumen

Esta revisión sistemática analiza el impacto del aprendizaje cooperativo en estudiantes universitarios entre 2019 y 2025. Mediante la aplicación de la metodología PRISMA, se seleccionaron 20 estudios indexados en Scopus, SciELO y Latindex 2.0, centrados en tres dimensiones: habilidades sociales, interdependencia positiva e interacción estimuladora. Los hallazgos, respaldados por teorías como la autodeterminación, el interaccionismo simbólico y la zona de desarrollo próximo, evidencian mejoras significativas en la participación activa, la cohesión grupal y el desarrollo socioemocional. Este tipo de aprendizaje demostró potenciar competencias transversales del siglo XXI —trabajo en equipo, comunicación efectiva y liderazgo—, así como adaptarse con éxito a entornos virtuales e híbridos, incluso durante la pandemia. Los estudios destacan su eficacia para fomentar la corresponsabilidad, el pensamiento crítico y la construcción colaborativa del conocimiento. No obstante, se identificaron desafíos en su implementación, como la resistencia docente a cambios metodológicos y la necesidad de capacitación en estrategias cooperativas. La evidencia sugiere que su adopción institucional requiere innovación curricular, formación docente continua y apoyo tecnológico. Esta revisión aporta fundamentos para el diseño de políticas educativas que prioricen modelos pedagógicos inclusivos, alineados con las demandas laborales actuales y con la responsabilidad social universitaria.

Palabras clave: aprendizaje cooperativo, educación superior, revisión sistemática.

Introduction

Cooperative learning, recognized as a key pedagogical method in higher education, is grounded in social interaction, teamwork, and shared responsibility to achieve collective learning (Cerdá et al., 2024). Clemente (2023), referencing León (2017), indicates that this methodology fosters the development of essential social skills—such as problem-solving, effective communication, and leadership—while stimulating cognitive growth. Such competencies contribute to the formation of well-rounded professionals capable of addressing contemporary challenges. This model transcends traditional classes by generating dynamic and inclusive environments, transforming passivity into active participation and promoting the joint construction of knowledge.

Various international studies have shown that cooperative learning significantly enhances academic performance in university students, boosting their intrinsic motivation and facilitating the collective construction of knowledge (García et al., 2022). However, the challenge remains to identify the critical factors that determine its effectiveness. Almeida and Núñez (2020) highlight student participation as a central element, while Loza (2024) emphasizes the need to overcome individualistic approaches. Both agree that only genuine collaborative environments—prioritizing research and critical thinking—consolidate the benefits of this pedagogical strategy.

Carrillo et al. (2021) assert that cooperative learning can significantly contribute to the development of transversal skills, such as teamwork, group decision-making, and critical reflection on social and educational processes. These competencies are particularly relevant in the current academic context, where professional training must be accompanied by social awareness and a willingness for constructive change.

In the case of Peru, the implementation of cooperative learning still faces barriers. Clemente (2023) warns that many university students have not experienced this active methodology, reflecting a gap in its adoption. Therefore, a transformation in teaching practices is required, incorporating more inclusive and equitable methods that strengthen the social and collaborative skills necessary for contemporary work and cognitive development.

The COVID-19 pandemic accelerated the transition to virtual teaching modalities, allowing for educational continuity but reducing direct contact between students and teachers (Loza, 2024). This decrease in interaction affected motivation and active participation, key factors for the success of cooperative learning. In this scenario, it is essential to investigate how to adapt and strengthen this methodology in virtual and hybrid environments, ensuring its effectiveness in changing contexts.

Regarding its theoretical foundations, self-determination theory (Deci & Ryan, 2000) posits that intrinsic motivation depends on satisfying three basic needs: autonomy, competence, and meaningful social interaction. These principles align directly with cooperative learning, as they enable students to make decisions about their learning process, receive continuous feedback, and establish strong connections with their peers.

Moreover, George Herbert Mead's symbolic interactionism posits that social interaction shapes identity and knowledge (Mead, 1934). From this perspective, cooperative learning not only allows for the exchange of knowledge but also fosters the creation of shared meanings, a crucial aspect for teamwork and the development of communication skills.

Furthermore, Lev Vygotsky's socioconstructivist theory introduces the concept of the zone of proximal development, understood as the difference between what a student can achieve independently and what they can accomplish with support (Vygotsky, 1978). This principle supports the utility of cooperative learning as a strategy to overcome individual limitations through cooperation.

These theoretical frameworks provide a solid foundation for understanding how cooperative learning influences the holistic development of university students, particularly in areas such as social interaction, motivation, and collective knowledge creation.

In practice, this methodology responds to the increasing demand for professionals with advanced social competencies, valued in both academic and professional contexts. In various sectors, skills such as collaborative work, effective communication, decision-making, and collective conflict resolution are increasingly appreciated (García et al., 2022).

Thus, cooperative learning contributes to achieving academic success and prepares students to face challenges in dynamic work environments. Additionally, it fosters a critical and constructive mindset that allows for addressing problems from diverse perspectives, promoting a culture of innovation and constant progress (Loza, 2024).

The primary objective of this article is to analyze the influence of cooperative learning on university students. To this end, the following specific objectives are proposed:

a) To explain the influence of cooperative learning on the development of social skills in university students in 2025.

b) To explore the influence of cooperative learning on positive interdependence among university students.

c) To identify the influence of cooperative learning on stimulating interaction among university students in 2025.

The central hypothesis posits that cooperative learning significantly influences university students, promoting the development of social skills, positive interdependence, and stimulating interaction. This proposition will be evaluated through a systematic review of recent scientific literature to empirically validate these effects and establish a basis for future research.

Methodologically, a qualitative fundamental approach is adopted, based on a comprehensive review of scientific literature sourced from reliable outlets, including journals indexed in international databases such as Scopus, SciELO, and Latindex 2.0. This procedure ensures the validity and applicability of the findings by providing an updated and rigorous analysis of the state of cooperative learning in higher education.

Methodology

This study adopts a quantitative approach and a descriptive design, based on a systemic literature review. Its primary purpose is to analyze the influence of cooperative learning on university students, considering its benefits and limitations in a contemporary context, with emphasis on the advances recorded between 2019 and 2025.

The systematic review was developed under the PRISMA method, utilizing checklists and flow diagrams to document the selection process. Only articles published between 2019 and 2025 in indexed journals were considered, applying strict inclusion and exclusion criteria to guarantee quality and relevance. The databases consulted were Scopus, SciELO, and Latindex 2.0.

In the initial search, 164 articles related to cooperative learning in higher education were identified. After applying the inclusion and exclusion criteria—which excluded duplicates, studies outside the established period, or those not directly related to the variables of interest—110 studies were selected for a more detailed review. Of these, 90 were excluded for failing to meet methodological or thematic requirements, leaving 20 articles for the primary analysis.

The study focused on one independent variable: cooperative learning, divided into three key dimensions:

1. **Social skills:** development of essential interpersonal competencies for teamwork (Aguilera, 2020; Castañeda, 2019).
2. **Positive interdependence:** fostering supportive relationships among students to achieve shared goals (Ortuño, 2024).
3. **Stimulating interaction:** constructive exchange of ideas and knowledge among group members (Espinoza et al., 2021).

The thematic analysis of the 20 selected articles allowed for the identification of patterns and relationships among these dimensions, demonstrating how cooperative learning promotes the development of academic, social, and emotional competencies.

Phases of the methodological process

1. Search phase

- A bibliographic search was conducted in Google Scholar and the MyLoft UCV Virtual Library, employing keywords such as "cooperative learning" and "cooperative work."
- Articles in both English and Spanish were included.
- A publication period from 2019 to 2025 was established to ensure currency.
- Only original scientific and review articles were considered, excluding theses and non-indexed reports.
- A search strategy combining terms such as "cooperative learning in higher education," "university students," and "higher education students" was employed.

2. Evaluation phase

- Titles and abstracts were reviewed to confirm thematic relevance.
- Articles were required to have between 8 and 49 pages, include a clear methodology, and be published in indexed journals.
- The studied population had to correspond to higher education students, whether university or non-university.
- None of the studies included control groups; results were organized into two categories: a) digital and social media, b) scientific and professional fields.

3. Analysis phase

- A complete reading of the selected articles was conducted to extract information on design, population, methods, and findings.
- The studies presented qualitative and quantitative approaches, with both experimental and non-experimental designs, predominantly descriptive-correlational.
- Techniques such as observation and surveys were used, validated by expert judgment and reliability measured using Cronbach's alpha coefficient.
- Statistical analysis included factorial ANOVA, Cronbach's Alpha, Pearson correlation coefficient, and Spearman's Rho.

4. Synthesis phase

- Common patterns and themes, as well as discrepancies among studies, were identified.
- A positive relationship between cooperative learning and the development of competencies such as teamwork, leadership, effective communication, and decision-making was evidenced.
- The studies indicated that digital technologies and social media can enhance the effectiveness of cooperative learning, promoting more inclusive and collaborative classrooms.
- This procedure ensured the validity of the study and the exclusive use of verified information, thus ensuring that conclusions are grounded in solid and current evidence.

Figure 1 *Study identification*

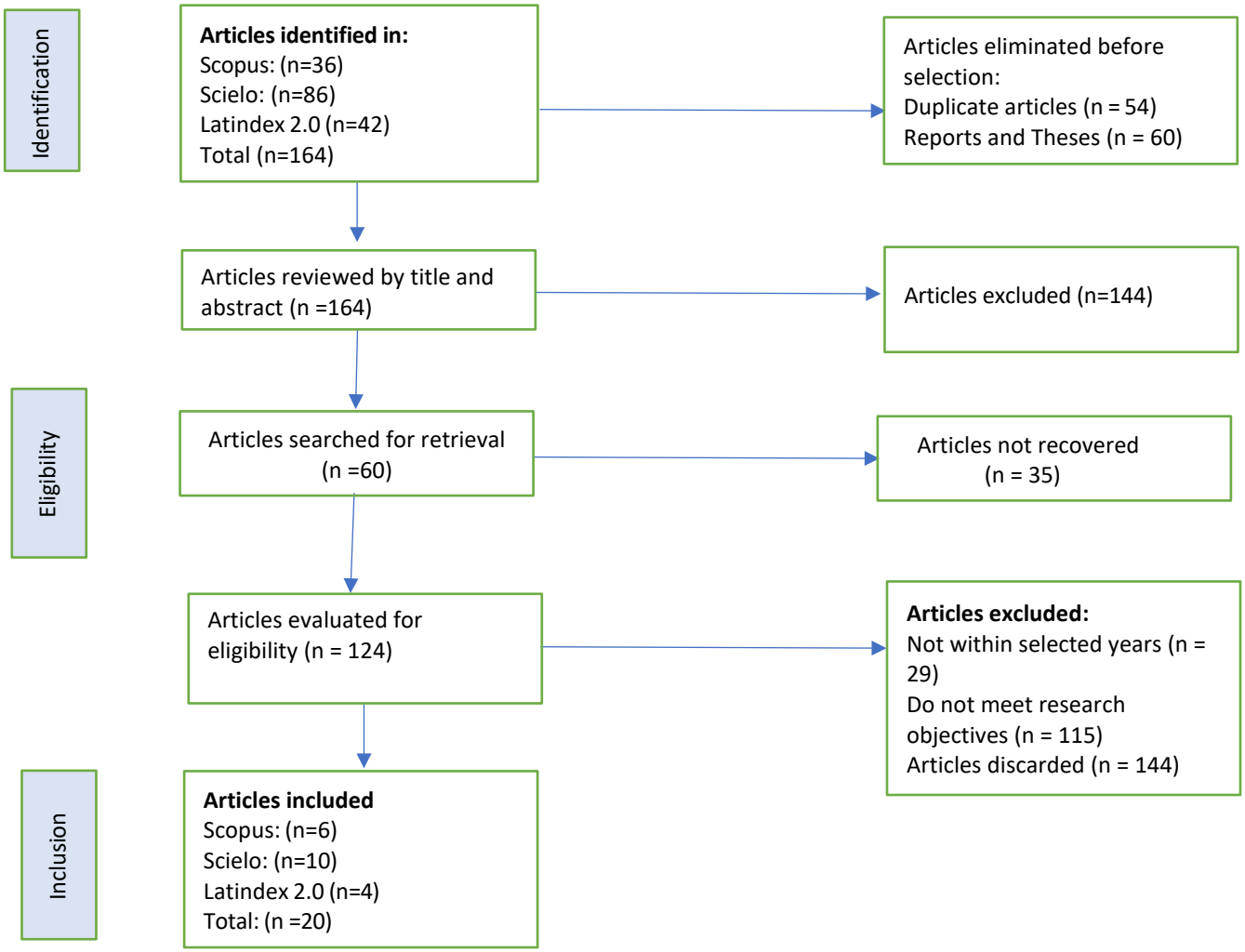


Table 1. *Selected articles*

No	Title	Year	Author(s)	Database	Link, URL/DOI
1	Cooperative Learning on Promoting Creative Thinking and Mathematical Creativity in Higher Education	2019	Catarino, P.; Vasco, P.; Lopes, J.; Silva, H. & Morais, E.	Scopus	https://www.scopus.com/pages/publications/85068927346
2	Cooperative Learning and Approach Goals in Physical Education: The Discriminant Role of Individual Accountability	2021	Rivera, S.; León del Barco, B.; González, J. & Iglesias, D.	Scopus	https://doi.org/10.1016/j.psicod.2020.11.001
3	Digital pedagogy and cooperative learning: Effect on the technological pedagogical content knowledge and academic performance of pre-service teachers	2021	Meroño, L.; Calderón, A. & Arias-Estero, J.	Scopus	https://doi.org/10.1016/j.psicod.2020.10.002
4	Interventions of Cooperative Learning and Associated Outcomes in Future Educators: A Systematic Review	2022	Fernández-Río, J.; Rivera-Pérez, S. & Iglesias, D.	Scopus	https://doi.org/10.1016/j.psicod.2022.04.002
5	Action-Research in Higher Education: Inquiring about Cooperative Learning	2022	Castro-Martín, B. & Sanchez-Suricalday, A.	Scopus	https://www.scopus.com/pages/publications/85146032101
6	Innovative Knowledge Management for Cooperative Learning in Higher Basic Education	2023	Basantes-Arias, E.; Chamorro Ortega, Cr. & Yánez Valle, V.	Scopus	https://www.scopus.com/pages/publications/85160559422
7	Design and Experience of Cooperative Learning in the Field of Sciences	2019	Marina Carrasco Acosta Josefa Rodríguez Pulido Mónica Guerra Santana Pilar Garcia Jimenez	Scielo	https://www.scielo.cl/scielo.php?pid=S0718-51622019000300211&script=sci_arttext&tlng=pt

8	Theoretical Approaches to Cooperative Learning for Health Education in the University Context	2020	Betancourt Aldana, G.; Santiesteban Labañino, M.; Vicente Mendo, J. Miranda Vázquez, M.	Scielo	http://scielo.sld.cu/scielo.php?pid=S1029-30192020000500925&script=sci_arttext&tlng=pt
9	Cooperative Learning in a National University of Peru, 2021	2021	Castagnola Rossini, G.; Cárdenas Saavedra, A.; Sánchez Farias, M. & Leiva Bazan. Z.	Scielo	http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202021000600022
10	Use of Telegram and Cooperative Learning in the Teaching of Scientific Research in Medical Students	2021	Matzumura-Kasano, J. & Gutiérrez-Crespo, H.	Scielo	http://www.scielo.org.pe/scielo.php?pid=S1025-55832021000400314&script=sci_arttext&tlng=pt
11	The IPEEC Method in Cooperative Learning Among Students of an Intercultural Peruvian University	2022	Quintana Huaccho, J.; Huamani Pumacahua, S. & Espinoza Silva, E.	Scielo	http://scielo.sld.cu/scielo.php?pid=S1729-80912022000400181&script=sci_arttext&tlng=en
12	Emotional Competencies and Cooperative Learning of University Students in the Context of Online Education	2023	Erazo-Moreno, M.; Colichón-Chiscul, M.; Nina-Cuchillo, J. & Cubas-Irigoin, N.	Scielo	https://www.scielo.cl/scielo.php?pid=S0718-50062023000300011&script=sci_arttext
13	Cooperative Learning Technique: The Puzzle Applied in the University Context	2024	De León Nicaretta , F.; Santiviago Ansuberro , C.; Rubio Montaño , V. & Sosa Castillo, A.	Scielo	http://scielo.sld.cu/scielo.php?pid=S0257-43142024000200001&script=sci_arttext
14	Cooperative Learning, Social Skills, and Digital Competencies in Students of a Pedagogical Higher Education School	2024	Peralta Ortega, S.; Núñez-Lira, L. & Ocaña-Fernández, Y.	Scielo	https://ve.scielo.org/scielo.php?script=sci_arttext&pid=S2739-00632025000102079
15	Artificial Intelligence and Cooperative Learning in University Students	2025	Acosta Pastor, N. & Carcausto Calla, W.	Scielo	https://ve.scielo.org/scielo.php?pid=S2739-00632025000202021&script=sci_arttext

16	Cooperative Learning in Higher Education Students: A Systematic Review	2025	López Vargas, F.	Scielo	http://www.scielo.org.bo/scielo.php?script=sci_arttext&pid=S2959-65132025000100479
17	TPACK Model in Cooperative Learning Contexts: Perception of University Physical Education Students During Initial Teacher Training	2019	Meroño García, L., Calderón, A. & Arias-Estero, J.	Latindex	https://doi.org/10.22370/ieya.2019.5.2.1709
18	Design and Experience of Cooperative Learning in the Field of Sciences	2019	Marina Carrasco Acostaa, Josefa Rodríguez Pulidob, Mónica Guerra Santanac & Pilar Garcia Jimenez.	Latindex	https://www.rexe.cl/index.php/rexe/article/view/789/565
19	Cooperative Learning and Its Relationship with Labor Competencies in a Private University in Trujillo, 2020	2020	Castagnola Rossini, G. M., Castagnola Sánchez, V. R., Castagnola Rossini, A. del C., & Castagnola Sanchez, C. G.	Latindex	https://doi.org/10.37955/cs.v4i3.74
20	Cooperative Learning and Social Networks in Students of a Private Technological Institute in Trujillo	2021	Arce Gutiérrez, K. M., Medina Gonzales, R. H., & Ulloa Parravicini, C. E.	Latindex	https://revistas.unitru.edu.pe/index.php/SCIENDO/article/view/3989/4522

Note: Authors' own elaboration

Results and discussion

From the initial 164 articles, only 20 studies published between 2019 and 2025 met the inclusion criteria. These studies analyzed cooperative learning in university contexts, examining its relationship with three main dimensions: social skills, positive interdependence, and stimulating interaction. The selection was conducted through recognized academic databases (Scopus, SciELO, and Latindex 2.0), ensuring the reliability, currency, and methodological rigor of the research included in this systematic review.

The thematic analysis revealed a clear consensus: cooperative learning consistently enhances both social and cognitive skills. All studies confirmed a positive and statistically significant impact on university students. These benefits were reflected in increased active participation in classes, stronger group cohesion, and enhanced academic development, as reported by Castañeda (2019) and Moreno et al. (2023).

In 18 of the 20 studies, the role of cooperative learning in fostering social skills was addressed. Research by Carrillo et al. (2021) and García et al. (2022) noted significant advancements in students' abilities to resolve conflicts, communicate effectively, and make group decisions. These results align with the self-determination theory, which emphasizes meaningful interaction and continuous feedback as essential foundations for intrinsic motivation and the development of social competencies (Deci & Ryan, 2000).

Aguilera (2020) and Espinoza et al. (2021) highlighted the utility of small working groups as safe spaces to practice verbal and non-verbal communication. This dynamic strengthened empathy among participants and promoted positive recognition of diversity. Such findings are supported by Mead's (1934) symbolic interactionism, which posits that knowledge is constructed through social interactions that imbue formative experiences with meaning.

Cooperative learning not only served a pedagogical function but also established itself as a space for socio-emotional growth. Moreno et al. (2023) observed significant advancements in emotional competencies, suggesting that structured and recurrent social interaction enhances psychological well-being and emotional self-regulation in academic settings.

In 16 studies, positive interdependence was evidenced as a core component of cooperative learning. Defined by Ortuño (2024) as the perception that personal success depends on group achievement, it manifested in collaborative attitudes, mutual assistance, and shared goals. Research by López (2025), Erazo-Moreno et al. (2023), and Rivera et al. (2021) reported that students strengthened their sense of belonging and demonstrated greater commitment to common tasks, developing tolerance, trust, and openness to dialogue.

Positive interdependence is grounded in Vygotsky's (1978) zone of proximal development, which suggests that the most significant learning arises from interactions with more experienced peers. In this context, students act as reciprocal supports that enhance individual skills through collaboration. Furthermore, Betancourt et al. (2020) identified that participants learned to adjust expectations, adapt to group needs, and value diverse perspectives, key competencies in multicultural or multidisciplinary environments.

Meanwhile, 17 studies emphasized stimulating interaction as an essential element. This exchange fostered constructive dialogues, reflective argumentation, and co-construction of knowledge (Espinoza et al., 2021; Fernández-Río et al., 2022). Such practices benefited cognitive learning, critical thinking, and metacognition. Matzumura-Kasano and Gutiérrez-Crespo (2021) noted that the use of applications like Telegram facilitated fluid interactions, stimulating academic debates and joint reflections among medical students.

Mead's (1934) theoretical framework reinforces these results by proposing that shared meanings arise from symbolic interaction, transcending the academic realm to strengthen developing professional identities. Similarly, self-determination theory (Deci & Ryan, 2000) posits that meaningful interaction fuels intrinsic motivation. Studies by Castro-Martín and Sánchez-Suricalday (2022) and Quintana et al. (2022) confirmed that cooperative environments stimulate interest and creativity among students.

Cooperative learning also demonstrated an impact beyond the classroom. Peralta et al. (2024) identified its direct relationship with the development of digital competencies, leadership, and decision-making, aligning with current labor demands. Likewise, Acosta and Carcausto (2025) linked these practices with artificial intelligence, suggesting that technological tools facilitate their implementation in virtual and hybrid environments, a relevant aspect in light of post-pandemic challenges according to Loza (2024).

The findings of this review confirm that cooperative learning is an effective strategy in higher education, surpassing the results of traditional methodologies that focus exclusively on the instructor. However, as Clemente (2023) warns, its use in Peru remains limited. It is urgent to transform teaching practices to prepare professionals with robust interpersonal skills. Collaborative work enhances academic performance, strengthens group cohesion, and stimulates flexible thinking.

Despite its benefits, significant methodological limitations were detected: a lack of comparison groups, variability in the application of the strategy, and limited long-term follow-ups. Future research should employ controlled experimental designs with prolonged evaluations, as well as train faculty in cooperative strategies and

technology use, overcoming resistance to changes in traditional educational environments. This review provides solid foundations for universities, particularly in the Peruvian context, to institutionally incorporate cooperative learning, promoting equity, inclusion, and educational quality aligned with social responsibility.

Conclusions

This systematic review demonstrates that cooperative learning constitutes a highly effective pedagogical strategy for the comprehensive development of university students, especially in contexts demanding professionals with strong social, emotional, and cognitive competencies. The analysis of 20 studies allowed for the identification of key findings organized according to the established dimensions.

It was corroborated that this methodology strengthens social skills such as assertive communication, conflict resolution, shared leadership, and empathy. These competencies emerge from constant peer interaction, in line with the symbolic interactionism by Mead (1934). Furthermore, a direct relationship was evidenced between cooperative strategies and the development of positive interdependence, manifested in shared responsibility, mutual trust, and commitment to group goals, supporting the postulates of the zone of proximal development by Vygotsky (1978).

Cooperative environments favor meaningful interactions through reflective exchanges, constructive questioning, and collaborative knowledge construction processes, enhancing critical thinking and metacognition. These practices stimulate intrinsic motivation, consistent with the self-determination theory by Deci and Ryan (2000).

In addition to enhancing academic performance, cooperative learning develops key professional competencies such as teamwork, effective communication, and decision-making. Even in the face of challenges arising from the pandemic, this methodology exhibited a remarkable capacity for adaptation to virtual and hybrid environments, supported by technological tools that ensured the continuity of collaborative learning.

To ensure effective implementation, institutional transformations are required, including ongoing faculty training, curriculum updates, and improvements in technological infrastructure. This review establishes solid foundations for longitudinal research and the design of adaptive strategies, thereby contributing to the consolidation of an inclusive educational model consistent with university social responsibility.

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