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Cooperative Learning and the Improvement of Generic Competence Development in University Students

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ABSTRACT

The objective of the present investigation is to measure the relationship between cooperative learning and generic competencies in university students. The research corresponds to the hypothetical-deductive method, a quantitative approach, with a correlational cross-sectional design. The instruments applied were questionnaires administered to sixty students. The Kolgomorov-Smirnov statistic was applied for the assumption of normality, and Spearman's Rho was used for the correlation test. After processing the data, a high positive correlation of 0.653 and a P-value of 0.000 were evidenced, which lead to the conclusion that there is a positive relationship of moderate level between cooperative learning and generic competencies in the student.

Keywords: Cooperative learning, Generic competencies, Learning strategies.

INTRODUCTION

In higher education, there is a constant search for methodologies that respond to the challenges of teaching and learning, allowing the teacher to work together with the students (Cerezo et al., 2025). In cooperative activities, students seek results that are beneficial for themselves and for the other members of the group.

The university reform in the European Higher Education Area has driven significant changes in the education system. The Bologna Declaration points out the protagonism of students in the learning processes, fostering a pedagogical approach centered on the development of competencies through active and cooperative strategies (Riera, et al., 2025). The university must prepare students for the development of professional skills, promote cooperation, and satisfy the needs of current society (Sánchez et al., 2020).

According to Pérez et al. (2025), it is considered that the application of a cooperative methodology provides multiple benefits and learning opportunities for the student, as well as pedagogical skills for teachers and social skills. Despite the benefits mentioned, the application of cooperative learning in the classroom is still in an initial stage (Cerezo et al., 2025). Education focuses on providing a solid education to the student; this entails considering more integrated evaluation approaches that allow for contrasting and demonstrating the achievement of competencies, affirm Pérez et al. (2025).

In Latin America, according to Galindo et al. (2024), the challenges in the educational field place methodologies as essential axes in the change of teaching practices. Cooperative learning has a participatory and democratic focus based on reciprocal learning (De la Peña and Rodríguez, 2023). For this reason, the teacher must plan the process and incorporate diverse activities where the student is the protagonist, prioritizing cooperative

work. For Vera et al. (2025), methodologies that promote the development of competence are still under development; the problem lies in the fact that generic competencies, in higher education, are presented in study programs, but it is not known exactly which methodologies enhance their development.

In the local context, in Peru, cooperative learning is essential for the development of student learning; however, due to the lack of knowledge of this method by the teacher, its effective application is hindered (Castagnola et al., 2021). Many universities have as their primary interest the development of competencies, which is why they seek curriculum changes that involve a collaborative or cooperative type of competence.

On the other hand, Correa and Osses (2022) consider cooperative learning to be an active methodology, resulting in new challenges for the teacher and institutional demands that respond to current requirements. In this sense, Andrey et al. (2024) states that universities promote changes in teaching methodology to ensure the development of competencies in students, which are specified in the graduate profiles of university careers. Consequently, university higher education faces a discussion on the assertive choice of adequate methodologies to foster competencies, and the question arises: Does the cooperative learning methodology improve generic competencies in university students? Therefore, the goal of this research is to analyze cooperative learning to improve generic competencies.

THEORETICAL FRAMEWORK

Cooperative Learning

According to La (2017), cooperative learning is defined as a method that acts with the results of the group, with the main objective of improving learning and social relationships among students. For Castro and Sánchez (2022), it is an organized form of heterogeneous groups to enhance the development of each member with the help of the others. Galindo et al. (2024) consider that cooperative learning is a way of relating through the group; it allows for better learning, and group discussions allow for consolidating and correcting some achieved learnings.

Likewise, Johnson et al. (1994) point out that to improve social relationships, it is necessary for students to know some social techniques based on group dynamics; the professor must train and foster social participation among members, consolidating the objective of cooperative learning. According to Vygotsky's theory (1979), the function of the more advanced peers is the support, direction, and organization of the learning of the less experienced, making social interaction a means that facilitates cognitive development.

For a better understanding, we have four dimensions that must be incorporated for cooperative learning to be effective:

Positive Interdependence

For La (2017), this occurs when each member of the group is aware that their effort benefits everyone or, conversely, it harms the entire group. According to Galindo et al. (2024), the assignment of different roles in the cooperative group strengthens positive interdependence; finishing the task on time, promoting everyone's participation, and bringing order to conflicts are indicators of this dimension.

Individual and Group Accountability

According to Alles (2005), an indicator of this dimension is the fulfillment of assigned tasks, which are shared with all members, with the objective of evaluating them and identifying who needs more support. Personal responsibility is the capacity to put first the responsibility of fulfilling mutually agreed-upon objectives; thus, demanding high goals, deadlines, and assuming self-direction with support for team members (Riera, et al., 2025).

Stimulating Interaction

This dimension occurs when each member of the group fosters the learning of the others, explaining how to solve problems, sharing what one knows; this allows for the development of cognitive and interpersonal capacities. By sharing learning, students acquire an individual commitment and a commitment to others (Johnson et al 1994). Positive verbal expressions toward the group and the recognition of achievements are indicators of positive stimulation (Erazo et al., 2023).

Interpersonal and Team Skills

A part of the development of social skills regarding conflict management must be carried out constructively and assertively, without passivity or aggressiveness, achieving an effective relationship with the other team members (Alles, 2005). As mentioned before, treating each member with respect, without aggression, is communicating sincerely, accepting others, supporting them when necessary, making the most of time and helping others to do so, and contributing their own ideas (Galindo et al., 2024). The teacher is an important tool to

contribute to the progress of behaviors, attitudes, and social interactions, such as working towards a goal and generating a positive climate (Adi et al., 2025).

Generic Competencies

According to García et al. (2022), generic competencies are defined as the set of socio-affective behaviors and cognitive, psychological, sensory, and motor skills that allow for adequately carrying out an activity or a task. The development of competencies is ideal for professions in general, as they are related to professional development and civic education. The behaviors they describe are associated with various occupations and branches of productive activity (León et al., 2025).

Generic competencies are identified as key competencies; they are transversal, not limited to one field, are transferable, and reinforce the student's capacity to acquire other competencies (García et al., 2022). For Andrey et al. (2024), these competencies complement the integral education of students, as they are oriented toward their preparation to face the world of work, and according to national requirements, the study plan will be modified. Each institution must take responsibility for choosing from a long list of competencies, constituting a challenge that must be supported by the research of the teachers themselves.

Below we present three dimensions of generic competencies that will allow for a deeper understanding:

Instrumental Competencies

Instrumental competencies involve the ability to analyze and synthesize, as well as the capacity to organize and plan an activity. They also include basic skills such as oral and written communication using a computer, information management, problem-solving, and decision-making skills (García et al., 2022). According to Andrey et al. (2024), the goal of instrumental competencies is to develop in students the skills and abilities needed for cooperation, since these are essential for building an ethical and democratic society.

Interpersonal Competencies

This dimension relates to social skills such as generosity and understanding with classmates; furthermore, these capacities involve objectification, identification, and information about feelings, favoring cooperation and social interaction (García et al., 2022). The competence involves critical and self-critical capacity, teamwork, interpersonal skills, capacity to work in interdisciplinary teams, valuing diversity and multiculturalism, crisis management, and negotiation in the classroom (Alles, 2005).

Systemic Competencies

Jones et al. (2023) define them as skills and abilities concerning systems as a whole. It is a combination of understanding, sensitivity, and knowledge. For Carbajal (2017), these capacities refer to planning changes that introduce improvement and designing a new system. According to Alles (2005), this competence involves research skills, capacity to learn, creativity in ideas, leadership, knowledge of cultures, autonomous work, project management, entrepreneurial mindset, concern for quality, and motivation for achieving objectives.

METHODOLOGY

This study is inserted in the quantitative approach, with a non-experimental, cross-sectional, and correlational design. The sequence of the hypothetical-deductive method was used. The non-probabilistic-intentional sampling technique was employed. The population consisted of $N = 72$ students enrolled in the first cycle in a mathematics course. The probabilistic sample was calculated using $n = \frac{Z^2\,P(1-P)N}{(N-1)e^2+Z^2P\,(1-P)}$ where the probability of success P = 0.5 the confidence level of 95%, Z =1.96 and an error level e = 5%, obtaining as a result a sample $n = 60$ first cycle students belonging to an Engineering Faculty of a state university.

The survey technique was used, and two questionnaires of thirty questions each were applied and adapted from Carbajal (2017). The cooperative learning questionnaire was structured under a Likert scale, considering the ordinal scale levels: never, almost never, almost always, always. Likewise, the generic competencies questionnaire was structured with the levels: disagreement, neither agreement nor disagreement, agreement, total agreement. Students were asked to answer the questions of the cooperative learning questionnaire, which was composed of the dimensions: positive interdependence (questions 1 to 6), individual and group accountability (questions 7 to 11), promotive interaction (questions 12 to 19), and interpersonal and team skills (questions 20 to 30); and the generic competencies questionnaire, composed of the dimensions: instrumental competencies (questions 1 to 16), interpersonal competencies (questions 17 to 25), and systemic competencies (questions 26 to 30). The validity of the questionnaires was submitted to the judgment of experts. The Cronbach's Alpha statistic was applied for

reliability, whose results were of 0.959 for the cooperative learning questionnaire and 0.835 for the generic competencies questionnaire.

RESULTS

Having applied the research instruments, the data was processed through SPSS 22 Software. The Kolgomorov-Smirnov statistic was used for the normality test, resulting that the generic competence variable has a normal distribution (sig. 1.190) and the cooperative learning variable following a non-normal distribution (sig. 0.008), respectively. Spearman's Rho statistic was applied for the hypothesis test.
The results are as follows:

Table 1. Correlation between cooperative work and formative assessment.

Test	Cooperative work	Generic competencies
Rho of Spearman	0,653	

Note: p≤ .01.

Table 1 shows a Spearman's correlation coefficient of 0.653 with a significance level of 0.01 (1% maximum error margin), which demonstrates that cooperative learning and generic competencies variables present a moderate-high positive correlation.

Table 2. Correlation between the dimensions of cooperative learning and formative assessment.

Test	Dimensions of cooperative learning	Generic competencies
Rho of Spearman	Positive interdependency	0.601
	Individual and group accountability	0.568
	Stimulating interaction	0.577
	Interpersonal and team skills	0.676

Note: ***p≤ 0,01,*

In Table 2 we can observe that the correlation measures are significant between formative assessment and the four dimensions of cooperative learning. In relation to the first dimension, interpersonal and team skills, and generic competencies, a correlation coefficient of 0.676 was obtained, which shows us a moderate positive relationship between both variables.

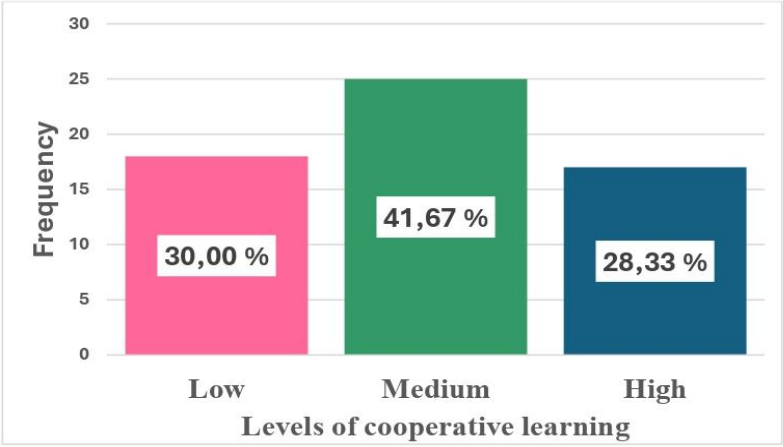

Figure 1. Levels of cooperative learning.

Figure 1 shows that 28.3% of students present a high level regarding the development of cooperative learning.

DISCUSSION OF RESULTS

The development of cooperative learning promotes the development of generic competencies, which are capacities for the professional development of the student, making it possible to facilitate insertion into any job position. Regarding the relationship between positive interdependence and generic competencies, they are positively related. This coincides with Asencios and Rivas (2022), who maintain that learning strategies that relate

motivation to responsibility contribute to regulating emotions and attitudes, thus contributing to the development of interpersonal competencies.

As for the relationship between individual and team accountability, it strengthens the planning of goals. This aligns with Vera et al. (2025), who says that the responsibility for fulfilling the task allows them to be aware of the importance of persevering in achieving their goals, which strengthens the promotion of team performance and the development of instrumental competencies. Regarding the relationship between stimulating interaction, it strengthens goal planning, according to Vera et al. (2025), the stimulation to continue working allows group members to develop empathy and understand each member's reality. This fosters diversity and intercultural understanding, strengthening interpersonal competencies. According to Jones et al. (2023), teamwork encourages the sharing of information, accepting each member's weaknesses and strengths, identification with the team, and the achievement of objectives, thus developing systemic competencies.

Regarding the relationship between interpersonal and team skills, they are positively related to the development of generic competencies. For Asencios and Rivas (2022), teaching strategies aimed at team organization and conflict resolution strengthen the development of critical and reflective thinking, thereby strengthening instrumental competencies. In this sense, cooperative work goes beyond the academic, promoting synergy, tolerance, and equity among its students, contributing to solving problems related to interpretative and attitudinal skills.

CONCLUSIONS

In conclusion, the results showed that there is a positive relationship between the variables of cooperative work and generic competencies. In this sense, to achieve an improvement in generic competencies and contribute to the personal development of the student, cooperative learning must be applied in the classroom. Given the results regarding the low-level percentage obtained by the cooperative learning variable, it implies that there are difficulties in its effective application. It is necessary to strengthen teachers through strategies that allow them to have a broader vision of cooperative learning.

Given the positive relationship between the technical dimensions of interpersonal and team skills and generic competencies, theoretical and practical empowerment on cooperative learning strategies is required. In this sense, an articulated effort between the institution and the teacher is recommended to ensure group interaction among students. To conclude, these results support the benefits of the cooperative learning methodology in the development of practical skills that prepare students to face a challenging and competitive society. It is necessary to encourage research related to teaching-learning strategies, as well as training according to the presented demands.

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