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Cooperative learning and its relationship with formative assessment in university students

Jenny Carbajal-Licas[1*], José Gregorio Brito-Garcías[2], Jesús Rule Flores-Cruz[3]
[1,2]Escuela de Posgrado, Universidad San Ignacio de Loyola, Lima, Perú; jenny.carbajal@usil.pe (J.C.L.) jose.brito@epg.usil.pe (J.G.B.G.).
[3]Departamento de Matemáticas, Universidad Nacional Mayor de San Marcos Lima, Perú; jfloresc@unmsm.edu.pe (J.R.F.C.).

Abstract: The aim of this research is to measure the relationship between formative assessment and cooperative learning in the classroom of a public university. This research is based on a hypothetical-deductive method, using a quantitative approach and a cross-sectional correlational design. The instruments used were questionnaires applied to a total of one hundred and fifty-eight students. The Kolmogorov–Smirnov test was applied to verify the assumption of normality, while Spearman's rho was used for the correlation test. The results of the statistical analysis show a moderate positive relationship among the variables with a correlation coefficient of 0.619. The analysis highlights a moderate positive relationship between the positive interdependence dimension and formative assessment, as well as with the individual and group responsibility dimension. The study concluded that, to improve formative assessment, cooperative learning must prioritize communication skills along with pedagogical and reflective training of faculty members.

Keywords: *Communication skills, Cooperative learning, Feedback, Formative assessment, Positive interdependence.*

1. Introduction

In higher education, faculty members tend to associate assessment with a practice of measurement, grading, and comparison, which makes it difficult to focus on the student in the teaching-learning process. Therefore, it becomes necessary to consider more integrated assessment approaches, as noted by Pérez De Arce et al. [1]. This leads to questioning how the teaching-learning process is being developed, exploring how students have learned, and evaluating its effectiveness through observation, thereby fostering reflection and improvement of education [2].

In Latin America, according to Galindo et al. [3], challenges in the educational field position methodologies as key drivers in transforming teaching practices. Cooperative learning is a technique that facilitates interaction among classmates and the sharing of knowledge. De la Peña and Rodríguez [4] state that the cooperative learning methodology is an activity that promotes learning among students; however, despite its benefits, this methodology is not consistently applied. Castagnola Rossini et al. [5] indicate that the various forms of cooperation contribute to the development of significant learning, since they develop reflective, innovative, and critical capacities, strengthening individual learning, which is one of the objectives of formative assessment.

In line with the foregoing, Ruiz Cuéllar [6] says that the Regional Office for Education in Latin America and the Caribbean (OREALC) identified through a survey that more than 50% of faculty members consider that formative assessment is a difficult and complicated task due to the number of students per class. Therefore, Pérez De Arce et al. [1] state that assessment becomes challenging, not only for the faculty member but also for the authorities of educational institutions. The lack of knowledge about cooperation strategies and the use of technology has represented a significant challenge for faculty members.

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* Correspondence: jenny.carbajal@usil.pe

Herrera-Araya [7] indicates that formative assessment requires taking some time for pedagogical support to students and promoting cooperative activities among them. Cunill and Curbelo [8] note that formative assessment must transfer the control and responsibility of learning to students with the guidance of faculty members. Fernández [9] suggests that feedback is a key resource of formative assessment as it strengthens dialogue between the faculty member and the student by providing comments, corrections, and suggestions for improvement of the submitted assignment. In this regard, the challenge for faculty members is to foster self-regulation strategies that enhance what students have achieved and help them learn from their mistakes.

In the Peruvian context, assessment faces a challenge. The concept of formative assessment is not clear; it is reduced to a specific moment and not considered as a process. Consequently, an optimal assessment cannot be developed [2]. An appropriate faculty profile has not been established. It is urgent that institutions take action to make progress and foster a culture of formative assessment [10]. Moreover, Correa-Gurtubay and Osses-Sánchez [11] consider that cooperative learning is an active methodology that presents new challenges to faculty members and requires institutions to address current needs.

In relation to this problem, formative assessment is democratic in nature, and feedback is its key resource. This implies promoting discussions; however, it is not linked to a cooperative work approach [12]. This leads to a discussion on strategies that play an important role in good classroom practices, enabling formative development in students, as well as to ask: How are formative assessment and cooperative learning related in university students?

2. Theoretical Framework

2.1. Formative assessment

To understand the direction of this research work, it is necessary to define certain concepts regarding formative assessment and cooperative work. According to Anijovich and Gonzales [12], formative assessment is a process focused on gathering information so that faculty members can reformulate their pedagogical practices based on students' needs. For Fuster et al. [13], formative assessment provides opportunities for each student to express their doubts, and therefore, strategies need to be established to support students. To understand the characteristics of formative assessment, we will explain its dimensions, objectives, assessment criteria, techniques, and instruments to assess evidence, students' engagement in both their learning and their peers' learning, and feedback.

Thus, in regard to objectives and assessment criteria, Cunill and Curbelo [8] define objectives as the expected outcomes in each session, and criteria imply understanding of established assessment standards. This must be communicated to students prior to conducting any activity. The formative assessment approach seeks to inform students about the objectives of the teaching process and share criteria to know what is expected upon completion of the process, thereby contributing to the development of self-regulation in their learning [14].

Furthermore, Pérez De Arce et al. [1] state that assessment criteria are indicators and benchmarks in relation to what is expected from the teaching process and student performance. These indicators must be developed based on the assessment objectives outlined in the course syllabus. In this regard, to prepare assessment criteria, the expected outcomes to be developed must be taken into account, determining the learning level and setting the different levels. According to Moreno [15], it is important to point out that formative assessment is focused on details, as it is a qualitative assessment reflected in the assessment criteria designed by the faculty member. Accordingly, faculty members should be aware of this information; otherwise, assessment would be based on empirical information and improvisation that prevail in traditional education.

Formative assessment involves activities that enable faculty members to gather evidence. To achieve this purpose, they must be familiar with techniques and instruments to assess evidence that promotes dialogue. Anijovich and Cappelleti [16] define assessment instruments as the means for collecting students' representations of specific knowledge. This documentation may include annotations,

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observation logs, exams, and portfolios that demonstrate students' progress. Anijovich and Cappelleti [16]. Cañadas [17] points out that assessment, when correctly applied, becomes a powerful tool for teaching. Its effectiveness will depend on the selection of the techniques to be used in the assessment. The appropriate selection of assessment instruments will allow gathering learning evidence.

This leads Anijovich and Cappelleti [16] to suggest that instruments aim to identify each student's level regarding the educational objective, as the gaps vary from student to student. If students perceive large gaps, it can lead to failure and loss of motivation, but if the gap is too small, then they may not be encouraged to strive toward the established objectives. This gap, according to Cañadas [17], evokes the concept of the Zone of Proximal Development (ZPD), developed by Vygotsky [18], which represents the distance between the student's current cognitive development and their potential development. The ZPD represents current development, when tasks that learners can perform with guidance are eventually performed independently. This support is called scaffolding, a process where a more knowledgeable individual provides help to a learner. The help is gradually removed as the learner gains competence.

Likewise, encouraging students' engagement in their learning and that of their peers reinforces the formative nature of assessment. It involves valuing their effort and reflecting on their outcomes. Furthermore, Cunill and Curbelo [8] point out that students judge their work and that of their peers through the objectives and assessment criteria given by the faculty member. To carry out self-assessment and peer-assessment, it is necessary for students to be aware of their successes and mistakes. Zamora and Palacios [19] consider that the selected assessment instrument must reflect, in an orderly manner, the information about the success and failure of a given activity carried out in class, so as to infer and assign responsibility for various aspects of teaching practices.

According to Hamodi et al. [20], self-assessment enables students and faculty members to share judgments, which will result in the identification of difficulties in order to enhance students' learning. Peer assessment occurs among classmates in relation to an activity carried out in class. This activity allows the development of assessment skills, and the participation of each peer is evaluated. Shared assessment is the dialogue process between the student and the faculty member; it enables the faculty member to guide the assessment process while keeping the student accountable. Mollo-Flores and Medina-Zuta [2] state that formative assessment fosters students' comprehensive development, implying that faculty members create spaces for self-assessment; however, conventional teaching continues to prevail in classrooms, restricting students from taking an active role.

In turn, Cunill and Curbelo [8] define feedback as one of the key dimensions in formative assessment. It responds to the analysis of evidence. For the success of this process, it is necessary to know what is expected from the student by articulating objectives and assessment criteria presented to determine the student's level. It is important to create a suitable space to promote dialogue about the quality of the submitted assignment in order to suggest clear and feasible recommendations to reduce the gap between the expected level and the current level. For Miranda [21], students must evidence that the feedback has been effective. In this regard, it is key to schedule a moment for them to demonstrate it. This feedback must be scheduled within a short time; otherwise, it diminishes its value and impact.

Cunill and Curbelo [8] explain that feedback is descriptive rather than unfounded praise or criticism. Students are informed about their current level and the objective they must achieve, demonstrating that they have overcome the difficulty observed by the faculty member. In addition, scaffolding is offered whereby the faculty member models the process so that the student can later carry it out.

2.2. Cooperative learning

According to Riera et al. [22], cooperative learning is a teaching strategy that combines both social and academic objectives through group work with the aim of reaching common goals and maximizing learning. For Galindo et al. [3], verbal interactions among small groups favor the distribution of tasks

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and constructive dialogue. Adi et al. [23] consider that this methodology enables learning improvement. It prioritizes the internal organization of the work group, promoting the exchange of abilities and values through communication.

Vygotsky [18] states that the role of the most skilled student is to provide support and guidance to those with less expertise, in line with Bruner's scaffolding theory. Cooperative work sets the team's goals first. Students are motivated by expressions of support and the exchange of information. Correa-Gurtubay and Osses-Sánchez [11] consider that cooperative learning requires faculty members to be familiar with diverse activities to organize students into groups, taking into account their abilities and affinities. For Riera et al. [22], the continuous practice of cooperative activities makes it possible to address various individual and personal students' needs, fostering mutual support to achieve common goals.

For a better understanding, it is necessary to know the cooperative learning dimensions, which are: positive interdependence, individual and group responsibility, stimulating interaction, and finally, interpersonal and team techniques.

Thus, according to Galindo et al. [3], positive interdependence in cooperative learning occurs when each group member perceives that the success of the group depends on them and vice versa. Duties are assigned to each group member, prioritizing common objectives and sharing roles. Among the indicators, we can mention organization, fulfillment of assigned duties, and prioritizing the group's interests. Expressions of commitment and individual responsibility to carry out tasks reflect the recognition of their contribution to achieving the group's goals. From a psychological perspective, achieving individual objectives depends on the achievement of other group members [24].

Individual and group responsibility consists of supporting and responding to the group's needs. Collaboration goes beyond addressing problems and doubts of group members; it involves providing support to those who face difficulties within the group, which is a key indicator of this dimension. It also includes sharing outcomes and giving one's best by providing ideas that contribute to individual success and to that of each group member [24]. Individual and group responsibility goes beyond the academic field, since there is an environment of trust and sensitivity related to the needs of others.

Sánchez et al. [24] point out that stimulating interaction involves encouraging the group with verbal expressions, appreciation, and recognition of the suggestions given by its members. Likewise, identification with the group, which consists of believing that the group has the capacity to achieve its goals, promotes effective communication among members and the exchange of information. Galindo-Domínguez et al. [25] define interpersonal and team techniques as interpersonal practices that foster teamwork, such as respecting others' opinions and managing conflicts. Within these abilities, the team's objective must be present. To this end, it is important to assign roles to each member so that they know how to lead and make decisions in relation to the team's goal [25].

In turn, [3] state that it is necessary to introduce active methodologies since cooperative learning links knowledge with abilities and enables collective reflection. New roles must be established for the faculty member to promote quality education. Similarly, Cerezo et al. [26] argue that faculty members do not carry out collaborative processes in classrooms and that they are limited to the delivery of the class. Therefore, cooperative learning is still at its initial stage, which opens a broad path for research that remains unexplored.

In relation to the foregoing, it is evident that teaching practices are in a state of neglect regarding the didactic aspect. There is a need for pedagogical guidance to develop practice from a reflective perspective. This paper aims to analyze the relationship between cooperative learning and formative assessment in first-term students at a public university. To this end, it analyzes the dimensions of formative assessment: positive interdependence, individual and group responsibility, stimulating interaction, interpersonal and team techniques.

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3. Methodology

This research is based on a hypothetical-deductive method, using a non-experimental quantitative approach and a cross-sectional correlational design. It consists of data collection and statistical analysis methods. This approach follows a structured pattern aimed at confirming and predicting the research phenomena [27].

The study population consisted of N =270 students enrolled in the first term, the probabilistic sample was calculated using $n = \frac{Z^2P(1-P)N}{(N-1)e^2+Z^2P(1-P)}$ where the probability of success was $P = 0.5$, with a 95% confidence level, $Z = 1.96$ with a margin of error of $e = 5\%$, resulting in a sample of $n = 158$ first-term students, from the School of Engineering at a public university in Lima, Perú, composed of 63 females (40.0%) and 95 males (60.0%).

For the development of the study, two questionnaires structured on a Likert scale were applied. The ordinal response levels considered were never, almost never, almost always, and always. For the cooperative learning questionnaire, the dimensions considered were positive interdependence (questions 1 to 3), individual and group responsibility (questions 4 to 6), stimulating interaction (questions 7 to 10), interpersonal and team techniques (questions 11 to 15). Regarding the formative assessment questionnaire, students were asked to answer twelve questions related to the dimensions of objectives and assessment criteria (questions 1 to 3), techniques and instruments for evidence assessment (questions 4 to 5), students' engagement in their own learning and in that of their peers (questions 6 to 8), and feedback (questions 9 to 12). Two dichotomous questions on gender and work status were included in the questionnaires, as well as an open-ended question about their age. Table 1 summarizes the variables and dimensions of this research.

Table 1.
Variables and dimensions.

Variables	Dimensions
Cooperative learning	Positive interdependence
	Individual and group responsibility
	Stimulating interaction
	Interpersonal and team techniques
Formative assessment	Objectives and assessment criteria
	Techniques and instruments for evidence assessment
	Students' engagement in their own learning and that of their peers
	Feedback

Data collection was carried out by the researchers of this study, and it took three weeks. The instrument was validated through expert judgment, with specialists providing comments and suggestions for each item, which were incorporated and adjusted prior to its application. Cronbach's alpha was used to assess instrument reliability, yielding values of 0.876 for formative assessment and 0.955 for cooperative learning, which demonstrated that the questionnaires were reliable for application.

For data collection, permission was requested from the faculty member, who authorized the application of the instruments. The faculty member informed the students that participation in the survey was voluntary, and they were provided with the survey link through their institutional university email. After data collection, the information was processed using SPSS version 25, which enabled the integration and analysis of quantitative data. It is important to point out that, using the Kolmogorov-Smirnov test, the assumption of normality for the items of the formative assessment and cooperative learning variables was examined, yielding significant values of 0.006 and 0.007, respectively, indicating that the data differ from a normal distribution. Therefore, Spearman's rho was applied for hypothesis testing.

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4. Results

After defining the methodology of this study and conducting a thorough data collection, the statistical analysis of the results was performed.

From the data processing, with respect to the descriptive statistics and considering the research levels (non-adequate, moderate, and adequate) for the cooperative learning and formative assessment variables, the following percentages were obtained.

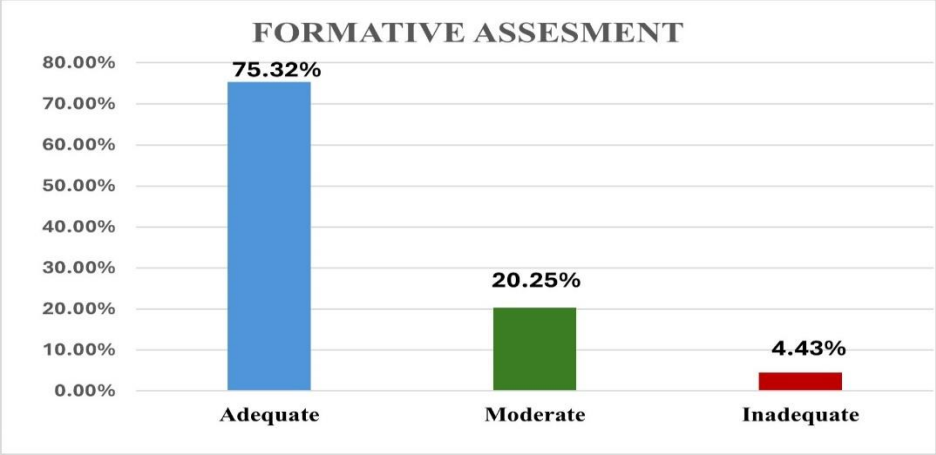

Figure 1.
Percentage levels for formative assessment

Figure 1 shows the percentage levels for formative assessment. The adequate level is 75.32%, the moderate level is 20.25%, and the non-adequate level is 4.43%. The adequate level reflects that the faculty member has developed the formative assessment process by identifying students' difficulties, which provided the basis for feedback planning. This implies that students' engagement in their own learning enabled the faculty member to make changes in the teaching-learning process to achieve the established objectives. The moderate level indicates that we should continue enhancing pedagogical strategies and reflective assessment practices to ensure that the application of formative assessment is not biased.

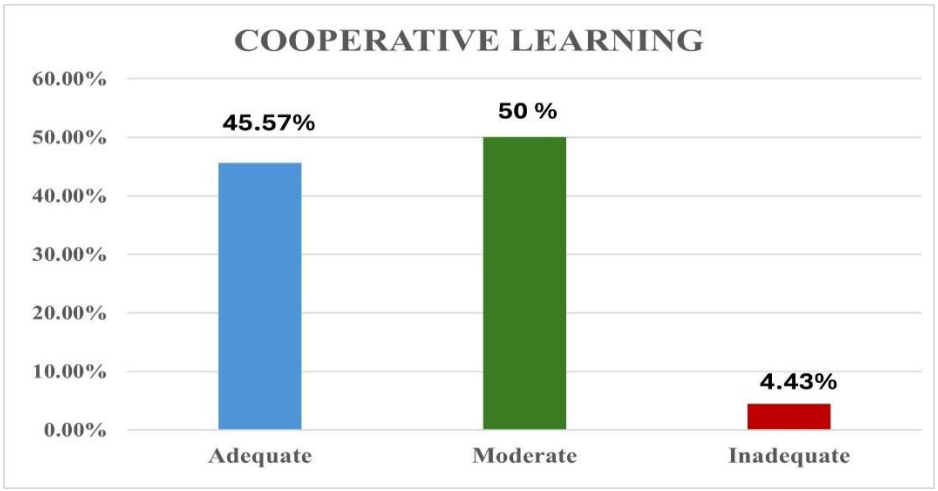

Figure 2.
Percentage levels for cooperative learning.

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Figure 2 shows the percentage levels for cooperative learning. The adequate level is 45.57%, the moderate level is 50%, and the non-adequate level is 4.43%. The moderate and adequate levels show close values, indicating that the application of cooperative learning is being moderately developed by faculty members, which reflects acceptance by students. In regard to the descriptive statistics, percentages for the cooperative learning dimensions distributed in adequate, moderate, and non-adequate levels are shown below.

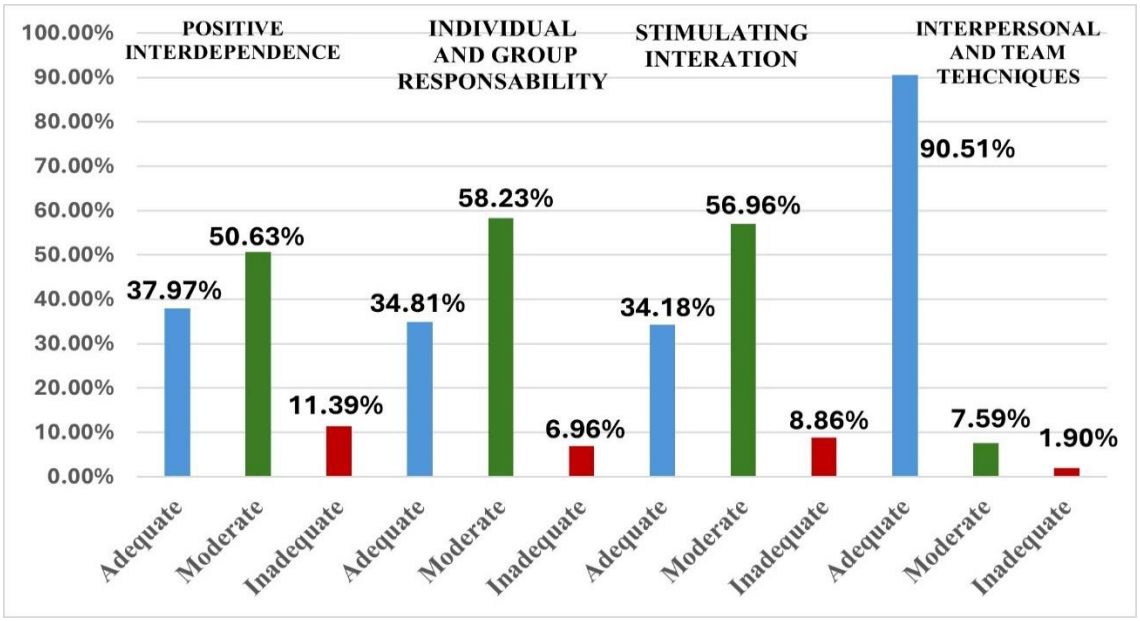

Figure 3.
Percentage levels for cooperative learning dimensions

Figure 3 shows how the four cooperative learning dimensions have developed, categorizing them by adequate, moderate, and non-adequate levels, respectively. With respect to the positive interdependence dimension, the percentage of the adequate level was 37.97%, and that of individual and group responsibility was 34.81%, stimulating interaction was 34.18%, and interpersonal and team techniques was 90.51%.

After presenting the descriptive analysis results, the inferential statistics analysis is reported. The following correlations were obtained with the application of Spearman's rho to the formative assessment variable and the four cooperative learning dimensions:

Table 2.
Correlation between cooperative learning dimensions and formative assessment

Test	Cooperative Learning Dimensions	Formative assessment
Spearman's rho	Positive interdependence	0.632**
	Individual and group responsibility	0.634**
	Stimulating interaction	0.554**
	Interpersonal and team techniques	0.471**

Note: $^{**}p \leq 0.01$.

Table 2 indicates that correlation measures are significant between formative evaluation and the four cooperative learning dimensions. Regarding the first dimension, positive interdependence, and formative assessment, the resulting correlation coefficient was 0.632, which suggests that there is a moderate positive relationship between the two variables. The resulting correlation coefficient for the second dimension, individual and group responsibility, was 0.634, indicating a moderate positive

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relationship between the two variables. The third dimension, stimulating interaction, yielded a value of 0.554, suggesting that there is a weak positive relationship between the two variables. The resulting value for the last dimension, interpersonal and team techniques, was 0.471, which indicates that there is a weak positive relationship between the two variables.

The results of the Spearman's rho analysis applied to cooperative work and formative assessment were the following:

Table 3.
Correlation between cooperative work and formative assessment

Test	Cooperative work	Formative assessment
Spearman's rho	0.619**	

Note: **p≤ 0.01.

Table 3 shows a moderate positive relationship between formative assessment and cooperative work.

5. Discussion of Results

Findings indicate that the positive interdependence dimension is moderately related to formative assessment. This means that the development of common objectives, as well as suggesting group organization and appealing to responsibility, contribute to the development of self-assessment and reflection on collective work. This promotes students' engagement in their own learning and that of their peers, thereby leading to the development of formative assessment. Likewise, the results of Galindo-Domínguez et al. [25] demonstrated that cooperative learning develops critical thinking, and this is an opportunity to develop social abilities, promoting metacognitive experiences in students.

With respect to the results of the previous dimension, they are consistent with Erazo-Moreno et al. [28], who point out that cooperative learning fosters personal engagement in a reflective and critical way in relation to the work developed by the team. This allows them to strengthen their abilities and self-assess their progress, thereby achieving self-learning. De la Peña and Rodríguez [4] indicate that it is important to consider different styles of learning and student-oriented dynamic environments. This motivates the development of an environment of trust, collaboration, and respect. Cooperative learning is related to the development of social skills. It allows students to understand their peers and suggest creative solutions, thereby promoting the comprehensive development of students.

Based on the results, the individual and group responsibility dimension promotes team performance, encourages among their peers, and the fulfillment of group assignments contributes to the exchange of information and ideas. The review of the assigned tasks by group members implies understanding the objectives and assessment criteria, thereby developing formative assessment, as shown by the correlation value in relation to formative assessment and individual and group responsibility, specified in Table 2. In this line, Castagnola Rossini et al. [5] indicate that cooperative learning promotes discussion and the exchange of ideas among group members, fostering autonomous learning among their peers.

Moreover, Castagnola Rossini et al. [5] point out that cooperative work encourages students to share their viewpoints and support one another to achieve the established objectives, seeking solutions to the difficulties they encounter. Pérez De Arce et al. [1] mention that these cooperation activities developed in an inclusive environment, where competition does not prevail, are factors for self-regulation and group self-assessment.

Furthermore, Erazo-Moreno et al. [28] confirm that continuous student monitoring by the faculty member promotes mutual support to understand a specific topic. According to Anijovich and Cappelleti [16], peer assessment is a means for students to evaluate their own work while promoting metacognition. This practice helps to build a horizontal relationship between the faculty member and the student.

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Within this framework and based on the level of association between the stimulating interaction dimension and formative assessment, it can be inferred that encouragement for task completion fosters trustful communication between the faculty member and the student, thereby enabling effective development of feedback. This result is consistent with the work of Souza [29], who points out that students are aware that by applying socialization and motivation skills, they will achieve more productive learning. For Carrasco Acosta et al. [30], optimal implementation of cooperative work will depend on the skills and abilities of group members and the faculty member's methodology; thus, monitoring must be carried out on a regular basis.

The moderate level of 56.9% of the stimulating interaction dimension (see Figure 3) indicates that attitudinal performance needs to be developed in students. Medina Zuta and Mollo Flores [31] note that students show respect toward each other almost always, but they do not reach the level of critical thinking regarding the shortcomings observed in the classroom. Consequently, the information obtained from the teaching process is not reliable and does not allow for planning student support or providing feedback. This result suggests the need to reformulate teaching strategies that encourage students to self-assess their performance.

Another point for discussion is the percentage achieved of 90.51% for the interpersonal and team technique dimensions (see Figure 3). In contrast, its weak correlation with formative assessment was 0.471 (see Table 2). It can be concluded that, although guidance on assigning roles, organization, and management is provided, it appears to have limited relevance for the development of formative assessment. Social skills have a greater influence, as evidenced by the moderate correlation level between formative assessment and the individual and group responsibility dimension, with a correlation value of 0.471, which is the lowest in Table 2. In light of these results, Erazo-Moreno et al. [28] maintain that even though cooperation instructions are provided to students, it does not ensure the effectiveness of learning. Activities enabling the exchange of information and the sharing of rewards for a task developed collectively are required. Promoting discussion in the classroom maximizes social skills and the ability to assume various roles, enabling students to learn from the experiences of their peers.

In turn, Neciosup [32] notes that formative assessment involves planning a social didactic sequence, that is, attending to students' needs and discussing changes in the process with the aim of creating a motivating learning environment. Araya-Muñoz and Majano-Benavides [33] point out that the faculty member lacks knowledge of didactic processes and the use of technological tools for course development. Although the institution provides training, adjustments to the didactic aspects have not yet been achieved.

According to Miranda [21], the faculty member requires continuous support. It is not enough to provide workshops and training only at the beginning of the academic term; ongoing monitoring is essential to enhance strategies based on the faculty member's personal teaching style. For Aguero [34], formative assessment contributes to the development of student competencies. Creating spaces for dialogue between students and faculty is essential to support this academic development. Similarly, Anijovich and Cappelleti [16] state that faculty members should allocate time for discussions focused on a specific academic task rather than personal matters, so that students identify what they know and plan strategies considering suggestions from the faculty member to reach their goals.

In summary, Table 3 shows the correlation between cooperative work and formative assessment variables, for which a correlation coefficient of 0.604 was obtained with a significance level of 0.01, suggesting there is a moderate positive relationship between the two variables. This result is consistent with what Castagnola Rossini et al. [5] mentioned, who state that cooperative learning enhances students' self-assessment outcomes by promoting engagement in their own learning and that of their peers. Cooperative learning promotes knowledge construction through interaction and socialization, consistent with the constructivist approach to formative assessment [10].

In fact, the faculty member's pedagogy needs to be adjusted since didactic methods are still based on experience. According to Martínez et al. [10], the methodology applied in the classroom lacks pedagogical guidance, clear concepts, and objectives. It is based solely on the faculty member's teaching

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practice. The application of outcome-centered assessment restricts students to assimilating and reproducing the theory taught in class, thereby losing objectivity and control of the evaluations. It is urgent to provide support and guidance to the faculty member, in line with Joya [35], who states that trained and committed faculty members develop adequate formative assessment. Application of various innovative resources improves learning assessment.

According to Miranda [21], faculty lack sufficient understanding of objectives and criteria due to both the lack of an assessment culture within the university and limited knowledge of institutional goals. Further studies are needed on topics related to assessment instruments. In addition, faculty members show reluctance to prepare assessment criteria since it would take some time of their workload, which would impact their methodological practices. For Mollo-Flores and Medina-Zuta [2], assessment lacks a formative approach, a continuous and regulating process, as well as activities designed to promote integration. This indicates that summative assessment still prevails.

6. Conclusions and Recommendations

Results indicate that there is a moderate positive relationship between cooperative work and formative assessment variables. Thus, to improve formative assessment, the cooperative learning method must be well applied in class. For an effective application, faculty members must understand the theoretical fundamentals of the variables studied. Results regarding the percentage of the adequate level obtained for cooperative learning suggest difficulties in applying methodological strategies. Faculty members are expected to be formative and reflective, and to possess knowledge regarding the application of teamwork. Faculty members must be trained in the creation of dynamic and flexible environments to foster collaboration among students.

According to the results, strengthening cooperative learning dimensions such as positive interdependence, individual and group responsibility, promotes the effective development of formative assessment. Therefore, faculty members are expected to have a theoretical and practical understanding of cooperative learning strategies. The lack of student motivation is related to the absence of activities that encourage dialogue between faculty members and students, making it difficult to develop effective feedback. Articulated work between the institution and faculty members is recommended to achieve the established objectives.

Moreover, the application of methodologies that promote social interaction among students contributes to building motivation and trust in the learning process, enabling them to show their shortcomings. These interactions should take place in an open, horizontal dialogue that does not limit questions, placing the student at the center of the teaching process rather than treating them as just another case in class.

To conclude, the lack of pedagogical training among faculty members within the university educational context creates additional obstacles to addressing the issues identified. It is crucial to foster research related to teaching-learning strategies as well as training based on the needs presented.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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