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Teachers' effectiveness, cooperative learning, and servant leadership: examining the mediating role of satisfaction with studies in a Latin American university sample

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Introduction: The importance of addressing topics related to higher education is increasingly recognized, with greater impetus since the education sector has expanded rapidly worldwide since the second half of the 20th century. These educational conditions have created the need to evaluate the mediating role of satisfaction with studies in the influence of teachers' effectiveness and cooperative learning on servant leadership in the context of higher education.

Method: An explanatory study was conducted with the participation of 2,165 university students from Latin America, with an almost equal distribution between women (51.8%) and men (48.2%), with ages ranging from 18 to 56 years ($M = 21.26$; $SD = 3.48$). Data were collected using an online self-report questionnaire employing the Student Evaluation of Teachers' Effectiveness (SETE) scale, the Cooperative Learning Questionnaire (CLC), the Servant Leadership Short Scale (SLSS), and the Brief Scale of Study Satisfaction (BSSS).

Results: The hypotheses were supported, observing the effect on satisfaction with studies of both teachers' effectiveness ($\beta = 0.185$; $p = 0.000$; $t = 6.297$) and cooperative learning ($\beta = 0.358$; $p = 0.000$; $t = 11.491$); and the effect on servant leadership of both teachers' effectiveness ($\beta = 0.122$; $p = 0.000$; $t = 4.247$), cooperative learning ($\beta = 0.576$; $p = 0.000$; $t = 21.186$), and satisfaction with studies ($\beta = 0.151$; $p = 0.000$; $t = 7.734$). Likewise, the results indicate the mediating role of satisfaction with studies in the effect of teachers' effectiveness on servant leadership ($\beta = 0.028$; $p = 0.000$; $t = 4.784$), and of cooperative learning on servant leadership ($\beta = 0.054$; $p = 0.000$; $t = 6.531$).

Discussion: This new model suggests a re-evaluation of existing models on these topics. The results of this research provide valuable insights for higher education management and leadership seeking to achieve higher levels of academic satisfaction among Latin American university students. This model warrants special attention in future research, including the exploration of other potential factors and the application of these findings to diverse contexts and cultures.

KEYWORDS

teachers' effectiveness, cooperative learning, servant leadership, satisfaction with studies, Latin America

1 Introduction

Higher Education Institutions (HEIs) can play a leading role in driving better education (Nawaz et al., 2023), since they have the capacity to get involved in sustainability and promote the fulfillment of institutional and social objectives (Villar-Guevara et al., 2024). In this sense, satisfaction with studies constitutes a key factor in validating that the teaching-learning process, institutional resources and other educational indicators meet quality standards (Kanadli et al., 2022). A favorable satisfaction not only benefits the academic performance of university students (Rodrigues et al., 2024) and its continuity (Omodan, 2022; Shafi and Middleton, 2024), but also a projection in their personal and professional development (Jach and Trolan, 2022; Goni et al., 2025). The call to design strategies that bring benefits to higher education is not only a local or national task, but rather a global one (Lehtomäki et al., 2019). Considering that new teaching strategies have always brought complications among teachers due to their reluctance and slowness to adapt and adopt innovative changes; and, on the other hand, the low level of teacher preparation and competence is a historical problem that seems to persist over the years (Chanana, 2021), are factors that higher education must challenge itself to overcome.

On the other hand, teachers' effectiveness has a significant influence on the learning process of university students. This implies that this is a relevant link in promoting educational quality, which will be reflected in the quality of its graduates. Previous studies confirm that significantly improving the professional quality of teachers will also improve student performance (Sánchez and Craig, 2007; Tadesse et al., 2021), and satisfaction with studies (Chowdhury et al., 2024). Thus, the demands of the knowledge society have generated significant changes in the education system of South American countries, aimed at improving the quality of education (Muguerza-Florián et al., 2023, 2025b; Muguerza-Florián et al., 2025a; Acuña-Hurtado et al., 2024b, Acuña-Hurtado et al., 2024a); however, the results do not show improved student performance. And in that sense, Cooperative learning is being understood as a vital methodological strategy where it is emphasized that the student does not learn alone, but in collaboration, since it contributes to a better development of their capacities, which are resources to act competently (MINEDU, 2015). In recent years, special emphasis has been placed on the incorporation of active methodologies that consider learning as a dynamic and attractive process (Oortwijn et al., 2008; Abramczyk and Jurkowski, 2020), where you learn, in addition to theoretical knowledge, from experience and frequent interaction with classmates, since they Individuals build their own learning based on a common goal, harmonizing their essential factors; and providing teachers with tools to facilitate learning control through continuous assessment (Fernandez-Rio et al., 2017; Prieto-Saborit et al., 2022a; Prieto-Saborit et al., 2022b).

Programs related to cooperative learning have initially been community and alternative experiences dedicated to change and incorporating the values of cooperation and participation in student groups (Baena-Morales et al., 2020; Ramadhan et al., 2022). For many

years, South America has been considered an educational context with a "non-existent" margin for cooperative learning, while the promotion of a competitive spirit instead of a cooperative one was noted (Brown and Brown, 1995; Johnson and Johnson, 2021); however, a few decades ago, in this context it has become important to include cooperative learning in the teaching process (Jacob, 2020), while many educators have reflected on the fact that it seems easier to organize a "competition" than to "create cooperative activities." In this sense, cooperative learning attempts to take into account aspects of dialog, participation, learning retention, and cooperation (Balestiero da Silva et al., 2019; Mendo-Lázaro et al., 2022). The challenge of today's education to instill values of cooperation and teamwork is immense and is essential for social change (Brown and Brown, 1995; Shwalb and Shwalbt, 1995).

According to the latest research in South America, the education sector has increased its concern for higher education (Balbachevsky, 2020). Today, the emphasis of education is on the search for a collective participation of knowledge, and as a response, a need for critical thinking has been revealed in the learning process of higher education in countries such as Chile, Colombia, Bolivia, Peru, Venezuela and others (Villar-Guevara et al., 2024). In this sense, the topics of this research are closely linked to providing quality education, which is part of the Sustainable Development Goals (SDG) designed by the United Nations in its 2030 Agenda, which recognizes 17 global objectives that address global problems such as health, poverty, education, environmental protection and other areas (Leal et al., 2023; Pedraja-Rejas et al., 2023). Studying cooperative learning, teachers' effectiveness, and satisfaction with studies and leadership among university students would contribute to the SDGs in several ways. For example, SDG 4 focuses on ensuring quality education, ensuring inclusive, equitable, and high-quality education for all (Miranda-Gonçalves, 2023; Morris et al., 2023; Ocaña-Zúñiga et al., 2023). This translates into a constant concern for building the development of teachers who offer quality education and universities that strive to promote and achieve these objectives through their educational work and their impact in the Latin American context (McCowan, 2023; Villar-Guevara et al., 2024).

In this regard, after reviewing the aforementioned background, interest arose in delving deeper into satisfaction with studies, teachers' effectiveness, cooperative learning, and servant leadership as an integrative model that could add value to researchers, academics, education sector leaders, and specialists in public education, educational management, and pedagogy. Furthermore, bibliometric indicators reveal the 10 countries most interested in disseminating their scientific results: the United States, China, Spain, Indonesia, the United Kingdom, Australia, Taiwan, Germany, Turkey, and Malaysia. These countries have primarily applied their studies to diverse areas, sectors, and populations, such as the social sciences, business, administration and accounting, psychology, and engineering. Despite this, no empirical research has been found that examines how the suggested model behaves in higher education settings in Latin America, revealing a clear lack of scientific production for this cultural context.

The lack of scientific evidence prevents a proper understanding of the topics analyzed for the diverse sociocultural contexts involved in Latin American countries such as Peru, Colombia, Bolivia, and Chile. In summary, with the intention of addressing this theoretical and empirical gap, this research aims to analyze and validate the suggested model in the context of Latin America, thus providing valuable information for higher education management and leadership that seeks to achieve higher levels of academic satisfaction among Latin American university students. In this regard, the objective of the research was to evaluate the mediating role of satisfaction with studies in the influence of teachers' effectiveness and cooperative learning on servant leadership in the context of higher education.

2 Literature review

2.1 Teachers' effectiveness

Academics and specialists report that the effectiveness of teaching is analyzed based on student results, ensuring that they are learning and achieving those results (Sofyan et al., 2021; Villar-Guevara et al., 2024). Recent studies have provided new knowledge and concepts on performance evaluation, pedagogical skills, and university teacher effectiveness (Hoque et al., 2020; Pham et al., 2023). Also it is also known as a channel for improving academic performance and promotes approaches that foster critical thinking, deep learning, and analytical skills (Karagiannopoulou and Entwistle, 2019). Deep learning is defined by meaningful understanding and connection of ideas, while surface learning focuses on memorization (Tesouro et al., 2014). On the other hand, the contribution of Ayaneh et al. (2021) teachers' effectiveness refers to a teacher's ability to improve students' academic and overall performance, as measured by pedagogical, ethical, and assessment indicators. This could directly impact the acquisition of knowledge and attitudes necessary for students' academic and personal growth (Calaguas, 2012; Shahzad and Mehmood, 2019). Previous studies have analyzed the link between teachers' effectiveness and transformational, transactional, servant, educational, and teaching leadership (Lin and Hamid, 2025); however, all have focused on evaluation from the teacher's perspective, rather than on the leadership exercised by university students in the classroom. Although there are various theoretical models that focus on teacher effectiveness (Marshall et al., 2016; Shahzad and Mehmood, 2019; Matosas-López, 2023), Ayaneh et al. (2021) and Villar-Guevara et al. (2024). They suggest a four-component approach: subject matter knowledge, professional competence, ethical competence, and time management. This model has made a significant contribution to higher education.

2.2 Cooperative learning

Cooperative learning has a long history, dating back to the initial contributions of Dewey (1915) and Deutsch (1949), more than 50 years ago. It is known as a methodology in which small groups of students work collaboratively to achieve common goals. This pedagogical approach is based on five essential principles: positive interdependence, supportive interaction, individual responsibility, group processing, and social skills. These elements foster an

environment of mutual support, where students benefit not only from their own efforts but also from those of their peers. The theory of social interdependence states that cooperative work yields greater results than individualized or competitive tasks. Students who perceive greater workload with cooperative learning methodologies feel that their teachers are genuinely concerned about their academic growth and report being more academically engaged, satisfied with their learning, and motivated (Tadesse et al., 2021). Recent studies, such as that of Fernandez-Rio et al. (2017) and Zhou and Colomer (2024), demonstrate that cooperative learning not only improves academic performance, but also promotes social inclusion and the development of cognitive and emotional skills, responding to contemporary educational needs. Furthermore, their study identifies three approaches to cooperative learning: (1) Conceptual approach: dedicated to the development of general theoretical and practical programs, as well as to the definition of action principles that facilitate the adoption of the model; (2) Curricular approach: oriented toward the creation of specific and practical teaching resources aimed at addressing the fundamental contents of various curricular areas; and (3) Structural approach: focuses on the organization of the framework of the teaching-learning process with the purpose of fostering interaction between students.

2.3 Servant leadership

Servant leadership is a leadership approach focused on the well-being and development of followers, where the leader assumes the role of servant rather than authority (Agustin-Silvestre et al., 2024; Espejo-Pereda et al., 2025b; Espejo-Pereda et al., 2025a). This model, developed by Greenleaf (1977), challenges traditional leadership structures that prioritize power and control, putting instead the growth of others (Eva et al., 2019). This type of leadership must permeate all spheres of the leader's life, transcending the workplace to positively impact the community (Langhof and Guldenberg, 2020). In this sense, servant leadership fosters trust and commitment, strengthening organizational cohesion and performance (Sihombing et al., 2024). Overall, this approach not only generates organizational benefits but also promotes a culture based on empathy and service. In this regard, the educational system has made various efforts to adopt leadership styles that strengthen its institutions and optimize their growth and management. Even state initiatives have been taken to identify barriers and facilitate leadership (Crippen and Willows, 2019).

In educational contexts, analyzing servant leadership based on the self-perceptions of university students offers valuable insights into their internalized values, motivational orientations, and intentional leadership approaches. In contrast to approaches that focus solely on observable behaviors, self-perception can help assess the aspirational and formative dimensions of leadership identity (Eva et al., 2019). This approach is especially relevant in higher education, where emerging leaders may not yet have consistent leadership experiences but can link their principles to ethical leadership intentions. Furthermore, empirical evidence supports the validity of self-perceived servant leadership measures, particularly in predicting prosocial attitudes and intrinsic motivation among students (Barbuto and Wheeler, 2006). Consequently, capturing students' perceptions of servant leadership can facilitate a more comprehensive understanding of their potential for ethical leadership in future professional contexts.

The importance of addressing servant leadership in educational contexts lies in the fact that it fosters collaboration, examines the mediating role of organizational justice and trust (Dahleez and Aboramadan, 2022), improves motivation and positively impacts work commitment (Aboramadan et al., 2020), is a proactive predictor of worker performance (Abbas et al., 2020) and the relationship is strengthened when tested with religiosity, develops future leaders, strengthens the educational community, increases staff job satisfaction (Dahleez and Aboramadan, 2022), facilitates problem-solving, and promotes equity and inclusion. Indeed, servant leadership is essential in educational contexts because it creates an environment in which the well-being of students, educators, and staff is a priority (Sihombing et al., 2024; Udin, 2024). This not only improves the quality of education and contributes significantly to SDG 4 (Miranda-Gonçalves, 2023; Morris et al., 2023; Tomasella et al., 2023; Bray, 2024), but also transforms an educational community from more solid principles and forming leaders who value service to others, fostering a more humanized culture (Villar-Guevara et al., 2024).

2.4 Satisfaction with studies

It is known to be a key factor in learning and academic success. Satisfaction with studies, as assessed by university students, has been linked to academic performance (Messerer et al., 2024), task delay and intentions to abandon (Lindner et al., 2023), academic procrastination (Scheunemann et al., 2022), psychological distress and academic self-efficacy (Carranza et al., 2022), personality traits (Künsting and Lipowsky, 2011) and vocational guidance (Heise et al., 1997). This creates trust and a sense of belonging, which reduces dropout rates (Merino-Soto et al., 2017). Satisfaction with studies is used as an indicator by educational institutions, helping them adjust plans and methods to provide a personalized education that is more in line with student expectations.

In this sense, satisfaction with studies is the subjective evaluation of the fulfillment of the student's goals and expectations (Karabatak et al., 2020). It can be understood as a very valid construct for measuring and evaluating student well-being (Ravina-Ripoll et al., 2021). According to Lindner et al. (2023) this behavior is analyzed both as a stable trait and as a temporary state, influenced by contextual factors. Recent research by Reinhold et al. (2022) and Mostert et al. (2024) they agree that this translates to the degree to which students value various aspects of their academic experience, including their major, study conditions, and the fulfillment of their expectations. This concept can be understood as a global measure of student well-being, reflecting their level of satisfaction, their overall experience, and their positive attitude toward their studies and the university institution. Using an expectancy-value approach, the perception of success and the assessment of tasks are fundamental to understanding this behavior, highlighting the need for interventions that promote self-regulation (Scheunemann et al., 2022).

Based on the above, the following study hypotheses are proposed:

H1: Teachers' effectiveness positively influences satisfaction with studies.

H2: Teachers' effectiveness positively influences servant leadership.

H3: Cooperative learning positively influences satisfaction with studies.

H4: Cooperative learning positively influences servant leadership.

H5: Satisfaction with studies positively influences servant leadership.

H6: Satisfaction with studies mediates the influence of teachers' effectiveness on servant leadership.

H7: Satisfaction with studies mediates the influence of cooperative learning on servant leadership.

Taking into account the hypotheses mentioned above, the conceptual model resulting from the study can be visualized, as represented in Figure 1.

3 Materials and methods

3.1 Study design and participants

This research is classified as an explanatory cross-sectional study (Ato et al., 2013). The study population consisted of university students from four South American countries (Peru, Bolivia, Chile, and Colombia), who belong to a private educational network with 124 higher education institutions worldwide. A condition for participating in the study was that university students be enrolled in the 2023-II or 2024-I academic semester, be over 18 years of age, and take classes in person. Excluding all students enrolled in the blended and distance learning modalities.

Non-probability convenience sampling was used to collect data for this research (Otzen and Manterola, 2017). This type of sampling allowed for the selection of easily accessible cases due to the proximity of the respondents to the research team; they were university students who were willing to participate, and were more easily accessible due to their schedules, courses, or study methods, and homogenous extracurricular activities. Participants were approached in a variety of settings, such as large gatherings, study halls, campus rest centers, libraries, university cafeterias and convenience stores, and at various social events. The Soper (2024) electronic tool was also used. This tool takes into account the number of variables, both observed and latent, in the SEM, along with the anticipated effect size ($\lambda = 0.2$), the desired level of statistical significance ($\alpha = 0.05$), and the required statistical power ($1 - \beta = 0.80$). Based on these parameters, it was determined that 342 university students needed to be included in the sample. However, a total of 2,165 university students participated, with an almost equal distribution between women (51.8%) and men (48.2%), with ages ranging from 18 to 56 years ($M = 21.26$; $SD = 3.48$). The inclusion criteria stipulated those participants had to be over 18 years of age and enrolled in the in-person modality at eligible universities. Individuals who did not meet the age and study modality criteria were excluded. The majority of participants were between 18 and 20 years old (51.1%), were studying on-campus in Peru (41.7%) and were in their first year of university studies, representing 40.7%, as shown in Table 1.

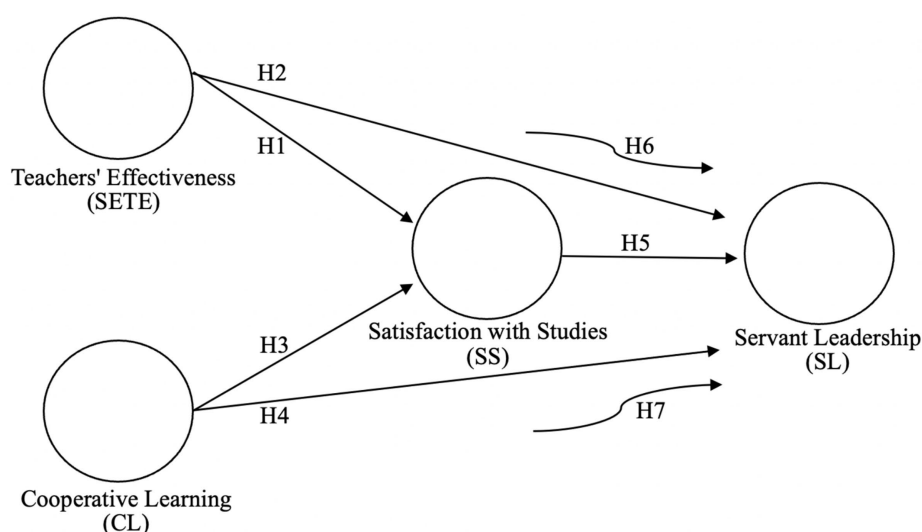


FIGURE 1
Proposed hypothetical model.

TABLE 1 Profile sociodemographic of the participants ($n = 2,165$).

Characteristic	Category	Frequency	%
Sex	Female	1,122	51.8
	Male	1,043	48.2
Age range	18–20 years old	1,107	51.1
	21–30 years old	1,012	46.8
	31–56 years old	46	2.1
University campus	Peru	903	41.7
	Bolivia	534	24.7
	Chile	508	23.5
	Colombia	220	10.1
Year of study	First	882	40.7
	Second	449	20.7
	Third	333	15.4
	Fourth	307	14.2
	Fifth	101	4.7
	Sixth	41	1.9
	Seventh	52	2.4

3.2 Measurement scales

For data collection, an online questionnaire was designed and divided into three parts. The first section provided instructions for completion. The second section requested participants' sociodemographic information, and the final section presented the measurement scales. This research employed four reliable measurement scales, which are detailed below:

3.2.1 Teachers' effectiveness

The Student Evaluation of Teachers' Effectiveness (SETE) Scale, adapted and validated in Latino samples by Villar-Guevara et al.

(2024), consists of 28 items divided into 4 factors: subject knowledge, professional competence, ethical competence, and time management (the same ones that for this study were coded as TE1, TE2, TE3, and TE4). A 5-point Likert-type response format was used, ranging from 1 to 5 (never, rarely, occasionally, frequently, and very frequently). In the present investigation, the Cronbach's alpha coefficient value, which estimates reliability, was good ($\alpha = 0.903$).

3.2.2 Cooperative learning

The Cooperative Learning Questionnaire (CLC), designed and validated by Fernandez-Rio et al. (2017), contains 20 items divided into 5 factors: social skills, group processing, positive interdependence, promoting interaction and individual responsibility (the same ones that for this study were coded as CL1, CL2, CL3, CL4 and CL5). A 5-point Likert-type response format was used, ranging from 1 to 5 (strongly disagree, disagree, undecided, agree and strongly agree). In the present investigation, the value of the Cronbach's alpha coefficient that estimates the reliability was good ($\alpha = 0.912$).

3.2.3 Servant leadership

The Servant Leadership Short Scale (SLSS), validated in students by Rivera et al. (2017), a one-dimensional scale consisting of 14 items (the same ones that for this study were coded as SL1 to SL14). An example item was: "I am willing to make personal sacrifices to serve others." A 5-point Likert-type response format was used, ranging from 1 to 5 (strongly disagree, disagree, undecided, agree, and strongly agree). In the present research, the value of Cronbach's alpha coefficient that estimates reliability was good ($\alpha = 0.947$).

3.2.4 Satisfaction with studies

The Brief Scale of Study Satisfaction (BSSS), designed and validated in the Peruvian context by Merino-Soto et al. (2017), a one-dimensional scale consisting of 3 items (the same ones that were coded as SS1, SS2, and SS3 for this study). An example item was: "I am currently satisfied with the way I study." A 5-point Likert-type response format was used, ranging from 1 to 5 (strongly disagree, disagree, undecided, agree, and

strongly agree). In the present research, the Cronbach's alpha coefficient value, which estimates reliability, was good ($\alpha = 0.895$).

3.3 Ethical considerations

The research was approved by the Ethics Committee of the Graduate School of a private university in Peru (2023-CE-EPG-00071). Subsequently, from September 2023 to March 2024, university students who met the inclusion criteria were invited to complete an online questionnaire via a Google Form. Participants were informed at the beginning of the survey that their responses would be collected anonymously and used exclusively for statistical and academic purposes. No Personally Identifiable Information (PII), such as names, personal phone numbers, IP addresses, or email addresses, was requested or stored. The online platform was configured to disable tracking features, and data was stored securely with access restricted to the research team. Preserving anonymity in online data collection is a key principle for safeguarding participant privacy and reducing social desirability bias. Furthermore, this study followed the confidentiality rules and principles of the Declaration of Helsinki (Manzini, 2000; Puri et al., 2009), obtaining informed consent from each respondent, confirming the premise: "I acknowledge that by completing this questionnaire, I am giving my consent to participate in the study."

3.4 Statistical analysis

Two statistical software programs were used to analyze the data: IBM SPSS version 22 was used to analyze the sociodemographic data of the participants, which are shown in Table 1. In addition, discriminant validity, convergent validity and reliability tests were performed to evaluate the measurement model (Hair et al., 2019). Smart-PLS version 4.0 was used to test the conceptual model (see Figure 1) using a two-step approach that includes the evaluation of the measurement model and the evaluation of the structural model (Hair et al., 2019). The partial least squares (PLS-SEM) method was used to test the hypotheses. PLS-SEM is a comprehensive multivariate statistical analysis approach that includes both structural and measurement components to simultaneously examine the relationships between each of the variables in a conceptual model. It is characterized by multivariate analysis, i.e., it involves a number of variables equal to or greater than three (Hair et al., 2010). In addition, PLS-SEM was used in the present study because it facilitates theory building (Hair et al., 2011). The significance of the path coefficients (p and t values) was assessed to evaluate the structural model. The coefficient of determination (R^2) was used to measure the predictive relevance of the structural model. Finally, the overall model fit was measured using the root mean square residual (SRMR). It is noteworthy that behavioral scholars have praised the application of PLS-SEM in interdisciplinary research (Bhutto et al., 2022).

4 Results

Before performing the model analyses, an exploratory data analysis was previously performed using SPSS-22 software and it was

detected that there were no inconsistencies or outliers, so there was no need to transform the data. Furthermore, according to Professor Gaskin, since it is a Likert scale, there are no outliers, since the participant responds at the extreme (1 or 5), so it does not represent a representative atypical component (Gaskin, 2021). The results of the research are shown in two phases: (1) evaluation of the measurement model, which assesses the validity and reliability of the measurement model, and (2) evaluation of the structural model, which estimates the structural model and addresses the relationships between the constructs (Hair et al., 2014).

4.1 Evaluation of the measurement model

To assess the internal consistency of the measurement model, it is necessary to evaluate the convergent validity and reliability of the construct. Convergent validity is acceptable if the loading for each indicator is greater than 0.70 (Hair et al., 2011). The composite reliability (CR) must be greater than 0.70, and the average variance extracted (AVE) must be greater than 0.50 (Chin, 2010; Hair et al., 2014). Cronbach's alpha coefficient (α) should be greater than 0.70. The factor tends to be similar to CR values when using factor-based algorithms (Kock, 2015). Table 2 reveals that all factor loadings had values greater than 0.70. Likewise, all α and CR values for each item were greater than 0.80, and all AVE values were greater than 0.60. Therefore, the convergent validity of the measurement model was excellent.

To evaluate the discriminant validity of the model, the Fornell and Larcker (1981) criteria were used and Heterotrait-Monotrait (HTMT; Henseler et al., 2015). When analyzing the data under the Fornell-Larcker criteria, the square root of the AVE was calculated for each factor, which must be greater than the highest correlation between the factors of the measurement model (Hair et al., 2014), showing that all diagonal values detailed in bold were greater than the correlation. On the other hand, to evaluate the HTMT criteria, it was considered that the values should be less than 0.95 (Henseler et al., 2015), to take into account the existence of discriminant validity between two reflective constructs. In this regard, the highest correlation was observed to be 0.788, well below the expected limit. The results analyzed show that the discriminant validity of the model is met, as evidenced in Table 3.

4.2 Evaluation of the structural model

The proposed hypotheses were tested using the PLS-SEM technique. Predictive relevance values were used for model fitting. Cross-validated redundancy values (R^2) represent the model's predictive relevance. As reported by Hair et al. (2014) and Henseler et al. (2015), R^2 values should be greater than 0 for model accuracy. R^2 values were determined using the blindfolding method where all endogenous construct values were greater than 0, representing model accuracy. The endogenous latent variables with their respective R^2 of the present work for both satisfaction with studies (SS) and servant leadership (SL) were 0.256 and 0.571, respectively (see Table 4). That is, the R^2 values had acceptable to substantial values.

Figure 2 and Table 5 show the results of the structural model with Path Coefficients between ± 1 (Hair et al., 2019). The strength of the relationship between variables can be examined through the path

TABLE 2 Elements of the scale.

Predictor	Code	Outer loadings	a	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
Cooperative learning (CL)	CL1	0.862	0.912	0.914	0.934	0.739
	CL2	0.881				
	CL3	0.841				
	CL4	0.887				
	CL5	0.826				
Teachers' effectiveness (SETE)	SETE1	0.887	0.903	0.912	0.932	0.774
	SETE2	0.893				
	SETE3	0.861				
	SETE4	0.879				
Servant leadership (SL)	SL1	0.757	0.949	0.951	0.955	0.604
	SL2	0.771				
	SL3	0.724				
	SL4	0.734				
	SL5	0.748				
	SL6	0.814				
	SL7	0.843				
	SL8	0.793				
	SL9	0.798				
	SL10	0.784				
	SL11	0.722				
	SL12	0.828				
	SL13	0.819				
	SL14	0.728				
Satisfaction with studies (SS)	SS1	0.913	0.895	0.897	0.934	0.826
	SS2	0.893				
	SS3	0.920				

TABLE 3 Discriminant validity.

Predictor	Fornell–Larcker criterion				Heterotrait–Monotrait ratio (HTMT)			
	CL	SETE	SL	SS	CL	SETE	SL	SS
CL	0.860							
SETE	0.709	0.880			0.774			
SL	0.736	0.597	0.777		0.788	0.637		
SS	0.489	0.439	0.486	0.909	0.539	0.481	0.526	

The square root of AVEs is shown diagonally in bold, *** $p < 0.001$ (significance level).

coefficient values. Path coefficient values close to +1 indicate a strong relationship, and vice versa (Hair et al., 2016). The path coefficient values, the p -value, and the t -statistics were used to accept and reject the hypotheses. In this study, the conceptual model contains seven hypotheses. The results of the tested hypotheses are summarized in Table 5.

Hypothesis testing and path coefficient evaluation can be seen in Table 5. Results show that teachers' effectiveness (SETE) positively influences satisfaction with studies (SS; $\beta = 0.185$;

TABLE 4 R^2 of the endogenous latent variables.

Construct	R^2
Satisfaction with studies (SS)	0.256
Servant leadership (SL)	0.571

$p = 0.000$; $t = 6.297$) and servant leadership (SL; $\beta = 0.122$; $p = 0.000$; $t = 4.247$), supporting hypotheses H1 and H2. Results also show that cooperative learning (CL) positively influences satisfaction with studies (SS; $\beta = 0.358$; $p = 0.000$; $t = 11.491$) and servant leadership (SL; $\beta = 0.576$; $p = 0.000$; $t = 21.186$), supporting hypotheses H3 and H4. Likewise, it is also validated that satisfaction with studies (SS) positively influences servant leadership (SL; $\beta = 0.151$; $p = 0.000$; $t = 7.734$), which supports hypothesis H5. In addition, these results support that satisfaction with studies (SS) mediates the positive influence of teachers' effectiveness (SETE) on servant leadership (SL; $\beta = 0.028$; $p = 0.000$; $t = 4.784$), and that it also mediates the positive influence of cooperative learning (CL) on servant leadership (SL; $\beta = 0.054$; $p = 0.000$; $t = 6.531$), which is why hypotheses H6 and H7 are accepted.

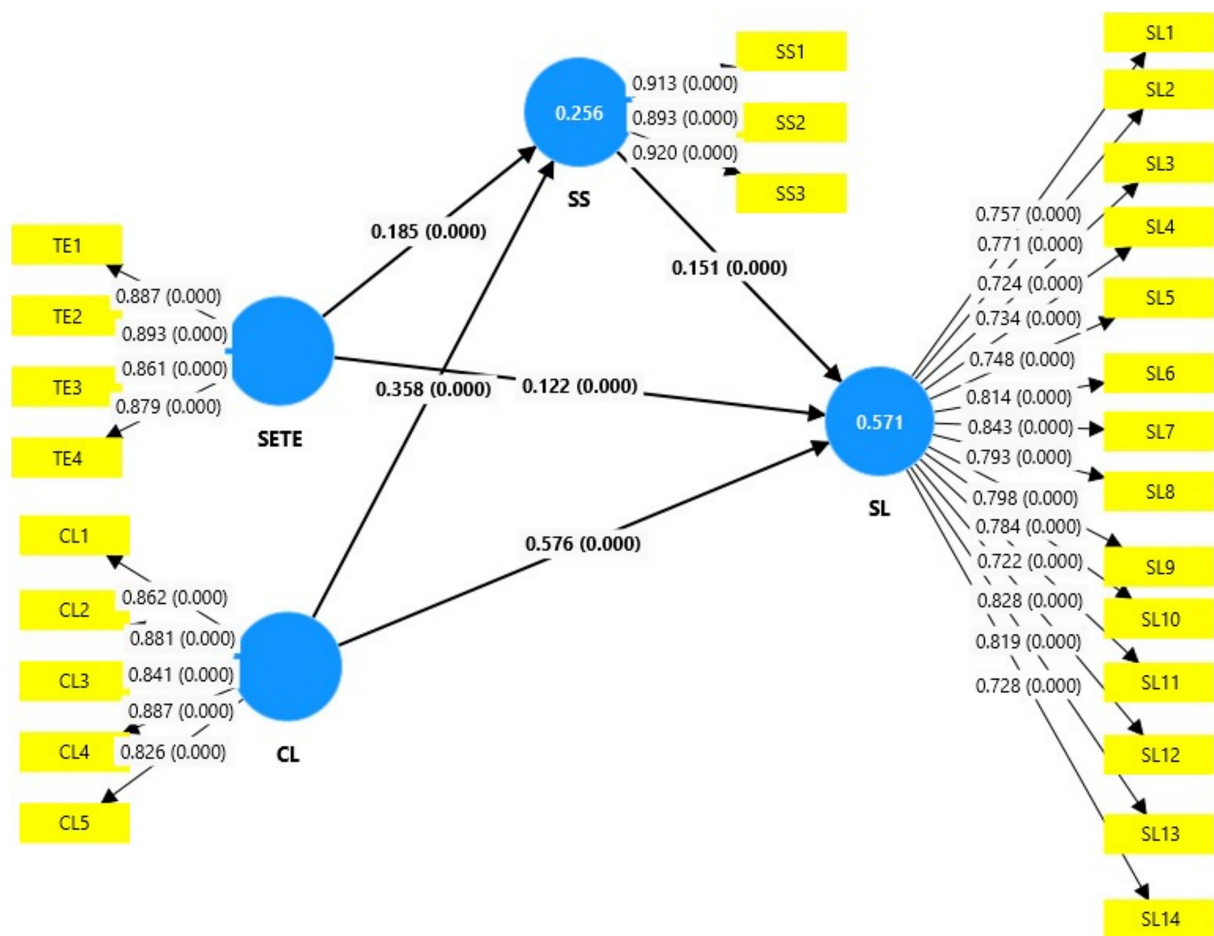


FIGURE 2
Structural model.

TABLE 5 Estimates of the proposed hypotheses.

H	Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	p values	Decision
H1	SETe→SS	0.185	0.185	0.029	6.297	0.000	Accepted
H2	SETe→SL	0.122	0.122	0.029	4.247	0.000	Accepted
H3	CL→SS	0.358	0.358	0.031	11.491	0.000	Accepted
H4	CL→SL	0.576	0.576	0.027	21.186	0.000	Accepted
H5	SS→SL	0.151	0.151	0.020	7.734	0.000	Accepted
H6	SETe→SS→SL	0.028	0.028	0.006	4.784	0.000	Accepted
H7	CL→SS→SL	0.054	0.054	0.008	6.531	0.000	Accepted

5 Discussion

5.1 Discussion of the findings

The objective of this research was to evaluate the mediating role of satisfaction with studies in the influence of teachers' effectiveness and cooperative learning on servant leadership in the context of higher education. The study of teaching and learning in higher education is essential to understanding how educational processes can

foster individual and social development. According to [Knol et al. \(2016\)](#) and [Al Kuwaiti et al. \(2021\)](#), effective teaching promotes the acquisition of knowledge, skills, and values that enhance social mobility, economic development, and cultural change. However, evidence suggests that many undergraduate students are failing to achieve meaningful learning due to inadequate methodological approaches and teaching cultures that do not foster active student participation ([Tadesse et al., 2021](#)). Despite efforts to improve teaching practice through professional development programs, studies such as

that by [Hobbiss et al. \(2021\)](#). They indicate that these programs do not always achieve the expected changes in pedagogical practices, highlighting the need for more effective methodologies and qualitative feedback to support educational growth.

Teacher effectiveness has been widely debated, with theoretical and empirical approaches seeking to identify the characteristics that define a good educator. Recent research suggests that teacher effectiveness depends not only on classroom experience but also on factors such as a healthy teacher-student relationship, empathy, and teacher enthusiasm ([Kuzmanovic et al., 2012](#); [Rocha, 2013](#)). However, studies have shown that experience does not always translate into greater effectiveness; some novice teachers may be more dynamic and innovative than their more experienced colleagues ([Hoque et al., 2020](#); [Saeeda et al., 2021](#)). Continuous assessment of teacher effectiveness is crucial to improving educational quality and ensuring that learning experiences are meaningful and adaptive to the needs of students and the global environment ([Ayaneh et al., 2021](#)). Finally, it is worth highlighting that all the proposed hypotheses were accepted. However, regarding Hypothesis 6, the structural model confirmed that satisfaction with studies mediates the influence of teachers' effectiveness on servant leadership. Although the direct effect was statistically accepted, its effect size was small ($\beta = 0.028$), indicating that the impact of teachers' effectiveness is primarily indirect through student satisfaction, which emerges as a key factor in the development of servant leadership.

5.2 Theoretical-strategic implications and practical recommendations

The results of this research have a considerable impact on educational policies, teacher training, and the methodologies used in higher education classrooms. First, the findings highlight the close link between teachers' effectiveness and student satisfaction with their academic experience, indicating that teachers are a key factor in how various aspects of higher education are perceived. This could motivate institutions to develop more appropriate selection processes that recognize and value the work of teachers who demonstrate strong effectiveness and excellence in their performance. Universities should consider establishing training programs that focus on enhancing the pedagogical competencies of their teachers. Such initiatives could prioritize effective teaching techniques, classroom management skills, and methods that encourage active student participation. By equipping teachers with these tools, universities would have the opportunity to offer higher-quality teaching.

Furthermore, the proven link between SETE and servant leadership opens the door to the creation of seminars, workshops, and interactive courses that allow faculty to become familiar with the qualities of a servant leader, as well as to promote classroom academic practices based on this model for individual and group leadership. This model was addressed by the private educational network involved in the study. While this is a leadership approach theoretically prioritized in the private network's educational model, which to some extent has encouraged its inclusion in the study's hypothetical model, it is believed that there is still a significant gap to be addressed regarding faculty understanding of the classroom, the credibility of this approach, and the actual practice of its most salient characteristics among senior leaders, faculty deans, school principals, and department

heads. In this sense, it is believed that a strategically progressive and transversal approach would produce significant results in students' university experience, their professional development, and their future lives.

Based on this perspective, the findings show that teacher training should focus not only on the development of pedagogical competencies but also on cultivating socio-emotional skills and ethical leadership focused on service. International literature agrees that effective academic leadership models in the 21st century are those that combine professional excellence with a vocation for service and care for students ([Greenleaf, 1997](#); [Eva et al., 2019](#)). Incorporating humanized leadership modules into teacher training programs would contribute to creating empathetic, collaborative, and resilient educational communities in the face of contemporary challenges in higher education. Along these lines, promoting collaborative methodologies, such as co-teaching and cooperative learning, strengthens shared leadership competencies and fosters co-responsibility in the teaching-learning process. Thus, the university is configured as a space for the development of servant leaders capable of transforming the institutional culture based on an ethic of service and commitment to the common good.

In the public policy arena, the results of this study suggest the need to strengthen teacher evaluation standards by aligning them with international frameworks that promote quality, equity, and accountability in higher education. Organizations such as the [OCDE \(2025\)](#) and [UNESCO \(2024\)](#) emphasize that teacher evaluation should be integrated into systemic continuous improvement policies, in which peer and student feedback is used not as a sanctioning mechanism, but as a means to guide professional development and pedagogical innovation. This perspective coincides with the approach of [Darling-Hammond \(2021\)](#), who argues that the most successful education systems are those that articulate their evaluation policies with ongoing teacher training strategies. In this way, the results of this research engage with global debates on evidence-based policies and frameworks for teaching excellence, underscoring that participatory and formative evaluation constitutes an essential tool for higher education governance and the sustainability of educational reforms.

Furthermore, it would be advisable for teacher training programs to include modules that address the development of humanized leadership in university students. Training that enhances teachers' ability to connect and empathize with their students can transform classroom dynamics and create a more favorable learning environment. The study's results also highlight the benefits offered by collaborative learning strategies. Universities should consider implementing models such as co-teaching or co-teaching. These collaborative methodologies could provide university students with a more enriching learning experience, improving their classroom experiences and allowing them to develop their leadership skills during group activities. Furthermore, universities should allocate resources to training teachers in the effective use of digital tools, ensuring a more positive perception among students.

5.3 Limitations and future research

While this study provides valuable information on course satisfaction, teachers' effectiveness, cooperative learning, and servant leadership, it has some limitations that should be acknowledged. First,

the research used a self-report questionnaire, which represents a major limitation. While the sample was carefully selected and followed a rigorous methodological procedure, the anonymous nature of the method and the way in which the data were collected could have affected the accuracy of the responses. This could be due to factors such as response bias or indirect participation by respondents, especially in large samples, social desirability or confirmation bias, selective recall, inconsistency in perception, or bias toward a particular grade due to having previously failed a course, having psychological problems that disrupt the student's concentration, or having negative relationships with a professor. Therefore, it is recommended that future studies incorporate data triangulation or methods (Podsakoff et al., 2003; Creswell and Plano Clark, 2017), such as combining self-reports with observational measures, interviews, or administrative records, to improve the robustness and validity of the findings.

Second, the study sample, although sizable, was limited to university students from a specific context in four Latin American countries (Peru, Bolivia, Chile, and Colombia). Furthermore, participants came exclusively from a private educational network, which might not reflect the diversity of experiences in public or private institutions that maintain different educational philosophies and/or models in other regions of the world. While the reported findings offer relevant information for the sector, the study's external validity is limited. Therefore, generalization of the findings to other educational contexts or populations should be undertaken with caution. In this regard, future studies should consider more diverse samples to improve the generalizability of the results. Future research would benefit from longitudinal designs, mixed-methods approaches, and more heterogeneous samples to address these limitations and deepen understanding of the observed relationships.

Third, the use of non-probability convenience sampling is also identified as a limitation. While this methodology can be useful given the Latinx scope of the study, it limits the generalizability of the results solely due to the researcher's accessibility, excluding potential Latinx participants. Future studies could replace this type of sampling with other methods, such as stratified sampling or alternative methods that can improve representativeness and reduce the margin of error in the sampling process. These strategies would not only simplify data collection but also facilitate cross-cultural comparisons by including a broader range of population groups, educational cultures, types of university management, study modalities, and diverse educational models or philosophies.

Fourth, the cross-sectional design of the study limits the ability to draw causal inferences or capture the evolving dynamics between the variables studied over time. This design only captures a snapshot of university students over a given period, which impedes understanding of how perceptions of teacher efficacy, cooperative learning, satisfaction with studies, and servant leadership may change over time or under varying conditions. However, longitudinal studies can analyze changes over time to provide a more complete understanding of their impact and behavior, in addition to temporal and situational dynamics.

Finally, this study only focused on four predominant variables in the context of higher education in Latin America; however, future research should explore additional variables, such as teaching experience, sense of academic purpose, academic mindfulness, employability expectations, perceived teacher empathy, and knowledge co-creation, to better understand the dynamics of higher education teaching.

6 Conclusion

The importance of addressing topics involving higher education is increasingly recognized, with greater impetus since the education sector has expanded rapidly throughout the world since the second half of the 20th century. These educational conditions have created the need to evaluate the mediating role of satisfaction with studies in the influence of teachers' effectiveness and cooperative learning on servant leadership in the context of higher education. An explanatory study was conducted considering the participation of 2,165 university students from Latin America, with an almost equal distribution between women (51.8%) and men (48.2%), with ages ranging from 18 to 56 years ($M = 21.26$; $SD = 3.48$). Data were collected through an online self-report questionnaire using the Student Evaluation of Teachers' Effectiveness (SETE) scale, the Cooperative Learning Questionnaire (CLC), the Servant Leadership Short Scale (SLSS), and the Brief Scale of Study Satisfaction (BSSS).

The hypotheses were supported, observing the effect on satisfaction with studies of both teachers' effectiveness ($\beta = 0.185$; $p = 0.000$; $t = 6.297$) and cooperative learning ($\beta = 0.358$; $p = 0.000$; $t = 11.491$); and the effect on servant leadership of both teachers' effectiveness ($\beta = 0.122$; $p = 0.000$; $t = 4.247$), cooperative learning ($\beta = 0.576$; $p = 0.000$; $t = 21.186$), and satisfaction with studies ($\beta = 0.151$; $p = 0.000$; $t = 7.734$). Likewise, the results indicate the mediating role of satisfaction with studies in the effect of teachers' effectiveness on servant leadership ($\beta = 0.028$; $p = 0.000$; $t = 4.784$), and of cooperative learning on servant leadership ($\beta = 0.054$; $p = 0.000$; $t = 6.531$). This new model suggests a re-evaluation of existing models on these topics. The results of this research provide a valuable perspective for higher education management and leadership that seeks to achieve higher levels of satisfaction with studies among Latin American university students. This perspective deserves special attention in future research, including the exploration of other potential factors and the application of these findings in diverse contexts and cultures.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Ethics Committee of the Graduate School of the Peruvian Union University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MV-G: Supervision, Investigation, Methodology, Writing – review & editing, Conceptualization, Validation, Visualization, Resources, Funding acquisition, Project administration, Writing – original draft. EG-S: Data curation, Writing – review & editing,

Software, Writing – original draft, Funding acquisition, Formal analysis. IF-M: Investigation, Writing – review & editing, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict.

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