TPM Vol. 32, No. S3, 2025
ISSN: 1972-6325
https://www.tpmap.org/

PEDAGOGICAL LEADERSHIP AND INTERACTIVE LEARNING IN HIGHER TEACHER EDUCATION: INSIGHTS FROM A PERUVIAN STUDY

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Abstract

This research analyzes the relationship between pedagogical leadership and interactive learning among students at a private Professional School of Education in Ayacucho, Peru. A quantitative approach was used, with a non-experimental, cross-sectional design and a probabilistic sample of 175 students. Data were collected through expert-validated questionnaires with high reliability ($\alpha > 0.98$). Results show that 32% of students perceive a low level of pedagogical leadership, and 47% consider interactive learning to be inadequate. The correlations obtained (Rho $\approx$ 0.58) indicate a positive and significant relationship between the two variables, particularly in the dimensions of learning standards, quality education, and a professional learning culture. Weaknesses were identified in pedagogical supervision, collaborative planning, and the implementation of innovative teaching strategies, which negatively affect classroom interaction and student performance. It is concluded that strengthening pedagogical leadership is key to improving educational quality and promoting student-centered, participatory learning environments. It is recommended to broaden the research approach through comparative studies and mixed methods that explore the qualitative dimension of the phenomenon and guide institutional policies integrating leadership, pedagogical innovation, and teacher commitment.

Keywords: pedagogical leadership, interactive learning, higher education, student participation

Resumen

La presente investigación analiza la relación entre el liderazgo pedagógico y el aprendizaje interactivo en estudiantes de una escuela de educación superior pedagógica privada de Ayacucho- Perú. Se empleó un enfoque cuantitativo, con diseño no experimental, de corte transversal y una muestra probabilística de 175 estudiantes. Para la recolección de datos se aplicaron cuestionarios validados por juicio de expertos y con alta confiabilidad ($\alpha >$ 0.98). Los resultados evidencian que el 32 % de los estudiantes percibe un nivel bajo de liderazgo pedagógico y el 47 % considera inadecuado el aprendizaje interactivo. Las correlaciones obtenidas (Rho $\approx$ 0.58) muestran una

relación positiva y significativa entre ambas variables, especialmente en las dimensiones de estándares de aprendizaje, educación de calidad y cultura de aprendizaje profesional. Se identificaron deficiencias en la supervisión pedagógica, la planificación colaborativa y la implementación de estrategias didácticas innovadoras, las cuales afectan la interacción en el aula y el desempeño estudiantil. Se concluye que el fortalecimiento del liderazgo pedagógico es clave para mejorar la calidad educativa y promover entornos participativos centrados en el estudiante. Se recomienda ampliar el enfoque investigativo mediante estudios comparativos y metodologías mixtas que profundicen en la dimensión cualitativa del fenómeno, y que orienten el diseño de políticas institucionales que articulen liderazgo, innovación pedagógica y compromiso docente.

Palabras clave: liderazgo pedagógico, aprendizaje interactivo, educación superior, participación estudiantil

INTRODUCTION

In the 21st century, education has undergone a profound transformation driven by technological advances, new social demands, and the need to rethink traditional pedagogical approaches. In this context, educational leaders and teachers have had to actively adapt, seeking innovative strategies to optimize the teaching-learning process (Sánchez & Naula, 2020). Within this dynamic of change, pedagogical leadership has become a key factor, as it directly influences the implementation of interactive methodologies, curricular planning, and the management of inclusive educational environments (Abreu et al., 2018).

Globally, more than 90 million students are enrolled in teacher training institutes and pedagogical schools, of whom 35% remain under traditional academic leadership systems that limit active participation and critical thinking (Organisation for Economic Co-operation and Development [OECD], 2025). In addition, around 27 million prospective teachers report that unidirectional expository methods represent an obstacle to the development of reflective competencies (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2024a). This situation is exacerbated by the fact that 58% of initial teacher training programs lack pedagogical leaders trained in educational innovation, which limits opportunities for meaningful classroom interaction (UNESCO, 2024b; OECD, 2024a).

In Latin America, the outlook is no different. Nearly 6 million students are enrolled in pedagogical institutes, yet approximately 1.9 million receive training with limited participatory feedback (UNESCO, 2023). Despite regulatory progress, only 340 institutions have implemented interactive models supported by specialized teaching leadership (UNESCO, 2025). According to the OECD (2024b), 31% of students report that the classroom climate does not foster dialogue or collaborative knowledge building. Additionally, limited institutional flexibility and the absence of transformative leadership models hinder the implementation of student-centered approaches (UNESCO, 2024c).

In the Peruvian context, the situation reflects similar challenges. Of the more than 120,000 students enrolled in teacher training institutes, 42,000 study in private institutions, and only 73 directors have been certified in participatory leadership (UNESCO, 2024d; Ministry of Education of Peru [MINEDU], 2021a). Moreover, 28% of students state that they do not participate actively in class due to the lack of pedagogical stimuli, highlighting an educational structure still centered on the teacher (MINEDU, 2021b, 2022). The shortage of transformational leadership remains a barrier to the development of communicative, reflective, and collaborative competencies among future teachers (UNESCO, 2024a).

Given the above, it is possible that these problems are linked to the type of interaction developed during learning and to the interactive activities being implemented—particularly those related to feedback processes and others.

Through interaction and informal conversations with teachers and students at the Private School of Higher Pedagogical Education (Professional School), it became evident that, in some cases, teachers are not being supported in improving student learning, nor is a school culture being built that encourages the participation of educational stakeholders in the actions being undertaken by the institution. This may be due to difficulties in generating spaces and content that foster interactive learning in classrooms. Similarly, it is possible that a proper consensus is not being reached among stakeholders when planning learning objectives. If this persists, it may hinder student learning and the emergence of interactive dynamics during the educational process, as improvement processes will not occur without considering the participation and opinions of the educational community. Hence, the need arises to conduct further research on a potential relationship between pedagogical leadership and interactive learning.

The study of pedagogical leadership and its relationship with interactive learning in students of Professional Schools is justified because both elements directly influence the quality of training and the development of teaching competencies. Leadership oriented toward didactic innovation promotes participatory environments, stimulates student autonomy, and strengthens pedagogical mediation. Likewise, interactive learning contributes to consolidating reflective and collaborative processes that are essential to professional training. Analyzing this articulation allows for the improvement of institutional practices, enhancement of academic performance, and effective responses to contemporary educational challenges.

This research poses the following question: *How is pedagogical leadership related to interactive learning in students of a Professional School in Ayacucho, Peru?* The general objective is: *To measure the relationship between pedagogical leadership and interactive learning in students of a Professional School in Ayacucho, Peru.*

THEORETICAL FRAMEWORK

As highlighted by Hameed Khan and Khan (2025), contemporary transformations in education have given rise to theoretical models that emphasize the strategic role of those leading formative processes. The Instructional Leadership Theory, developed by Hallinger in the 1980s, asserts that school leaders go beyond mere resource management to actively enhance learning through curriculum supervision, teacher support, and the cultivation of a shared institutional vision (Al Sharafat et al., 2024). According to Hellström and Hagquist (2021), this framework underscores the necessity of linking leadership directly to academic outcomes by fostering a culture of high expectations, continuous assessment, and formative feedback. Hallinger's model comprises three key dimensions: goal setting, instructional program management, and the development of a supportive school climate (Hameed Khan & Khan, 2025). This theory has demonstrated validity across diverse educational settings due to its positive impact on student achievement, institutional coherence, and collaborative pedagogical practices (Al Sharafat et al., 2024). Advances in learning psychology and educational technology have also prompted the emergence of theories that reconceptualize how knowledge is constructed. The Theory of Interactive Learning, grounded in Vygotsky's concept of the zone of proximal development, conceptualizes learning as a socially mediated process wherein interaction facilitates knowledge internalization (Tohari & Rahman, 2024).

Molina Roldán et al. (2021) argue that learning is not a passive transfer of information but rather a co-constructed experience enabled by dialogue, collaboration, and the use of cultural tools. This model, grounded in constructivist principles, posits that meaningful learning arises from contexts of active participation, where error and feedback are viewed as opportunities for formative growth (Leuwol et al., 2023). It also highlights the teacher's role as a cognitive mediator, capable of creating dynamic environments tailored to diverse learner needs (Tohari & Rahman, 2024). The model is operationalized through methodologies such as collaborative learning, flipped classrooms, and digital interactive platforms (Molina Roldán et al., 2021). Pedagogical leadership, in this context, functions as a core managerial capability aimed at enhancing educational quality through effective curriculum design, teacher development, and optimized teaching-learning processes. It is intrinsically linked to setting positive expectations, providing ongoing support, and conducting formative evaluations of teaching practices (Miras & Longás, 2020; Vásquez et al., 2021). Its goal is to align curricular planning and teacher appraisal with a continuous improvement agenda (Ugalde & Canales, 2020). Moreover, it empowers teachers by recognizing them as central agents in educational transformation, thereby fostering collective engagement and institutional commitment (Cáceres et al., 2017; Ferreira, 2021).

This leadership model is considered an essential organizational component that fosters meaningful learning, advances professional teaching competencies, and ensures instructional efficacy. It directly addresses didactic and relational dimensions within the classroom by promoting collaboration, innovation, and institutional strengthening (Ugalde & Canales, 2020). It emphasizes trust-building, consensus-generation, and empathetic leadership practices over traditional authoritarian approaches (Jiménez, 2022; Acevedo, 2020), aligning institutional vision with sustainable human development goals (Ferreira, 2021). Two prominent models within this framework are Leadership for Learning and Instructional Leadership (Gajardo & Ulloa, 2016; Acevedo, 2020). The former adopts a psychosocial approach, centering learning within a distributed leadership culture, while the latter, grounded in North American thought, emphasizes teaching performance and its direct influence on instructional practices. Both converge on the importance of student-centered strategies, relational dynamics, and professional support structures in educational leadership.

In practice, pedagogical leadership enables schools to design effective institutional strategies, foster conducive learning conditions, and develop teaching competencies (Miras & Longás, 2020; Casas, 2019; Vásquez et al., 2021). Its role in shaping students' holistic development and adapting instruction to evolving educational demands underscores its importance as a structural pillar in learning communities, aligning institutional actions with a

coherent and transformative educational vision. Pedagogical leadership can be assessed through dimensions such as learning standards, educational quality, and professional learning culture (Porter et al., 2008). The leadership role is evaluated based on its capacity to ensure high academic expectations, coherence in planning, and motivation among learners (Salisbury et al., 2019; Sarasola & Da Costa, 2016). A professional learning culture emphasizes teacher collaboration, reflective dialogue, and shared goals within a supportive and student-centered environment.

Interactive learning, by contrast, promotes a participatory, contextualized, and student-driven methodology, led by educators who integrate cooperative strategies with elements from students' cultural backgrounds (Rodríguez et al., 2018). It prioritizes group work, cognitive development, and pedagogical mediation to construct meaningful knowledge. In this model, the teacher acts as a facilitator of learning experiences, and the classroom becomes a dialogic space where prior knowledge intersects with new content to produce socially relevant outcomes. Moreover, communicative interaction is central to this approach, as it dismantles hierarchical dynamics between teachers and students. Interactive learning thrives on horizontal exchanges, mutual listening, and co-construction of knowledge. Engagement across all phases of the learning process—before, during, and after instruction—bridges theory and practice and fosters egalitarian pedagogies wherein students become active agents in their own learning.

Interactive methodologies frequently incorporate tools, games, cognitive strategies, and materials tailored to developmental stages. These practices enhance neurocognitive functioning and deepen understanding by linking academic content with sociocultural contexts. They also promote long-term retention by activating prior knowledge and fostering critical and reflective thinking, ultimately supporting an education that transcends academic confines. The theoretical underpinnings of interactive learning derive from Vygotsky's socioconstructivism, Moreno's connectivism, and Ernest's social constructivism (Olivo & Corrales, 2020). While Vygotsky underscores the importance of cultural tools in learning, connectivism extends these ideas to virtual environments that prioritize dynamic networks and knowledge flows. Social constructivism, meanwhile, accentuates teacher-student relationships as a foundation for co-constructing knowledge in interactive settings. Collectively, these frameworks affirm the role of intersubjectivity and collaborative environments in shaping educational experiences.

The relevance of interactive learning lies in its documented impact on student achievement, motivation, and pedagogical practice. Continuous interaction, group collaboration, and active participation enhance learners' cognitive and socio-emotional capacities. Simultaneously, they offer educators opportunities to refine their practice through sustained feedback and responsiveness to learner needs, fostering a more humanized and context-sensitive approach to teaching. Interactive learning is typically assessed using dimensions such as learning interaction and types of activities (De Armas & Barroso, 2020). These metrics capture the quality of student-teacher-content interactions, the presence of mutual support, and the relevance of learning materials. Further considerations include the development of trust, the use of synchronous and asynchronous platforms, and the adaptability of pedagogical tools to learner diversity (Moneta et al., 2017).

PREVIOUS STUDIES

Zhao et al. (2025), in a study conducted in vocational schools in Weifang, concluded that strengthening teacher leadership competencies necessitates improvements in communication, systems thinking, and resource management. They proposed a three-tiered model—individual, institutional, and external—demonstrating that structured professional development enhances pedagogical leadership by fostering collaborative practices and interactive learning environments. The validated model underscores the critical role of organizational innovation in achieving sustained educational quality. Similarly, Alakoski et al. (2024), in their research on mathematics instruction in innovative learning spaces, identified inherent tensions between physical classroom conditions and interactive pedagogical intentions. Their findings suggest that pedagogical leadership must act as a mediating force between structural constraints and active learning goals. They further observed that spatial flexibility and teacher autonomy—supported by institutional collaboration—are key enablers of interactive learning. Their study concluded that classroom spatial design exerts a direct influence on pedagogical dynamics. Skog et al. (2024), in their analysis of remote teaching practices in Sweden, found that pedagogical leadership tends to shift toward facilitators who assume practical, social, and instructional roles. In large classroom settings, facilitators' collaboration with teachers enhances interaction and the monitoring of learning, whereas in smaller settings, their role becomes more technical and punctual. The study concluded that interactive learning depends heavily on a trust-based relationship between facilitator and teacher, as well as the availability of time for joint planning.

Haarala-Muhonen et al. (2023), in a study involving 265 university faculty members, found a strong association between extensive pedagogical training and an instructional approach oriented toward active learning (M = 3.65). In contrast, ICT training showed no significant correlation with the use of interactive tools. Teachers who had completed more than 25 pedagogical credits used more technology to engage students (M = 1.95) than those without such training (M = 1.49). The authors concluded that effective teacher leadership requires the integration of both pedagogical and digital competencies. Peralta et al. (2025), in their examination of public higher education institutes in Lima, found that pedagogical leadership had a direct impact on teacher engagement. Nearly half of the participating teachers (49.5%) rated leadership performance as efficient, particularly in areas such as shared responsibilities (50.5%) and pedagogical support (44.0%). Work engagement was rated as efficient by 86.8% of participants. A significant correlation was reported (r = 0.612), affirming that robust pedagogical leadership fosters participatory environments conducive to professional commitment.

Félix et al. (2025), through a systematic review of 34 studies, observed that pedagogical mentoring enhances classroom leadership by promoting reflective and collaborative practices. Although the study did not focus exclusively on leadership, it emphasized that the teacher's role as an active guide significantly strengthens interactive learning, particularly in vulnerable contexts. Effective leadership was linked to the personalization of teaching strategies, which in turn reinforces methodological innovation and educational inclusion. Chuquihuanca et al. (2022), in their assessment of educational institutions in Sullana, Peru, identified a moderate correlation (r = 0.564) between pedagogical leadership and educational quality. The most influential dimensions were goal-setting and expectations (r = 0.764), as well as strategic support (r = 0.587), suggesting that directive leadership enhances planning, evaluation, and teacher coordination. The authors concluded that leadership focused on interaction and shared decision-making positively transforms classroom climate and student performance.

Brito et al. (2025), in a bibliometric analysis of 54 scholarly articles on pedagogical leadership in basic education, reported an 81.5% increase in publications on the topic, reflecting growing global interest in its pedagogical implications. Their findings indicate that the most frequently cited forms of pedagogical leadership are those associated with active learning enhancement, teacher professionalization, and institutional transformation. They concluded that directive leadership plays a critical role in enabling conditions for methodological innovation, technological integration, and collaborative learning within school environments.

Collectively, these studies offer a robust theoretical and empirical foundation for understanding the impact of pedagogical leadership on various facets of educational quality, including teacher engagement (Peralta et al., 2025), institutional mediation (Alakoski et al., 2024), methodological innovation (Félix et al., 2025), and professional development (Zhao et al., 2025). Moreover, they emphasize the centrality of collaborative and reflective practices in enhancing interactive learning processes. Nonetheless, further research is needed in underexplored contexts such as private pedagogical higher education institutions, where student experiences remain insufficiently analyzed from a relational perspective. In this regard, the present study contributes a contextualized analysis from Ayacucho, Peru, incorporating students' perceptions of pedagogical leadership and its relationship with interactive learning. It offers empirical insights to enrich institutional diagnostics and inform the design of pedagogical improvement strategies grounded in evidence-based decision-making.

METHODOLOGY

This research followed a quantitative approach, relying on data collection and statistical analysis to address the stated objective. It was a basic study aimed at expanding theoretical knowledge of the studied constructs. A non-experimental, cross-sectional, and relational design was employed, as variables were not manipulated, data were collected at a specific time, and the study sought to determine the association between pedagogical leadership and interactive learning among students at a professional school in Ayacucho, Peru. A deductive method was used, deriving hypotheses from existing theories through logical reasoning. The population consisted of 320 students from the Early Childhood Intercultural Bilingual Education and English Language programs, and the sample included 175 students, calculated using a probabilistic sampling formula with a known sampling frame. The technique used was the survey, and the instrument was a questionnaire. To ensure validity, the instruments were evaluated by five experts, who agreed that the questionnaire items were relevant and appropriate for measuring the study constructs. A pilot test was conducted with 60 students, and reliability was assessed using Cronbach's alpha, yielding values of 0.981 for the pedagogical leadership questionnaire and 0.984 for the interactive learning questionnaire, indicating high internal consistency.

Data were processed using Excel and SPSS v29, applying descriptive and inferential statistics according to the proposed hypotheses. Charts and tables by dimension were developed to deepen the understanding of students' perceptions. The ethical principles of the Belmont Report were respected: respect for persons, beneficence, and

justice, ensuring participants' autonomy, protection, and equitable treatment. No sensitive personal data were collected, and the findings were oriented toward improving the educational environment for both teachers and students.

RESULTS

According to the objective regarding identifying the level of pedagogical leadership in students of the Professional School

Table 1

Frequency of the variable pedagogical leadership

Pedagogical leadership	Frequency	%
Low	56	32%
Medium	89	51%
High	30	17%
	175	100%

Based on the above, it was found that 32% of students reported a low level of pedagogical leadership, 51% indicated a medium level, and 17% perceived a high level (Table 1). This is mainly due to identified problems related to the supervision of student learning and the social and academic activities in which they participate. Nevertheless, some positive aspects were observed, linked to collaboration with the teaching staff to meet the objectives set by the Professional School. These aspects will be further explored below during the dimensional analysis. In the same line, for the dimensions of the stated variable, tabulation was carried out based on their arithmetic mean.

Table 2

Frequency of the dimensions of the variable pedagogical leadership

Level	Student Learning Standards		Quality Education		Learning Culture and Professional Practice	
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Low	68	39%	65	37%	62	35%
Medium	79	45%	82	47%	80	46%
High	28	16%	28	16%	33	19%
Total	**175**	**100%**	**175**	**100%**	**175**	**100%**

The results presented in the table reveal that students' perceptions of the dimensions of pedagogical leadership are predominantly concentrated at medium levels, with 45% in "Standards for student learning," 47% in "Quality education," and 46% in "Learning culture and professional practice." This predominance of the medium level suggests the existence of incipient institutional efforts to establish clear academic performance criteria, maintain acceptable teaching standards, and promote a collaborative learning environment. However, these advances have yet to consolidate into solid and sustained institutional practices.

Particularly concerning is the proportion of students who perceive a low level of development in these dimensions: 39% in standards, 37% in educational quality, and 35% in learning culture. These figures reveal structural deficiencies in pedagogical planning, in the articulation of shared educational goals, and in the creation of institutional spaces that foster collaborative teaching work. The low presence of "high" levels—only between 16% and 19%—indicates that good practices in pedagogical leadership, although present, have not yet been consolidated broadly within the institution.

These perceptions reflect important pedagogical implications. Leadership that fails to clearly define learning standards may affect curricular coherence and the alignment between objectives, methodologies, and assessment. Similarly, education perceived as lacking quality limits student engagement and weakens their intrinsic motivation. Finally, an underdeveloped learning culture negatively impacts the consolidation of reflective professional communities, which are essential to sustaining innovative and adaptive training processes. Therefore, the results

call for a rethinking of the role of institutional leadership not merely as a resource manager, but as a driver of pedagogical processes aimed at continuous improvement, active participation, and the collective construction of knowledge.

According to the objective: identify the level of interactive learning in students of the Professional School

Table 3
Frequency analysis of the variable interactive learning

Interactive Learning	Frequency	%
Inadequate	82	47%
Regular	56	32%
Adequate	37	21%
	175	100%

Based on the above, it was found that 47% of students reported an inadequate level regarding interactive learning, 32% indicated a regular level, and 21% indicated an adequate level (Table 3). This is mainly due to identified difficulties in learning interaction and interactive activities. These aspects will be further explored below during the dimensional analysis. In the same vein, for the dimensions of the stated variable, a tabulation was carried out based on their arithmetic mean.

Table 4
Frequency of the dimensions of the variable interactive learning

Level	Interaction in learning		Interactive activities	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Inadequate	83	47%	78	45%
Regular	56	32%	54	31%
Adequate	36	21%	43	25%
Total	175	100%	175	100%

The results of Table 4 reflect a concerning outlook regarding interactive learning in the analyzed context. In the "Interaction in learning" dimension, 47% of students perceive an inadequate level, while in "Interactive activities" this perception reaches 45%. These percentages reveal a structural weakness in pedagogical processes aimed at fostering active student participation, constructive dialogue, and co-construction of knowledge in the classroom. The high proportion of negative responses suggests the persistence of traditional expository practices, with little openness to collaborative and participatory dynamics.

The fact that only 21% of students identify an adequate level of interaction, and 25% do so in relation to interactive activities, highlights the limited presence of innovative, student-centered didactic strategies. The low implementation of methodologies such as problem-based learning, cooperative work, or the use of interactive educational technologies may be significantly limiting teachers' capacity to activate meaningful learning processes.

On the other hand, the "regular" segment, which represents between 31% and 32% in both dimensions, suggests partial or inconsistent attempts to apply interactive approaches. It is possible that these efforts are not properly articulated with clear pedagogical planning or with teacher leadership that promotes the strategic use of resources and tools that facilitate interaction.

From a pedagogical perspective, these results imply that the lack of interaction and limited participatory activities directly affect the development of key competencies in future teachers, such as autonomy, self-regulation, argumentation, and critical thinking. Furthermore, the absence of sustained interactive practices weakens the pedagogical bond between teacher and student and limits the formative potential of the classroom as a dialogic and transformative space.

In summary, the data reflect the urgent need to strengthen pedagogical leadership in order to redesign learning environments focused on interaction, in which both student agency and active pedagogical mediation are valued. This requires rethinking the teacher's role as a facilitator of meaningful experiences rather than a mere transmitter of content, and consolidating an institutional culture that values didactic innovation as the core of educational practice.

Table 5
Correlation between variables

Correlation	Rho	Sig. (bilateral)	N
Standards for student learning and interactive learning	0.583	0	175
Quality education and interactive learning	0.578	0	175
Learning culture and professional practice	0.580	0	175
Pedagogical leadership and interactive learning	0.586	0	175

Table 5 presents the Spearman's Rho correlation coefficients between the dimensions of pedagogical leadership and the interactive learning variable. In all cases, the bilateral significance values were p = 0.000, indicating a positive and statistically significant correlation between the variables analyzed (95% confidence level). This allows for the rejection of the null hypothesis and confirms the existence of a systematic association between the exercise of pedagogical leadership and students' perceptions of interactive learning.

The highest coefficient corresponds to the overall correlation between pedagogical leadership and interactive learning (Rho = 0.586), indicating a moderate-to-strong relationship. This finding supports the premise that educational leadership oriented toward strategic planning, reflective supervision, and methodological innovation directly impacts the creation of participatory learning environments. It also demonstrates that leadership does not operate in isolation but is translated into formative experiences perceptible to students.

Regarding specific dimensions, the correlation between "Standards for student learning" and interactive learning (Rho = 0.583) suggests that when teachers lead with clear goals and high academic expectations, students become more actively engaged in learning dynamics. This relationship underscores the importance of leadership that aligns curricular objectives with strategies that promote interaction and critical thinking.

The relationship with the "Quality education" dimension (Rho = 0.578) confirms that students perceive learning processes as more interactive when supported by effective teaching practices, relevant content, and resources that stimulate participation. A perceived high level of educational quality is thus associated with elements that foster collaboration, feedback, and autonomy.

Lastly, the "Culture of learning and professional practice" dimension also shows a positive and significant correlation (Rho = 0.580), indicating that institutional contexts where shared values, reflective dialogue, and learning communities are cultivated naturally strengthen interactive classroom experiences. This result reinforces the need to develop school cultures that value collaborative learning, pedagogical mentoring, and ongoing professional development.

Taken together, these empirical results validate the theoretical framework supporting the research, particularly the pedagogical leadership model proposed by Hallinger and interactive learning approaches derived from socioconstructivism. Furthermore, they provide a solid foundation for the formulation of educational policies aimed at integrating teacher leadership and didactic innovation as core drivers of improvement in pedagogical higher education.

DISCUSSION

The results obtained demonstrate that the instruments used to assess pedagogical leadership and interactive learning exhibited high levels of validity and reliability, as evidenced by Cronbach's alpha coefficients of 0.981 and 0.984, respectively. This methodological rigor reinforces the credibility of the findings and ensures that student perceptions are accurately captured. These results are consistent with the work of Haarala-Muhonen et al. (2023), who emphasized that the effectiveness of teacher leadership is enhanced when grounded in structured, measurable pedagogical tools. In this context, the use of validated instruments enabled the precise identification of deficits in educational interaction and leadership practices within the professional school in Ayacucho, Peru.

With regard to the perceived level of pedagogical leadership, 51% of students rated it as moderate, while a concerning 32% perceived it as low. This distribution suggests that, despite existing efforts to implement active leadership, institutional barriers persist that impede its consolidation. These findings mirror those of Peralta et al. (2025), who reported that only 49.5% of teachers positively evaluated leadership performance in their institutions, citing limitations in strategic collaboration and professional support as key constraints.

The dimensional analysis revealed specific areas of concern. In the dimension of "Standards for student learning," 39% of students perceived a low level, indicating deficiencies in academic supervision and in the establishment of shared learning objectives. This finding aligns with Chuquihuanca et al. (2022), who argued that the absence of coordinated planning and coherent evaluation frameworks adversely impacts instructional quality and student outcomes. Similarly, in the "Quality education" dimension, 37% of students reported low levels, suggesting that essential conditions for effective teaching—such as clarity of instruction and pedagogical coherence—are not consistently present. By contrast, Zhao et al. (2025) proposed a three-tiered leadership model which, when properly implemented, facilitates sustainable quality improvements through resource integration, systemic thinking, and pedagogical communication.

In the "Culture of learning and professional practice" dimension, 35% of students identified low levels, revealing a lack of reflective communities and limited opportunities for teacher collaboration. This result resonates with the findings of Félix et al. (2025), who emphasized that only through reflective leadership grounded in collaborative practice can inclusive, participatory, and sustainable learning environments be effectively cultivated.

The analysis of interactive learning yielded similarly concerning outcomes. Overall, 47% of students reported inadequate levels of interactivity, specifically in the dimensions of "Interaction in learning" (47%) and "Interactive activities" (45%). These figures reflect the persistence of traditional, teacher-centered instructional models and a limited presence of dialogic or participatory pedagogical practices. These trends are corroborated by Alakoski et al. (2024), who noted that the absence of structural flexibility and limited teacher autonomy often undermine the adoption of interactive methodologies. Students also reported issues such as the lack of asynchronous learning resources and insufficient variation in activity formats, echoing observations by Skog et al. (2024), who highlighted the dependence of interactive learning on collaborative planning, time availability, and institutional infrastructure.

From an inferential standpoint, the positive and statistically significant correlations between pedagogical leadership and interactive learning—most notably a general coefficient of Rho = 0.586—support the conclusions of Brito et al. (2025), who argued that leadership directly contributes to methodological innovation, the integration of educational technologies, and the facilitation of collaborative learning environments. Dimension-specific correlations further reinforce this link: learning standards (Rho = 0.583), quality education (Rho = 0.578), and learning culture (Rho = 0.580). These findings validate the theoretical premise that pedagogical leadership serves as a transversal factor that enhances students' interactive learning experiences.

In particular, the findings resonate with Zhao et al.'s (2025) multi-level leadership framework, confirming that effective pedagogical leadership must operate across individual, institutional, and systemic levels to generate lasting improvements in learning quality. While the correlations identified are moderate, their consistency across all dimensions highlights a robust structural basis for institutional improvement. This underscores the importance of strengthening educational policies, training educators in participatory leadership practices, and promoting inclusive, flexible, and student-centered learning environments.

Ultimately, the study's findings reaffirm the critical role of pedagogical leadership as a driving force for educational transformation. The demonstrated relationship between leadership and interactive learning suggests that isolated interventions or tools are insufficient; rather, a coherent and strategic vision is required—one that integrates active supervision, collaborative instructional practices, and joint pedagogical planning. Supported by empirical evidence and the theoretical contributions of Alakoski et al. (2024), Félix et al. (2025), and Peralta et al. (2025), these results

contribute meaningfully to the global discourse on teacher professionalization and the redesign of institutional frameworks that place students at the center of the educational process.

CONCLUSIONS

The results obtained show that pedagogical leadership presents a predominantly medium level among students, with notable deficiencies in the supervision of learning, educational quality, and institutional culture. These shortcomings directly affect the perception of formative standards, limiting the construction of school environments based on interaction. The validation of the instruments confirms their methodological reliability, which strengthens the interpretation of the correlations found between the analyzed dimensions. A positive and significant relationship was verified between pedagogical leadership and interactive learning, with moderate correlation coefficients in all its dimensions. This finding supports previous theoretical models that highlight the influence of teacher leadership in building participatory environments and improving formative practices, especially in contexts with low institutional innovation. The dimensions of standards, educational quality, and learning culture showed direct incidence on the forms of pedagogical interaction. The implications of the study suggest that strengthening pedagogical leadership can become a key tool to optimize interactivity in formative processes. Reinforcing collaborative planning, improving active supervision, and redesigning learning environments are configured as priority axes to raise educational quality in Professional Schools similar to that of Ayacucho.

The study was limited to a single institution and a specific sample of students, which restricts the possibility of generalizing the findings to other educational contexts. Likewise, the quantitative approach prevents capturing in depth the qualitative perceptions of the actors involved in leadership and pedagogical interaction processes. It is recommended to expand the study to various regions and types of pedagogical institutions, including mixed methodologies that integrate interviews or focus groups with teachers and managers. Future work could analyze the impact of leadership training on teaching practice or explore the role of institutional infrastructure in promoting interactive learning, considering mediating variables such as mentoring and professional autonomy.

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