Pedagogical competences of the teacher: analysis from the professional training of the Graduates in Primary Education

Competencias pedagógicas del docente: análisis desde la formación profesional de los Licenciados en Educación Primaria

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Abstract

Pedagogical competences are defined as the knowledge, skills, abilities, attitudes, and values that students acquire during their teacher training and that they can demonstrate in the execution of the teaching and learning process, adapting to the needs of students and the context in order to achieve educational quality. This research aims to evaluate the pedagogical competencies that students have acquired during their teacher training in the Bachelor's degree in Primary Education. It was conducted with a mixed approach, using a non-experimental cross-sectional design; the techniques of document review, survey, and focus group were employed; an instrument was applied to 109 students who were in their final semester of the program. The results across the various evaluated dimensions indicate that teachers must be able to integrate theoretical knowledge with practical skills; furthermore, it emphasizes the importance of developing socio-emotional skills, respect for diversity, and the creation of cohesive learning communities.

Keywords: pedagogical competences; teacher training; teaching and learning process; evaluation; educational quality.

Resumen

Las competencias pedagógicas se definen como, los conocimientos, habilidades, destrezas actitudes y valores que el estudiante adquiere, durante la formación docente y que puede demostrar en la ejecución del proceso de enseñanza y aprendizaje, adaptándose a las necesidades de estudiantes y del contexto, para lograr calidad educativa. Esta investigación tiene como objetivo evaluar las competencias pedagógicas que han adquirido los estudiantes durante la formación docente, recibida en la licenciatura en educación primaria. Se realizó con un enfoque mixto, con diseño no experimental-transversal; se utilizaron las técnicas de revisión documental, encuesta y grupo focal; se aplicó un instrumento a 109 estudiantes que cursaban el último semestre de la carrera. Los resultados, en las diversas dimensiones evaluadas indican que los docentes deben ser capaces de integrar conocimientos teóricos con habilidades prácticas; además, destaca la importancia de desarrollar habilidades socioemocionales, el respeto por la diversidad y la creación de comunidades de aprendizajes cohesionadas.

Palabras clave: competencias pedagógicas; formación docente; proceso de enseñanza y aprendizaje; evaluación; calidad educativa.

INTRODUCTION

The training of teachers in the Bachelor's degree in Primary Education is a fundamental process to ensure the quality of education and the integral development of students. Therefore, the pedagogical competences acquired during their progression through the program can determine the effectiveness of their professional practice.

The term competences is not limited to a set of specific skills or knowledge (Incháustegui Arias, 2019). Instead, it is understood as a broader concept that includes the tasks to be carried out, the expected outcomes, and the roles performed in a work environment. This suggests that competences are intrinsically linked to the context in which they are applied. At the end of the 20th century, education began to place greater emphasis on the development of competences as a set of knowledge, skills, abilities, and attitudes acquired in the formative process and applicable in diverse real-life situations (Girón Márquez, 2021).

By the late 20th and early 21st century, the concept of competences was formalized in many educational systems around the world, as a result of the need to evidence the capacities acquired during training, converging with the demand to prepare students to face the challenges of working life and daily living (Díaz-Barriga, 2011). Currently, 21st-century competences are discussed, emphasizing not only technical-professional knowledge but also the development of soft skills directed toward teamwork, creativity, innovation, and social responsibility (Sanz Leal et al., 2022). In the educational sector, competences, understood as a proposal, are grounded in meaningful learning and seek the integral formation of the human being by establishing a simultaneous development of knowledge, skills, and abilities that the student must acquire in a given subject. Therefore, "[...] competences are integral performances when facing contextual activities and problems, with suitability and ethical commitment, integrating knowing how to be, knowing how to do, and knowing how to know, within a perspective of continuous improvement" (Tobón; Pimienta Prieto; García Fraile, 2010, p. 11). In this context, for Espinoza et al. (2019) competences have a holistic approach that considers not only technical skills but also individual characteristics and their interaction within a context; in other words, the person, theory, and practice interact in diverse activities. It is also argued that "[...] the epistemological discussion in the theory-practice relationship can be understood in terms of interception and closeness within the pedagogical practice, and not as two issues operating separately" (Montoya Grisales; Arroyave Giraldo, 2023, p. 4). Castro-Rubilar and Navas-Martínez (2018, p. 178) state that:

> [...] regardless of the orientation that learning and competences take, it is especially significant to also consider the contribution they make to the graduate profile, as an expression of the formative processes that preserve the achievements attained during professional training.

In Panama, where this research was carried out, the curricular transformation of 2010-2014 by the Ministry of Education not only introduced the implementation of a competence-based education but also proposed a comprehensive and contemporary approach to education focused on the development of life competences, within an environment that values diversity and dignity, and dependent on trained teachers who do not limit themselves to transmitting knowledge, but who also seek to develop practical competences, in an atmosphere where students feel safe, motivated, curious, and eager to learn (Bernal, 2016).

Teachers are a fundamental component in the structure and quality of a country's educational system, where the levels of early childhood and primary education are crucial for students' development. Data provided by the Ministry of Education of Panama (MEDUCA) in 2023 indicate a total of 52,497 teachers working in both public and private education. In the distribution of teachers, at the primary level, a total of 18,827 was recorded. According to the statistics, the total number of teachers currently working in primary education represents approximately 35% of all professionals dedicated to teaching in the regular system. This suggests a greater concentration of human resources dedicated to teaching at the level that serves the population in its first years of formal schooling, which in turn imposes a commitment to evaluate the pedagogical competences of these teachers. The Ministry of Education *apud* Pérez-Sánchez (2022, p. 89) states that:

> [...] the Ministry of Education (MEDUCA) does not currently have specific standards for initial training, nor a performance framework for the teaching profession. The Organic Law of Education of 1946, nor Law 34 of 1995, nor any other more recent legislation, stipulate teaching standards or competences.

In recent years, research has been conducted to assess the process of evaluating pedagogical competences of teachers in general basic education and particularly in primary education.

Among these studies is that of Díaz et al. (2020), which seeks to strengthen teacher training in Chile through mechanisms that support the development of pedagogical competences within curricular designs of teaching degrees. Another study was conducted in Panama, where, according to Pérez-Sánchez (2022), it is important to understand educators' perceptions about educational quality and teacher performance, as well as the factors that affect them. Játiva Macas et al. (2021) carried out an analysis of research conducted in various countries, detailing that a deep understanding of pedagogical competences is necessary to improve the quality of training for future teachers (Yañez Monje; Palma Troncoso, 2022).

Progressive evaluation makes it possible to demonstrate learning outcomes and intermediate competences acquired during teacher training, suggesting an approach oriented toward the continuous improvement of educational quality. To evaluate pedagogical competences, Vázquez Rodríguez and Luna Serrano (2024) analyzed several categories, including theoretical perspectives and evaluation strategies, and found structural similarities among the approaches studied. However, differences were identified in the conception of teaching, competences, and indicators, as well as discrepancies between declared use and measurement instruments. They highlight the need for coherence between what is declared and what is practiced, as well as the importance of aligning evaluation criteria with the teacher's educational reality to improve teaching. For their part, Valenzuela Santoyo, Reynoso González y Portillo Peñuelas (2023) emphasize the importance of verifying self-perceived competence and interpersonal skills demonstrated in the execution of classroom methods, as this is crucial to determine the training received. Chile has made significant progress in this area, designing a series of standards that enable the verification of competences developed in future primary education teachers (Chile, 2022).

Regarding teacher training, it is a continuous process that develops after initial training and during educational practice (Salazar-Gómez; Tobón, 2018). In this training stage, teachers update and adjust their knowledge and competences to socialize and interact with their students during professional practice, while simultaneously facing the emerging challenges of a constantly changing society (Ripoll-Rivaldo, 2021). Játiva Macas et al. (2021, p. 197) argue that

> [...] teachers nowadays must have professional competences to promote good teaching; they must have a deep mastery of the subject they teach, as well as general and specific methodologies and didactics; in addition to pedagogical competences to plan and organize methodological activities, develop and implement evaluation systems, and make use of didactic and technological materials.

This research aims to evaluate the pedagogical competences acquired by students during teacher training in the Bachelor's degree in Primary Education at the Faculty of Education Sciences, Universidad Autónoma de Chiriquí. Investigating the pedagogical competences of primary education teachers is crucial for several reasons, including: pedagogical competences are one of the most influential factors in student learning; these competences ensure that teachers are prepared to foster a comprehensive and healthy educational environment; they can contribute to the quality of education provided in Panamanian primary schools; and they allow improvements to curricular designs. Therefore, it is imperative to answer the following question: What pedagogical competences have students of the Bachelor's degree in Primary Education, Faculty of Education Sciences, Universidad Autonoma de Chiriquí, acquired during their teacher training?

METHOD

The research carried out in the Bachelor's Degree in Primary Education on the pedagogical competencies acquired by future teachers during the professional training provided by the Faculty of Educational Sciences at the Universidad Autónoma de Chiriquí is based on the pragmatic paradigm, since it is oriented toward utility and practice (Mejía-Rivas, 2022). It rejects the idea that truth is objective and holds that the value of a scientific theory is measured by its usefulness in specific situations.

The research approach employed is mixed, as it integrates both qualitative and quantitative data. These studies represent the highest combination of both methods, intertwining throughout almost the entire investigative process (Hernández-Sampieri; Mendoza Torres,

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2018). Mixed research allows not only the evaluation of measurable indicators related to performance and training but also a deeper exploration of the perceptions, attitudes, and experiences of the actors involved in the research.

The design is non-experimental and cross-sectional, characterized by the collection of data at a specific point in time without variable manipulation (Echevarría, 2019). It is particularly useful for analyzing educational phenomena such as the pedagogical competencies of teachers in training, as it provides a general overview at a specific moment of the problem under study. Furthermore, it is valuable when seeking to detail characteristics, knowledge, attitudes, or competencies. This research has a descriptive purpose, as it aims to describe a specific phenomenon or situation without establishing causal relationships (Monje Álvarez, 2011), and an explanatory scope, providing key information about its development and areas for improvement. It provides specific information on the state of these competencies, which facilitates the identification of strengths, weaknesses, and significant patterns in the training process. The hypothesis, based on the result of the Spearman Correlation test whose significance value is equal to 0.000, therefore $P < 0.05$, allows us to reject the null hypothesis. From this, there is evidence to affirm that there is a significant association between teacher training and pedagogical competencies.

Variables

In the research, the variables measured were pedagogical competencies and teacher training, where the independent variable is teacher training and the dependent variable is pedagogical competency. Once the variables were identified, the dimensions and categories were established, which are the product of the analysis of previous literature, with the corresponding contextualization. Therefore, documentary review techniques were applied to the curriculum design of the Bachelor's Degree in Primary Education, at the Faculty of Educational Sciences of the Universidad Autónoma de Chiriquí (UNACHI). Rojas Valladares, Macías Merizalde and Formoso Mieres (2021, p. 119) states that:

> En este ámbito es importante que el diseño curricular en la Educación Superior satisfaga las exigencias y demandas que emanan de la sociedad, que se expresa en la concepción integral en la formación de un profesional, en el desarrollo de intereses y cualidades de la personalidad, la formación de competencias para conocer, saber hacer, saber conocer y saber ser desde una dimensión axiológica, que le permita la solución de los problemas profesionales del contexto.

Table 1 presents the variables, dimensions, and indicators measured in the instrument applied to the students. These variables are complex and multifaceted; therefore, without a precise definition, clear dimensions, and well-established indicators, it is difficult to measure them objectively and comparatively. When there is coherence among these elements, it is possible to systematically evaluate the level of development of pedagogical competencies and the quality of teacher training, facilitating the identification of strengths and areas for improvement.

Table 1. Variables, dimensions, and indicators measured in the instrument.

Variables	Dimensions	Indicators
Pedagogical Competences	Professional knowledge	Cognitive competencies of the discipline
		Communicative and social competencies
		Competencies for research and innovation
		Pedagogical management competency
	Cultural dimension and social interaction in the classroom	Cultural competences – classroom environment
Teacher Training	Professionalization and teaching attitude	Metacognitive competences
		Personal competences

Source: Own elaboration.

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Sample

The research to evaluate the pedagogical competencies acquired in teacher training was carried out at the Faculty of Education Sciences of the Universidad Autónoma de Chiriquí. The population consisted of students enrolled in the final semester of the Bachelor's Degree in Primary Education during the 2024 academic period. The population was made up of 109 students. No sample was taken, since the total population was considered. A questionnaire was applied to these students using the survey technique.

Instrument

For the development of the instrument, the documentary review technique was applied to the curriculum design of the program to identify the dimensions and their indicators in the training process. Afterwards, the survey technique was used, whose purpose is to facilitate data collection in a specific sample during a given period of time, in order to capture phenomena that manifest at that particular moment (Ballester Brage et al., 2022). A questionnaire with a Likert scale was developed, which allows measuring attitudes through direct responses to a series of statements, facilitating the analysis of subjects' reactions and opinions (Ballester Brage et al., 2022).

The instrument was designed to measure the pedagogical competencies acquired during the teacher training of the students under study. The instrument had three dimensions, which measured seven competencies, and consisted of a total of 55 questions. The dimensions and their indicators are the result of the documentary review carried out on the curriculum design of the program, as well as contributions generated from various studies. Based on this, a relationship table was structured to guide the construction of the corresponding items.

Cognitive competencies of the discipline were measured from items 1 to 9; communicative and social competencies, from items 10 to 18; competencies for research and innovation, from items 19 to 24; pedagogical management competencies, from items 25 to 34; metacognitive competencies, from items 35 to 39; personal competencies, from items 40 to 45; and cultural competencies – classroom environment, from items 46 to 55.

The validation of the instrument was carried out through expert judgment. For this process, experts with doctoral degrees from Mexico, Spain, Ecuador, Costa Rica, Chile, and Panama were considered. They provided contributions that facilitated the final construction of the instrument. The reliability of the instrument was verified using Cronbach's Alpha, which yielded a reliability of 0.98.

The research also included a focus group, which was aimed at delving deeper into the indicators for which data showed the need for broader responses. According to Cortés Gómez (2008, p. 36), "The focus group is a technique that centers its attention on the plurality of responses obtained… whose objective is to obtain data through the perceptions, feelings, attitudes, and opinions of groups of people". The focus group involved 10 students who were part of the study population. They were given a questionnaire of 9 questions, corresponding to those that had received lower scores in the responses to the applied instrument. The focus group lasted two hours and was moderated by a specialized professor.

In Table 2, the dimensions and the questions formulated in the focus group are described, in order to provide a deeper explanation than the one generated in the applied questionnaire.

Field work

The data collection was carried out in the classrooms within the academic units where the Faculty of Education had students enrolled in the final semester of the Bachelor's degree in Primary Education. The students completed the questionnaire during the class session corresponding to their regular schedule. To ensure full participation, support was requested from the instructors of the courses with complete enrollment.

Data analysis

For the analysis of the data obtained through the instrument, SPSS software, version 23, was used. With this technological resource, descriptive statistics were generated, and tables were created to present the data for each indicator measured by the applied instrument. Excel

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Table 2. Aspects evaluated in the focus group.

Dimension	Questions
Professional knowledge	Knows the purposes, objectives, structure, and legal norms (laws and decrees) that regulate teaching performance, educational administrative management, and inclusion, as well as the achievements, challenges, and goals of the education system.
	Masters the theoretical and practical knowledge of the Basic General program, recognizing the vertical sequence and horizontal coherence of the Panamanian curriculum.
	Knows and masters the key concepts of special educational needs, as well as the principles and purposes of differentiated evaluation, facilitating its application and coordinated work with specialists.
Professionalism and teaching attitude	Participates in teacher professional development processes to improve pedagogical competencies, recognizing professional development needs with the support of learning communities to transform practice.
	Knows how to plan the effective use of time to efficiently carry out the teaching and learning process in the classroom.
	Feels capable of designing, implementing, and evaluating teaching and learning strategies that foster critical thinking and promote the personal and social development of students, facilitating informed decision-making with strong ethical and moral principles..
Culture and social interaction in the classroom	Knows what must be done to establish high expectations for students, regardless of their sociocultural context, motivating them to set challenging goals and to improve continuously.
	Knows the strategies to effectively manage conflicts, foster empathy among students, and create harmonious interpersonal relationships through assertive communication.
	Knows how to adequately plan activities, the use of physical space, available equipment, and learning resources to be used.

Source: Own elaboration.

was used to design the graphs, as it was decided to create one graph per category in order to present the results holistically. For the data generated in the focus group, the responses were transcribed and then entered into Atlas.ti software. Using this tool, semantic maps were generated to reflect the agreements and contributions of each participant in the focus group.

RESULTS

The results obtained from the data collected via the questionnaire, designed with a Likert scale and administered to students in the final semester of the Bachelor's degree in Primary Education at the Universidad Autónoma de Chiriquí, allowed for a simple and clear measurement of the attitudes, opinions, and perceptions of the study population.

In Figure 1, the **vertical axis** represents the average performance values, which range between 3.10 and 3.45, and the **horizontal axis** shows the different competencies numbered from 1.10 to 1.18, each accompanied by a brief description. Indicators related to communicative and social competencies were evaluated. Each competency was rated with specific scores within a range close to 3.10 to 3.45 (these figures reflect the average evaluation of each competency). The values are relatively high, suggesting a good overall performance of the future teachers in the competencies assessed within this dimension.

Figure 2 focuses on evaluating competencies related to pedagogical management, divided into specific skills. A numerical scale was used for scoring, with values ranging from 2.95 to 3.50, suggesting a medium-high performance range among the students in this competency. The lowest scores were observed in the skills for selecting and designing strategies and in the ability to relate and integrate elements of the Panamanian Basic Education curriculum; in the other items, data indicate progress. Each competency has a score within the indicated range, highlighting stronger areas as well as those with potential for improvement.

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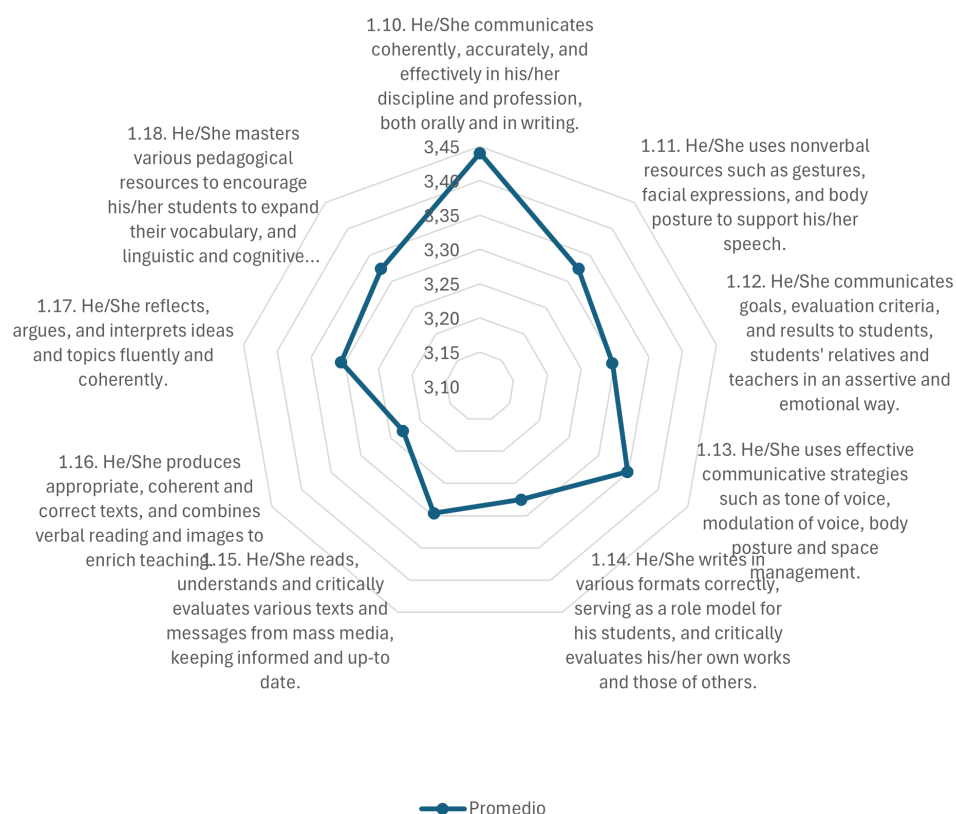6/15

Comunicative and Social Competence

Figure 1. Communicative and social competencies.
Source: Instrument applied to the students of the Bachelor's degree in Primary Education.
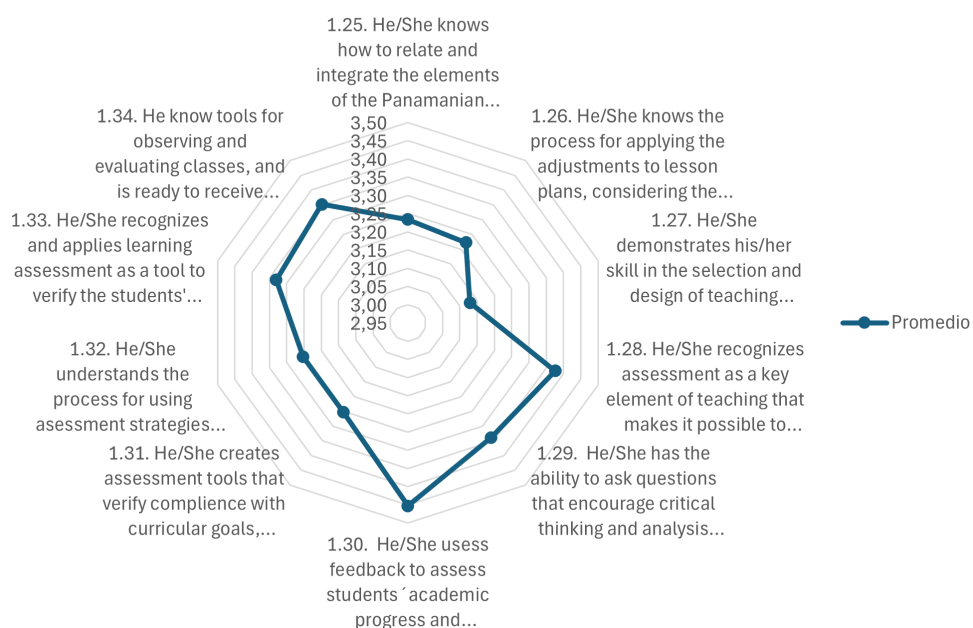
Pedagogical Management Competence

Figure 2. Pedagogical management competencies.
Source: Instrument applied to the students of the Bachelor's degree in Primary Education.

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Figure 3 evaluates metacognitive competencies, which reflect the teacher's ability for reflection, analysis, and self-regulation in their professional practice. The scores range from 3.20 to 3.60, indicating medium-high performance levels. The scores reflect positive performance in these areas, with room for improvement in specific aspects, such as self-criticism and participation in teacher professional development processes. The overall average is towards the upper end of the range, indicating a good understanding and application of the evaluated metacognitive competencies.

Figure 4 evaluates personal competencies, related to self-reflection, planning, and the design of pedagogical strategies aimed at the holistic development of students. The scores range from 3.15 to 3.50, indicating a medium-high performance level in these areas. The scores reveal positive achievements, with some areas likely more developed than others. High scores indicate strengths in strategy design and the promotion of holistic development, while lower scores may point to specific aspects, such as self-criticism or critical thinking, that require greater attention.

Figure 5 presents competencies related to the educational domain, particularly focused on developing an inclusive, ethical classroom environment centered on respect and diversity. The data highlight that students recognize the importance of understanding and fostering a culture that promotes respect, responsibility, and trust. This suggests that educators are prepared to positively influence the dynamics of the educational setting, creating an environment where all participants feel valued and respected. Low scores were noted in the promotion of inclusion and respect for diversity, encompassing gender, ethnicity, religion, disabilities, and more, alongside the preparation required for teachers to adopt and implement inclusive strategies that ensure all voices are valued.

In the context of mixed-method research, these results are especially significant, as they combine the richness of qualitative and quantitative data, allowing for a more comprehensive understanding of the studied phenomenon. The Likert scale provides numerical data that can be statistically analyzed, which, when complemented with qualitative techniques such as the focus group, offers a broader and more contextualized perspective. Together, this strengthens the validity and depth of the findings, facilitating more informed decisions and a more comprehensive interpretation of the research problem. Table 3 presents the analysis of the data generated in the focus group.
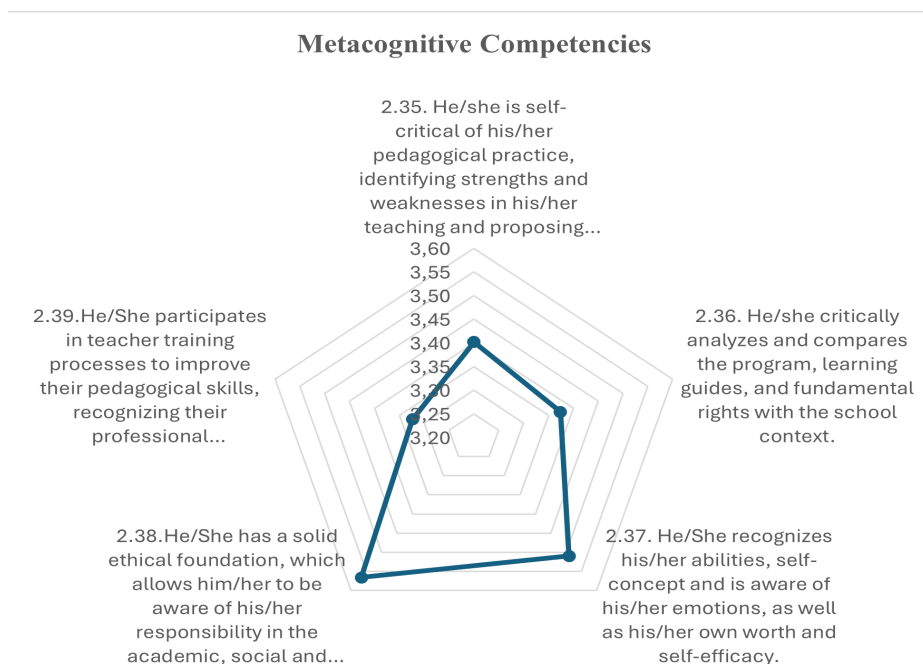

Figure 3. Metacognitive competencies.
Source: Instrument applied to the students of the Bachelor's degree in Primary Education.

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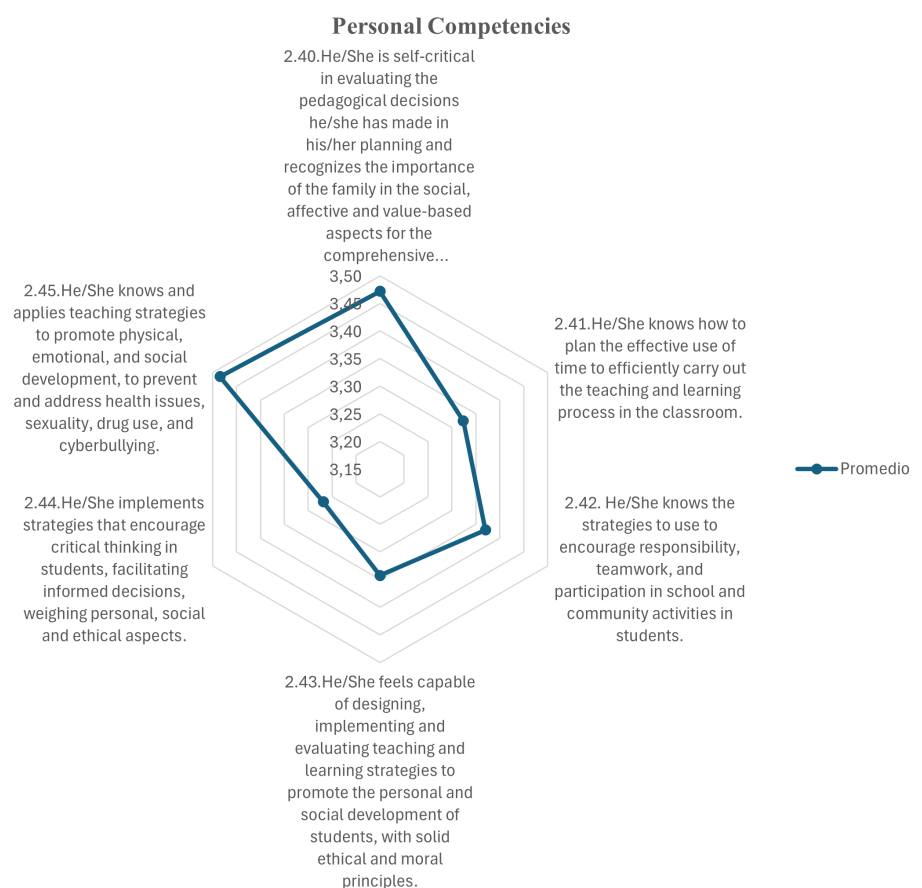
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Personal Competencies

Figure 4. Personal competencies.
Source: Instrument applied to the students of the Bachelor's degree in Primary Education.

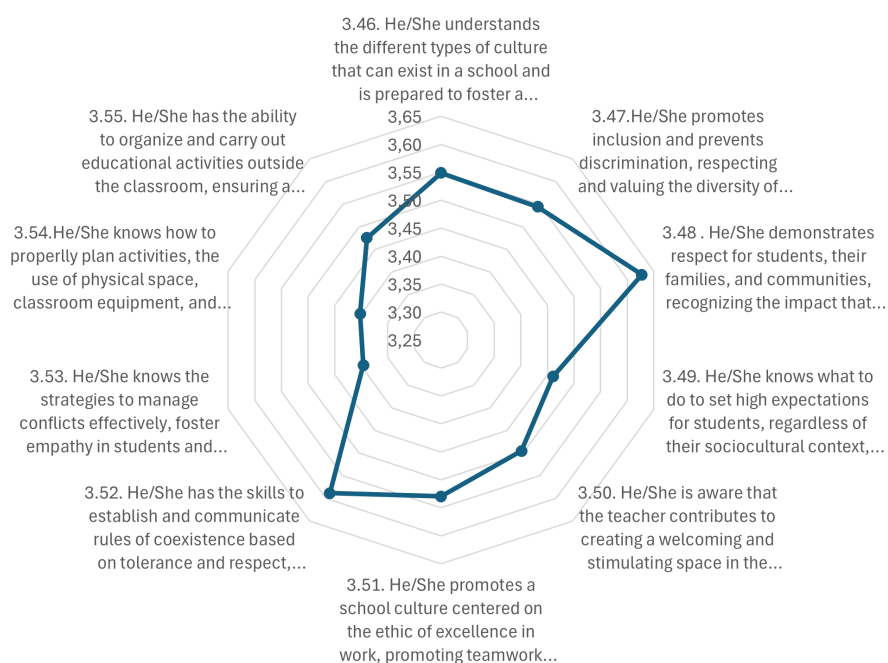## Cultural Competencies - Classroom environment

Figure 5. Cultural competencies - Educational domain.
Source: Instrument applied to the students of the Bachelor's degree in Primary Education.

Table 3. Analysis of the Focus Group.

Dimension	Questions	Summary of the Responses Provided by the Students
Dimension: Professional Knowledge	How do you think knowledge of the purposes, objectives, structure, and legal regulations governing teaching performance, educational administrative management, and inclusion can help you face challenges and contribute to the achievements and goals of the educational system?	The students emphasized that knowing the purposes and objectives of education is fundamental for charting their professional path. They recognize that this knowledge will help them convey to their students the importance of education. They mentioned that understanding the legal regulations governing their profession provides them with the ability to perform their duties ethically and professionally. This includes knowing how to handle administrative situations and whom to approach for support when needed. The students also noted that this knowledge contributes to their development as well-rounded professionals.
	Do you have mastery of the theoretical and practical knowledge of the General Basic program, recognizing the vertical sequence and horizontal coherence of the Panamanian curriculum?	The students feel confident that they know and have mastery of the General Basic curriculum. They mentioned that during their professional practice, they received proper instruction on how to apply this curriculum in the classroom, which has allowed them to understand its structure. They acknowledged that curricula and educational programs are modified according to the national context and the needs of the students. The students did not mention the importance of the vertical sequence and horizontal coherence in the curriculum.
	In what ways do you consider that mastery of key concepts about special educational needs and the application of differentiated assessment can improve your teaching practice and collaboration with specialists?	Helps with curriculum adaptation Differentiated teaching strategies Collaboration with specialists Assessment should be adapted to fairly reflect each student's progress Creation of an inclusive environment Special educational needs require teachers to be flexible, creative, and collaborative in their pedagogical approach
Dimension: Professionalism and Teaching Attitude	How do you perceive that teacher professional development processes and working with learning communities contribute to identifying and addressing your professional development needs to transform your teaching practice?	The students emphasized the importance of continuous learning in teaching practice, highlighting that training sessions, seminars, and workshops are essential for acquiring knowledge applicable in the classroom. Additionally, they noted that these trainings contribute to creating a conducive learning environment. Working in learning communities was perceived as a valuable opportunity to share experiences and learn from other teachers, which not only enriches their teaching practice but also helps them identify and address their professional development needs.
	During your professional training, you have learned to plan the effective use of time to efficiently carry out the teaching and learning process in the classroom.	The students have acquired skills to plan the effective use of time during their professional training, recognizing the importance of managing classroom time to address various subjects. They identify three key moments in lessons: beginning, development, and closure. However, despite their theoretical preparation, they encounter difficulties in adhering to the planned schedule in practice. They also emphasize the need to adapt to classroom dynamics and to the needs of the students, even when a schedule is established.

Source: Own elaboration.

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Table 3. Continued...

Dimension	Questions	Summary of the Responses Provided by the Students
Dimension: Professionalism and Teaching Attitude	What strategies do you consider most effective for setting high expectations for your students, motivating them to set challenging goals and surpass themselves, regardless of their sociocultural context?	The strategies mentioned are: Meaningful learning Setting challenging goals Self-criticism and reflection Role-playing Use of stories and fables When implemented properly, these strategies can significantly contribute to raising students' expectations and performance.
Dimension 3: Classroom Culture and Social Interaction	What factors do you consider most important when planning activities, organizing the physical space, selecting classroom equipment, and choosing learning resources to ensure an effective educational environment?	The students highlighted the importance of proper planning in the educational process. Even when the physical space remains constant, its organization is key to learning. They considered teaching resources essential and emphasized that a dynamic and creative environment, rather than a monotonous one, can enhance motivation and the desire to learn. They also noted that learning corners, especially those focused on subjects such as mathematics and science, promote student participation and concentration.
	Do you consider that you have the necessary competencies to conduct research and address the problems identified in the classroom?	The students expressed that, although they possess theoretical knowledge about research, they consider that true competence is acquired through practical classroom experience. They agree that the effective application of this knowledge occurs in a practical context. Additionally, the importance of teachers being willing to learn and adapt to new situations was emphasized.
	According to the focus group participants, knowledge of legal regulations is fundamental for teaching performance for several reasons.	Knowledge of the purposes, objectives, and legal regulations governing education provides teachers with a clear guide for their professional development. This understanding not only allows them to comply with the regulations of their profession ethically, but also equips them to manage educational administration appropriately.

Source: Own elaboration.

DISCUSSION

The results obtained from the research on pedagogical competencies acquired during teacher training in the Bachelor's degree in Primary Education confirm the hypothesis with the outcome of the Spearman correlation test, providing evidence to affirm that there is a significant association between teacher training and pedagogical competencies. The Spearman "r" coefficient is 0.863, which, according to Hernández-Sampieri and Mendoza Torres (2018), indicates a high positive correlation between teacher training and pedagogical competencies. It can therefore be concluded that pedagogical competencies have been largely developed during the teacher training of students in the Bachelor's degree in Primary Education at the Universidad Autónoma de Chiriquí, class of 2024.

These results align with the curricular design of the program, which is fundamental. As Saravia Domínguez et al. (2024) note, it is important that the curriculum design addresses learning needs and the teaching process in general. Therefore, it must be flexible and include methodological actions and assessment criteria that allow the achievement of the intended objectives, considering the context, the capabilities of each individual, and the demands of the labor market. The curriculum structure is based on a conceptualization that guides decision-making regarding the criteria and elements of curriculum design and development. Its goal is to ensure that it is relevant and coherent with the economic, cultural, social, scientific, and technological demands of diverse sociocultural contexts throughout its historical evolution,

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and that it responds to the training needs for the type of human being and citizen required by organized societies (Toro Santacruz, 2017). Consequently, competency-based education is a teaching and learning process aimed at enabling students to acquire skills, knowledge, and abilities through the procedures and attitudes required to achieve quality performance and fulfill the purposes of education (Cejas Martínez, et al., 2019).

Overall, the data show a competency profile regarding classroom culture and environment with a score of 3.46, representing the highest average. Cubero-Vásquez and Villanueva-Monge (2020) state that classroom culture and environment are understood as the interaction of students with the set of traditions, customs, beliefs, and practices shared in the community, which in turn give meaning to daily life and the work conducted in the classroom. This interaction is a dynamic and living phenomenon, nourished by both inherited patterns and internal and external influences, adapting and transforming at the group level. Metacognitive competencies scored 3.3, while communicative and social competencies, as well as personal competencies, scored 3.25, representing generally medium-high performance. However, certain specific areas may require further development to achieve a more balanced level of competency; these aspects can be improved through methodology or a professional development program. Communicative competencies in education not only foster a positive classroom environment but are also fundamental for the individual's life, highlighting their importance in teacher training (Valdez-Esquivel; Pérez-Azahuanche, 2021).

In research and innovation competencies, the overall score was 3.15, with investigative competence showing the lowest score. The cognitive competence of the discipline scored the lowest at 3.10, which is an important point as it represents knowledge of the concepts and theories that underpin professional understanding and the actions it entails. Delgado Nery de Vita and Alfonzo Mendoza (2019, p. 203) state that "[...] the teacher-researcher role implies constantly reflecting, adopting a critical attitude towards what has been learned in training... to establish synergies between what is learned and researched, as well as what is taught." These findings are consistent, as research is an effective means of acquiring knowledge, which is later shared in the teaching and learning process.

Regarding the focus group results, significant information was generated, such as the recognition of the importance of inclusive education, based on the understanding of legal regulations and their implementation in the classroom. Valdés-Morales, López and Jiménez-Vargas (2019, p. 190) indicates that "[...] developing inclusive schools is not an easy task: the obstacles are multiple... such as those imposed by educational policies, teacher training, available resources, among others". Therefore, it is important to highlight that students' perception of the microcurriculum is fundamental and corresponds to the preparation that every teacher should have when performing classroom duties. This preparation plays a key role in practice, as well as in strengthening competencies to plan lessons, manage time, implement strategies, and adjust resources, in order to carry out assessments that are coherent and relevant to what has been taught (Rojas Valladares; Macías Merizalde; Formoso Mieres, 2021).

These results demonstrate the significance of the constructivist model (Correa Mosquera; Pérez Piñón, 2022) and the competency-based approach, which has transformed the traditional teaching model, shifting the focus from the teacher alone to centering learning on the development of each student's capacities and skills for life (Villa Sánchez, 2020). Additionally, the contributions made two decades ago by Perrenoud, who identified the ten new competencies for teaching (Perrenoud, 2004), remain important. Another significant contribution was made by Zabalza, Cid-Sabucedo and Pérez-Abellás (2009), who enumerated nine qualities of an excellent teacher. According to Ortega Navas (2010), the European Higher Education Area (EHEA) has also identified eight competencies for the teacher profile. The Ministry of Education of Chile, in 2021, presented the Pedagogical Standards–Chile (Chile, 2022), as well as the specific competencies of the Bachelor's degree in Primary Education, redesigned in 2019. These contributions provided valuable input for the construction of the instrument, which outlines the pedagogical competencies that every student graduating from the Bachelor's degree in Primary Education should have acquired during teacher training, thereby generating a valuable tool for assessing the profile of Panamanian teachers.

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CONCLUSIONS

The analysis of pedagogical competencies acquired by students during teacher training in the Bachelor's degree in Primary Education reveals the need to implement an educational model that goes beyond traditional teaching, emphasizing the development of socio-emotional skills, respect for diversity, and the creation of cohesive learning communities.

The results obtained across the various evaluated dimensions indicate that educators must be able to integrate theoretical knowledge with practical, social, and managerial skills to address the challenges of today's educational environment. The need to implement specific and sustainable strategies that strengthen these competencies becomes evident, transforming the school environment into an inclusive and collaborative space where all students can learn.

Cognitive, communicative, metacognitive, and personal competencies, as well as pedagogical management and classroom environment, are fundamental for effective teacher performance. This suggests that initial teacher training should not only focus on academic content but also on preparing future educators to become agents of change in their educational institutions.

The results highlight that, although pre-service teachers possess theoretical knowledge about research, it is in practice that they truly face difficulties in applying what they have learned. Therefore, it is crucial to foster a culture of continuous learning, where educators feel motivated to participate in professional development, adapt, and learn from new situations.

This study not only provides a clear understanding of the competencies that must be developed in teacher training but also encourages reflection on the urgent need to improve education. Achieving this requires a collective commitment from universities to equip future educators with the necessary tools to face the challenges of the professional field.

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Authors contribution

XYAC: Conceptualización (idealización del estudio, definición de preguntas y objetivos), Metodología (diseño metodológico de la investigación), Gestión de datos (gestión de datos y metadatos, mantenimiento de datos para uso inicial y posterior), Recopilación de datos, Análisis estadístico (ejecución del diseño estadístico), Análisis de datos (interpretación de resultados y atribución de significado basado en marcos teóricos predeterminados), Recursos (provisión de materiales, equipos y software), Validación (responsabilidad de evaluar la reproducibilidad de la investigación), Escritura (redacción del manuscrito original). JPCC: Conceptualización (idealización del estudio, definición de preguntas y objetivos), Administración del proyecto (orientación, supervisión o coordinación), Recursos (provisión de materiales, equipos y software), Validación (responsabilidad de evaluar la reproducibilidad de la investigación), Revisión (revisión crítica del manuscrito original y aprobación de la versión a presentar).

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