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VENTANAS AL CONOCIMIENTO

The teaching voice in rural key:

speech accommodation and literacy as mediations of educational quality

Teacher identity in Tension:

A Hermeneutics of current educational praxis in Colombia



Other Subjects

Gamification in mathematics: a critical look at the tensions between innovation and teaching practice in Bogotá

Initial training of primary education degree students through pedagogical management

Experimentation in secondary education:
how to develop higher-order scientific skills?



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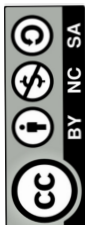
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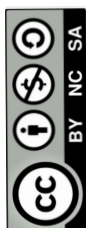
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Coordination

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Translator

Ronald Humberto Ordoñez Silva. PhD in Educational Sciences. International Corporation for Knowledge Management (Corpcigec), Quito, Ecuador. Email: ronald.cigec@gmail.com

Technical Management

Yossella Valdez. Systems Engineer. Email: yosella.valdez@iesip.edu.ve

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Editorial

Between tension and hope: educational transformations from the classroom

The issue that the reader holds in their hands arrives at a particularly significant moment for educational reflection in Ibero-America. It is not a set of isolated articles, but rather a deep dialogue among researchers who, from different countries, educational levels, and disciplinary traditions, share a central concern: how to build an education that not only transmits content but also transforms realities, subjectivities, and professional practices? The editorial team has selected six works that, from teacher training to science teaching, from language policies to the foundational thought of José Martí, offer situated, critical, and hopeful answers.

The first article, signed by Lady Johanna Ulloa Poveda, carries out a rigorous analysis of bilingualism policies in Colombia. The author does not limit herself to reviewing programs such as the National Bilingualism Program or the "Colombia, Very Well" law, but rather investigates the structural tension between the real and the ideal role of the teacher. With a hermeneutic gaze that integrates ontological, ethical, and pedagogical dimensions, the research reveals that the identity of the English teacher is constructed amidst often contradictory normative demands and a personal ethical consciousness that seeks to reconcile itself in daily practice. The findings are compelling: without comprehensive strengthening of teacher training — which includes not only linguistic competencies but also pedagogical and reflective ones — bilingualism goals will remain elusive. The conclusion invites us to think of contemporary teaching as a hermeneutic praxis oriented toward the humanization of education.

Next, Arnold Barreto Rodríguez deepens this same line of reflection on teacher identity, but from a perspective focused on the ethical and existential tensions of the educator in Colombia. His article, "Teacher identity in tension: a hermeneutics of current educational praxis," proposes an interpretive model called the Hermeneutic Triangle of Being, Ought-to-Be, and Teaching Praxis. Through semi-structured interviews, participant observation, and documentary analysis, the author shows how the teacher struggles between their deep vocation and bureaucratic and institutional demands. The vertex of "being" alludes to narrative identity, personal convictions, and the meaning each educator attributes to their profession; "ought-to-be" represents the normative horizon, standards, and policies that often operate decontextualized; and "praxis" emerges as the space of mediation where both dimensions are reconciled. The study concludes that teaching, far from being a technical application, is an ethical and political act that demands continuous training focused on caring for others, critical reflection, and collective construction of meaning.

Pedagogical innovation occupies a central place in the third article, by Miguel Chávez Marín, titled "Gamification in mathematics: a critical look at tensions between innovation and teaching practice in Bogotá." This work, part of a doctoral project, examines the promises and pitfalls of incorporating playful elements into mathematics teaching in public schools. Based on a systematic literature review and analysis of local experiences, the author reveals a persistent gap between the enthusiastic discourse of gamification and its actual implementation in the classroom. The lack of specific teacher training, curricular restrictions, scarce technological infrastructure, and work overload create a complex scenario that, in many cases, reduces gamification to mere "pointification" (points, badges, and leaderboards) without deep pedagogical intentionality. Chávez Marín argues that for gamification to transcend the level of a methodological fad, a cultural transformation in schools is required, accompanied by policies that invest in continuous teacher training, open educational resources, and parti-

icipatory action research. His reflection is a call not to confuse innovation with the simple adoption of digital tools.

The fourth article takes us to initial primary teacher training in the Dominican Republic and Cuba. Romelia Colón Valdez, Clay Pérez Jiménez, and Ángel Luis Gómez Cardoso propose a comprehensive training program to strengthen pedagogical management from the first years of the teaching career. The design, validated by expert judgment through critical opinion workshops and collective construction, is structured in four stages — diagnosis, planning, implementation, and evaluation — that systematically articulate theoretical and praxical components. One of the most notable virtues of this proposal is its flexible and contextualized nature, which recognizes the diversity of training needs and the specific realities of each institution. Evaluation is not conceived as a final moment, but as a continuous process that allows permanent adjustments and fosters self-reflection in future educators. The article constitutes a concrete contribution to teacher training policies in the region, offering a practical tool based on evidence and dialogue with the very protagonists of the process.

From Venezuela and Cuba, Omar Escalona Vivas and Víctor Bless Gutiérrez address a cross-cutting theme in natural science teaching: experimentation in secondary education and its capacity to develop higher-order scientific skills. Through a systematic review using the PRISMA methodology, the authors analyze 250 studies and extract seven thematic categories, including explicit scaffolding, collaborative problem-solving, maker culture, STEM/STEAM education, contextualization of learning, and spaces for reflective exchange. The findings are enlightening: experimentation alone does not guarantee the development of critical thinking, argumentation, or hypothesis formulation. Deliberate pedagogical guidance, opportunities for students to design, build, and test their own experiments, and a dialogic environment where error becomes a learning engine are required. The study also warns about structural gaps in Latin America — lack of equipped laboratories, scarce connectivity, insufficient teacher training — that limit the potential of experimental practices. The conclusion is a call to rethink science didactics from an integrative approach that combines epistemic rigor with social sensitivity.

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Closing the issue is an article by Rosa María Medina Borges, "The homeland in José Martí: Cuba, Our America, and the world," which offers a lucid interpretation of Martí's thought on identity and emancipation. The author traces three moments of conceptual synthesis in the work of the Cuban Apostle — "The Spanish Republic before the Cuban Revolution" (1873), "Our America" (1891), and the "Dominican Literary Review" (1895) — to show how Martí builds an idea of homeland that is neither narrowly nationalist nor abstractly cosmopolitan. The homeland is, for Martí, a community of interests, a unity of traditions, and, at the same time, a portion of humanity seen more closely. The research unveils the originality of the Cuban thinker in subverting the terminological instruments of his time (homeland, patriotism, nation) from a decolonized and deeply humanist stance. Medina Borges highlights the relevance of this thought for understanding current challenges of Latin American integration, citizenship building, and education for freedom. Her article is not just an exercise in the history of ideas, but an invitation to recover ethical and political reflection at the center of the educational debate.

Next, the editorial team incorporates a seventh article that, due to its relevance and quality, joins the central dialogue of this issue. It is titled "The teacher's voice in rural education: speech accommodation and literacy as mediations of educational quality," by Alba Lucía Barajas-Lizarazo and Adrián Filiberto Contreras-Colmenares. The study addresses one of the historical debts of Latin American educational systems: rural education. Based on documentary and field research with an ethnographic approach,

the authors examine how teachers in remote territories interpret and adapt the quality standards of the Colombian National Ministry of Education (MEN) through communicative strategies adjusted to the sociolinguistic environment. Speech accommodation theory and the sociocultural approach serve as a framework to understand that the rural teacher's ability to adapt their language and methodologies to the cultural reality of their students is not an optional addition, but the very condition of possibility for meaningful learning. The results show that rural teachers' discourse, far from being a mere transmission of content, constitutes an act of epistemic justice: it recognizes and values local knowledge, promotes dialogic practice, and is woven with affectivity and a sense of belonging. However, the findings also reveal important tensions: initial teacher training is mostly designed for urban contexts, multi-grade schools lack specific support, and quality policies often operate decontextualized. The article concludes that the true mediation of educational quality in rural settings does not lie in the repetition of universal standards, but in the teacher's ability to "accommodate their speech" — that is, to build bridges between the official curriculum and the daily life of the community. This is a fundamental contribution for rethinking teacher training, curricular policies, and educational research with a territorial focus.

Together, the seven works that make up this issue share a common thread: the conviction that education is fertile ground for transformation, but that transformation does not occur automatically or by decree alone. It requires committed individuals — teachers, trainers, researchers — capable of sustaining the tension between what is and what ought to be, between norm and conscience, between tradition and innovation. It also requires public policies that are not content with grandiloquent declarations, but that invest sustainably in teacher training, equitable infrastructure, and pedagogical support. Finally, it requires an academic community that dialogues with classrooms, listens to teachers, and places knowledge at the service of social justice.

The journal expresses its deepest gratitude to the authors for the quality and commitment of their contributions, as well as to the anonymous reviewers who, through their rigorous work, have guaranteed the scientific level of these pages. It invites readers to immerse themselves in each article with the certainty that educational research is not a luxury reserved for a few universities, but an indispensable tool for building more inclusive, creative, and humane societies. The next issue will continue exploring these paths, in the hope that shared reflection will continue to illuminate the way for those who, from the classroom, the laboratory, or the lectern, make possible the daily miracle of educating.

The editorial team

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Research articles

Artículos de investigación

Analysis of bilingualism policies in Colombia: Immersion and teacher training

Análisis a las políticas de bilingüismo en Colombia: Inmersión y formación docente



Lady Johanna Ulloa Poveda

English as a foreign language teacher at Colegio Instituto Técnico Laureano Gómez, Bogotá dc – Colombia.

Abstract

This article critically analyzes bilingualism policies in Colombia, focusing on higher education, language immersion, and teacher training. Through a systematic PRISMA review, milestones and approaches of programs like the PNB and “Colombia, Very Well” were examined. Results reveal efforts to strengthen English proficiency, but also implementation challenges. The effectiveness of immersion and the need for robust, contextualized teacher training are discussed. It concludes that future success depends on investing in educators and adapting strategies to Colombian realities, offering recommendations for more effective and sustainable policies.

Keywords: Bilingualism, Colombia, Higher Education, Language Immersion, Teacher Training, Educational Policies.

Resumen

Este artículo analiza críticamente las políticas de bilingüismo en Colombia, enfocándose en la educación superior, la inmersión lingüística y la formación docente. Mediante una revisión sistemática PRISMA, se examinaron hitos y enfoques de programas como el PNB y “Colombia, Very Well”. Los resultados revelan esfuerzos por fortalecer el inglés, pero también desafíos en la implementación. Se discute la efectividad de la inmersión y la necesidad de una formación docente robusta y contextualizada. Se concluye que el éxito futuro depende de la inversión en educadores y la adaptación de estrategias a la realidad colombiana, ofreciendo recomendaciones para políticas más efectivas y sostenibles..

Palabras clave: Bilingüismo, Colombia, Educación Superior, Inmersión Lingüística, Formación Docente, Políticas Educativas.

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Introduction

Bilingualism is understood as the ability to communicate in two languages. Furthermore, it is a vital competency in the context of globalization and the knowledge economy (Fandiño et al., 2012). In Colombia, there are over sixty indigenous languages spoken throughout the national territory, which makes it linguistically diverse. This reality has led to the formulation and implementation of various language policies aimed at strengthening the mastery of a second language, primarily English, among its citizens. Thus, Congress passed the General Education Law of 1994, which recognizes the country as a multilingual and pluricultural nation.

However, there are more recent programs such as the *National Bilingualism Program (NBP) and 'Colombia, Very Well'*, through which the National Government has sought to provide an education aligned with the demands of an interconnected world. Likewise, state examinations conducted by the Colombian Institute for the Evaluation of Education (ICFES) in 2004 indicate that ninety-nine percent of students chose English for the college entrance exam (Ministerio de Educación Nacional, 2006).

Nevertheless, the development of these policies has generated significant debates and challenges, particularly in the sphere of higher education and teacher training. The effectiveness of pedagogical strategies, such as language immersion, and the preparation of educators to meet the requirements of a bilingual curriculum are aspects that merit critical and reflective analysis.

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This research article aims to critically analyze the evolution and impact of bilingualism policies in Colombia, with an emphasis on higher education, language immersion, and teacher training. To this end, it identifies the main milestones and approaches of these policies, evaluates the effectiveness of language immersion as a pedagogical strategy in the Colombian context, and analyzes the role and preparation of teachers in the implementation of such policies. Finally, it generates recommendations for future bilingualism policies in the country.

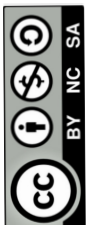
The central question guiding this reflection is: How have bilingualism policies in Colombia evolved, and what has been their impact on higher education, language immersion, and teacher training? Through a systematic literature review and a critical analysis of government documents and programs, this study seeks to offer a comprehensive perspective on this issue of vital importance for Colombia's educational and social development.

Methodology

In preparing this article, a systematic literature review methodology was employed, following the principles of the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) statement. This approach enabled a rigorous search, selection, and analysis of relevant scientific literature, ensuring transparency and replicability of the process.

Search criteria

The literature search was conducted using a combination of keywords in Spanish and English, which included: "*bilingualism policies Colombia*," "*higher education bilingualism*," "*language immersion Colombia*," "*teacher training bilingualism*," and "*bilingualism impact education*." These keywords were



combined with Boolean operators (AND, OR) to maximize the retrieval of pertinent articles.

Information sources

The databases consulted were Scopus, Web of Science, and Google Scholar. Priority was given to identifying articles published in journals within the fields of linguistics, applied linguistics, education, and bilingualism, in order to ensure the quality and impact of the selected literature. The search was restricted to publications from the last ten years (2015-2025).

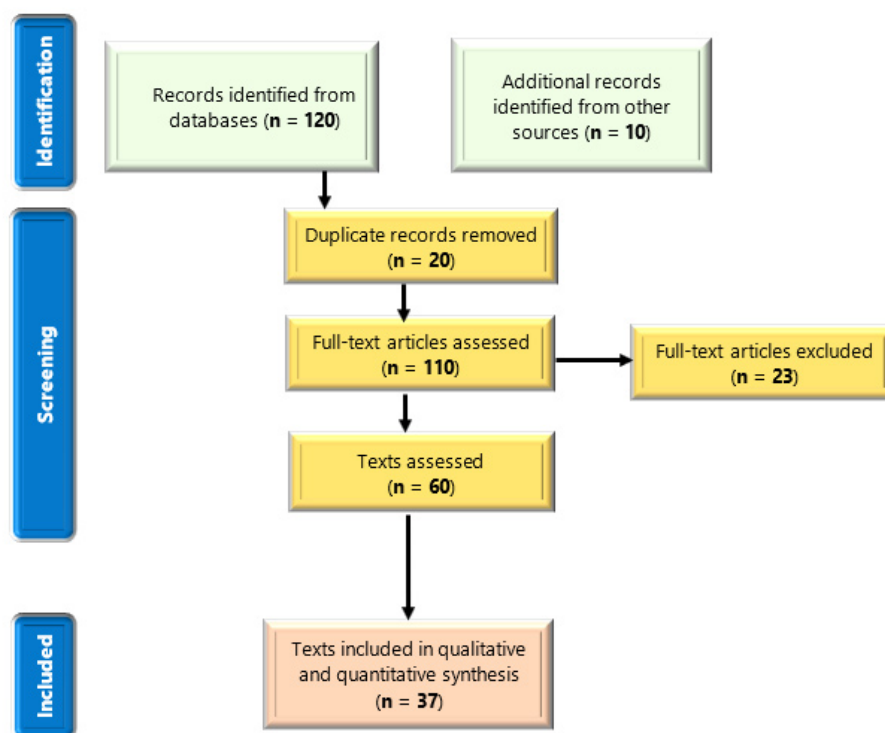
Inclusion and exclusion criteria

Included were original research articles, systematic reviews, case studies, and reflective articles addressing bilingualism policies in Colombia, their implementation, impact on higher education, or teacher training. Publications prior to 2015, articles not related to the Colombian context, studies on bilingualism in non-educational or non-policy settings, and opinion pieces lacking solid empirical or theoretical support were excluded.

Selection process and data extraction

The selection process was carried out in two phases, following a systematic approach that can be represented using a PRISMA flow diagram. Initially, a total of 120 articles were identified through the Scopus, Web of Science, and Google Scholar databases, using the predefined keywords and filters.

Figure 1
PRISMA flow diagram



Note: The researcher (2026).

In the *identification phase*, 120 records were located in databases and 10 additional records were identified through other sources. After removing 20 duplicates (e.g., not related to Colombia, outside the date range, or not pertinent to the topic), 110 records remained for screening. This resulted in 150 articles for full-text review.

In the *screening stage*, these 110 records were reviewed by title and abstract, excluding 50 for not meeting relevance criteria, such as lack of relevant data, inadequate methodology, or not directly addressing bilingualism policies in Colombia, leaving 60 full-text articles for analysis. During the eligibility assessment, these 60 full-text articles were evaluated, of which 23 were excluded for not conforming to the established criteria.

Finally, 37 articles met all the inclusion criteria and were used for the analysis and synthesis of this reflective article. Relevant data from each article, such as authors, year of publication, objectives, methodology, results, and conclusions, were extracted and synthesized for subsequent analysis.

Data analysis

The information analysis was conducted qualitatively, identifying recurring themes, trends, challenges, and opportunities in the implementation of bilingualism policies in Colombia. Special attention was paid to the discussion on the effectiveness of language immersion and the role of teacher training, contrasting the findings with the provided government documents and the existing literature.

Results and discussion

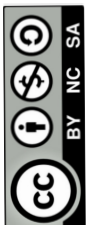
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Bilingualism policies in Colombia have undergone a significant evolution since the 1990s, driven by the growing importance of a second language in the global context. Initially, the General Education Law of 1994 laid the foundations for recognizing the nation as multilingual and pluricultural, promoting bilingual and intercultural ethno-education, along with the teaching of foreign languages. However, the main focus has centered on English, seeking the country's insertion into the global economy and universal communication ([Ministerio de Educación Nacional, 2006](#)).

Milestones and approaches of bilingualism policies from a detailed retrospective

Undoubtedly, the political trajectory of bilingualism in Colombia reflects the evolutionary nature of national priorities and global influences. The Political Constitution of 1991 establishes in Article 10 that the official language is Spanish, but in "those communities with their own linguistic traditions, [education] will be bilingual" ([Asamblea Nacional Constituyente, 1991](#)). There is a fundamental reason for this purpose: the country's ethnic and cultural diversity, hence the need to respect and promote native languages. However, the phenomenon of globalization and the increase in economic and cultural interconnectedness have exerted a shift in focus toward the mastery of foreign languages such as English ([De Mejía, 2006](#)).

Precisely, the governing body of these educational policies has been the Ministry of National Education, charting the roadmap through programs and documents for bilingualism in Colombia. In 2004, the NBP was launched as a comprehensive long-term vision. This required not only teacher training but also the monitoring of English teaching and learning processes in the country. The stated purpose was the comprehensive education of students to have citizens capable of communicating in English



(NBP, 2004; Díaz & Carmona, 2010).

Subsequently, in 2006, the Basic Standards of Competencies in Foreign Languages: English were added. This document set the goal that students, upon completing secondary education, would have an intermediate B1 level of English. Likewise, teachers were expected to have an upper-intermediate B2 level, and newly graduated language teachers a minimum advanced level of C2 (Ministerio de Educación Nacional, 2006). These levels were comparable to the B1 and B2 levels of the Common European Framework of Reference for Languages (CEFR). In this sense, the central approach was established under a Curriculum for Academic Excellence and Comprehensive Education, which required going beyond the acquisition of linguistic structures.

The *Program for the Strengthening of Foreign Languages (PSFL) 2010-2014* sought to develop communicative competencies in English among educators and students within the educational system to favor the insertion of human capital into the knowledge economy. The stated purpose was to complement classroom work for secondary education students through the development of a mass English program (Ministerio de Educación Nacional, 2013). In this regard, the evaluation of English competencies through the SABER tests in grades 5 and 9 was included. Meanwhile, at the higher education level, the Saber Pro tests were promoted so that students about to graduate or graduates of professional university programs would achieve the B1 level, that is, reading, grammar, and lexical tasks according to the Common European Framework (Ministerio de Educación Nacional, 2022).

Likewise, the program developed accompaniment in the improvement processes for undergraduate programs that trained English teachers. At the same time, certification of the quality of institutions with programs for work-oriented and human development training focused on English teaching was carried out. Tutoring for secondary school students in a second language was also included. Furthermore, the use of new technologies in English teaching was promoted.

Another important milestone was the enactment of Law 1651 in 2013, also known as the Law for the Strengthening of English Teaching in Colombia. This law served as a complement to Law 115 of 1994. This legal norm was oriented within public educational policy to improve the quality and competitiveness of citizens through the mastery of English as a second language. This law applies to all levels of the Colombian educational system, from preschool to higher education. Likewise, it establishes training and professional development programs so that teachers can teach English with quality, following international standards such as the Common European Framework of Reference for Languages. It also sets forth the evaluation of communicative competencies in English through national and international tests.

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Another important milestone has been the *National English Program (NEP) 2015-2025*, known by the slogan "Colombia Very Well," which is an initiative of the Ministry of National Education to strengthen



the learning of English as a foreign language at all levels of the educational system so that Colombia can achieve international standards and benefit from greater opportunities in education, employment, and international mobility ([Ministerio de Educación Nacional, 2014](#)).

Impact on higher education and language immersion

Language immersion is understood as a pedagogical approach in which a second language is used as the medium of instruction to teach academic content in order to develop linguistic competence ([Genesee, 1987](#)). However, [Bostwick \(n.d.\)](#) argues that this new language is not only the medium of instruction but also the object of it. In this sense, in immersion, the foreign language is used as a tool that enables the learning of other disciplines, thus creating an authentic and meaningful environment.

It should be noted that the impact of these policies on higher education has been mixed. While the teaching of English and the pursuit of higher proficiency levels (B1, B2 according to the CEFR) have been encouraged, the effectiveness of language immersion as a pedagogical strategy has been the subject of debate. Immersion, which seeks to maximize student exposure to learning in a second language (L2) in academic and everyday contexts, has proven effective in other contexts for developing additive bilingual competence ([Cummins, 2000](#)).

However, in Colombia, the implementation of immersion programs has faced challenges related to the availability of qualified teachers, adequate resources, and the homogeneity of students' entry levels. As well as the fact that not all institutions meet the required standards because they lack the necessary resources to facilitate teaching and learning processes to achieve communicative competencies in English ([García et al., 2018](#)). Likewise, it has been found that beliefs about foreign language learning play a significant role, especially in promoting the development of communicative competence ([Gómez, 2018](#)). It should be noted that debates and criticisms have arisen regarding this positioning of English as the dominant language to be learned throughout the educational system and as a tool for international competitiveness ([Roux & Soler Millán, 2023](#)).

Recent studies indicate that the goal of achieving bilingualism in Colombia by 2025 seems unattainable ([Ramos et al., 2021](#)). Other research maintains that not only does the achievement of this goal remain very low, but also no significant improvement is observed ([Benavides, 2021](#)). But what is the reason behind this situation? It appears that one of the most predominant factors is the lack of continuity in its implementation, from a structural point of view. However, at the specific or operational level, it has been pointed out that the weaknesses lie in the "number of hours and methodological and evaluation practices that affect program contents and student performance" ([Jiménez et al., 2017](#)). Nevertheless, there are those who consider that there are few opportunities for teachers provided by the MEN ([Bastidas & Muñoz, 2015](#)). Likewise, the level of students upon completing their university studies has not shown significant improvement in recent years ([Benavides, 2021](#)).

On the other hand, it is worth mentioning that Colombia ranks among the lowest in terms of bilingualism, occupying 74th place out of 116 countries, and at the Latin American level, it ranks 17th out of 21 ([EF English Proficiency Index, 2025](#)). Furthermore, 43% of teachers in Colombia are trained in English, and only 5% of eleventh-grade students ([Milanés, 2025](#)). The ICFES tests indicate low levels in English, and this is due to formative and cultural processes that have not achieved an optimal level

in students, with the majority at the basic level (A1) (Amaya & Osorio, 2021).

For their part, Estrada et al. (2015) and Sánchez et al. (2016) point out that there is limitation and lack of teacher quality, which calls for the development of formative scenarios that favor bilingual learning in students. Likewise, it has been found that participants' beliefs about language learning are related to the impact on motivation and academic performance (Sierra et al., 2024).

Also at the structural level, the literature suggests that foreign language acquisition depends on exposure to communicative situations in which students can understand the message, even without fully mastering the linguistic structure (Krashen, 1982). This implies that an effective immersion environment must provide real opportunities for interaction in the language, which is not always achieved in the Colombian educational system due to factors such as class sizes, lack of authenticity in materials, and limited exposure outside the classroom.

The role of teacher training

The author of this article agrees with Vergara and Gómez (2020) that to teach a language, whether native or foreign, the teacher must have both linguistic and pedagogical training. These elements are fundamental because bilingualism serves as a bridge between language and identity. Moreover, bilingual learning enhances not only cognitive development but also self-esteem (Gupa, 2019).

Achieving the aforementioned goals requires teacher training. Galindo and Moreno (2019) state that in Colombia, academic events have been held twice a year, such as regional, national, and international conferences for foreign language development, but there are also language refresher programs developed by institutions. Likewise, language level certification has been carried out.

In this sense, "the Ministry of National Education of Colombia, in its pursuit of improving the quality of national education, has committed to the continuous training of teachers" (Osorio, 2016, p. 47). It follows from this that in Colombia there is a shortage of English teachers that fails to cover the entire student population, and this makes it necessary to consider both initial and ongoing teacher training. Teacher training is defined as "constant learning, bringing it closer to the development of professional activities and to professional practice, and from it" (Imbernón, 2007, p. 11). This teacher training implicitly includes continuous training because the teacher is "a professional capable of mastering their own evolution, building new competencies and knowledge based on what they have acquired and their own experience" (Perrenoud, 2007, p. 23).

Thus, the Ministry of National Education, as the governing body of educational policies of the Colombian government, has set itself the great goal of a Bilingual Colombia, and therefore teacher training is a way to sensitize and raise awareness among English teachers about their responsibility and commitment to the State and the country in the formation of new generations, which is why they must train themselves and achieve English proficiency levels. This is why, as Vaillant and Marcelo (2015) affirm, in training, both the capacity and the will of each person are key elements in formative processes.

According to official MEN documents, various efforts have been made in Colombia to strengthen English teaching. One of the main objectives set is to ensure that "100% of English teachers are at the



B2 level" (Colombia, MEN, 2012). To advance toward this goal, the Ministry established, in partnership with a training institution, the so-called "English Training Strategy in Cascade Scheme," which seeks to train and benefit a group of 3,000 teachers throughout the country, thus promoting a significant improvement in their linguistic competencies and in the quality of education they offer to students.

Conclusions

Bilingualism policies in Colombia have demonstrated a clear intention to position the country within a globalized context, prioritizing the learning of English as a second language. However, the critical analysis of their evolution and impact reveals a gap between the stated objectives and the results achieved, particularly in higher education and with regard to teacher training.

Language immersion, although recognized as an effective pedagogical strategy, has encountered limitations in its application due to the lack of resources, the heterogeneity of student proficiency levels, and, fundamentally, the insufficient preparation of teachers. The success of these policies cannot depend solely on the enactment of laws and programs but requires substantial and sustained investment in the professional development of educators. It is imperative that teacher training transcends mere language proficiency and focuses on second language teaching methodologies, including immersion pedagogy, assessment, and curricular adaptation.

For future bilingualism policies in Colombia, the following recommendations are put forward: (a) Strengthen initial and ongoing teacher training in second language didactics and bilingualism, ensuring that teachers acquire not only linguistic but also pedagogical competence. (b) Develop language immersion programs contextualized to the Colombian reality, considering the particularities of each region and educational level. (c) Promote research on the effectiveness of different second language teaching strategies in the Colombian context. (d) Establish rigorous evaluation and monitoring mechanisms that allow policies to be adjusted based on results and the needs of the educational system. (e) Promote a more inclusive vision of bilingualism that also values and strengthens the country's indigenous and creole languages, in line with its multilingual and pluricultural character.

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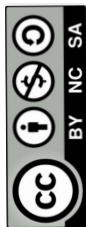
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About the author:

* Lady Johanna Ulloa Poveda is a Doctoral Candidate in Education at the Universidad Antonio Nariño, Bogotá. She completed a Proficiency and Professional Development Course for Teachers from Colombia (Hyderabad) at the English and Foreign Languages University: Hyderabad, Telangana. She holds a Master's degree in Didactics of Sciences (Cundinamarca) from the Universidad Autónoma de Colombia, a Specialization in University Teaching (Cundinamarca) from the Universidad Cooperativa de Colombia, and a Specialization in Education and Family Counseling (Cundinamarca) from the Fundación Universitaria Monserrat. She earned her Bachelor's degree in Spanish and Languages from the Universidad Nacional de Colombia. She is currently an English as a Foreign Language Teacher at the Colegio Instituto Técnico Laureano Gómez, Bogotá, D.C., Colombia. Email: Ladyz12@hotmail.com



Teacher identity in tension: A hermeneutics of current educational praxis in Colombia

La identidad docente en tensión: Una hermenéutica de la praxis educativa actual en Colombia



Arnold Barreto Rodríguez

Institución Educativa departamental Real del Obispo, Tenerife, Departamento Magdalena / Colombia

Abstract

This article analyzes the current tension between the real and ideal roles of teachers in contemporary education, through a hermeneutic perspective that integrates ontological, ethical, and pedagogical dimensions. The method employed was hermeneutic, supported by semi-structured interviews, reflective participant observation, and documentary analysis. The subjects were active teachers and teacher trainers from Colombian public institutions. The analytical processes were articulated in three stages —pre-understanding, interpretation, and fusion of horizons— which facilitated the construction of emerging categories related to teacher identity, professional ethics, and pedagogical praxis. The results show that teacher identity is constructed in a space of constant tension between normative demands and personal ethical consciousness; pedagogical practice is the space where both dimensions are reconciled. It is concluded that contemporary teaching must be understood as a hermeneutic praxis oriented toward the humanization of education and the ethical strengthening of teacher training.

Keywords: Hermeneutics, teacher attitudes, teachers, ethics, educational practices.

Resumen

Este artículo analiza la tensión actual entre los roles real e ideal del docente en la educación actual, a través de una perspectiva hermenéutica que integra dimensiones ontológicas, éticas y pedagógicas. El método empleado fue el hermenéutico apoyado en entrevistas semi-estructuradas, observación participante reflexiva y análisis documental. Los sujetos fueron docentes activos y formadores de docentes de instituciones públicas colombianas. Los procesos analíticos se articularon en tres etapas precomprensión, interpretación y fusión de horizontes que facilitaron la construcción de categorías emergentes relacionadas con la identidad docente, la ética profesional y la praxis pedagógica. Los resultados muestran que la identidad docente se construye en un espacio de constante tensión frente a las demandas normativas y la conciencia ética personal; la práctica pedagógica es el espacio donde ambas dimensiones se reconcilian. Se concluye que la enseñanza contemporánea debe entenderse como una praxis hermenéutica orientada a la humanización de la educación y al fortalecimiento ético de la formación docente.

Palabras clave: Hermenéutica, actitudes del docente, profesores, ética, prácticas educativa.

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Introduction

In recent decades, the social, cultural, technological, and political changes affecting contemporary educational systems have produced a transformation in the practice of the teaching profession. In this sense, the practice of teaching must remain in a tension between the educator's being and ought to be, which refers to the distance existing in the profession, in terms of experience, vocation, and ethical consciousness, and the assumption of the normative, administrative, and technical demands derived from educational policies and school management models (Tenti, 2005). The distance between the different dimensions that constitute the teaching profession is not an individual problem; at best, it is a collective and structural problem of pedagogy, of teaching practice, and of the ethics of education.

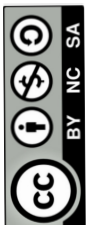
In the Ibero-American context, numerous studies consider that teacher identity is not a static condition or an attribute definitively acquired during initial training. Instead, it presents itself as a dynamic, historical, and relational construct, shaped at the intersection of the subject, the institutional context, and pedagogical practice (García, 2022). From this perspective, teacher identity is a process understood as the continuous interpretation, throughout the life cycle, of a series of autobiographical elements, values, knowledge, demands, intersubjective and intrasubjective factors, and social aspects. In this sense, the growing normative and prescriptive emphasis on the ought to be constitutes a regulatory horizon that impacts pedagogical practice. Nevertheless, and frequently, it operates decontextualized and removed from classroom realities and the educator's subjectivity (García, 2024).

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The gap between what is and what ought to be has brought to the surface some relevant ethical tensions in teaching practice, especially when institutional demands favor accountability, curricular standardization, and administrative control, to the detriment of more formative, reflective, and human educational processes (De la Hoz Cantillo, 2023; Flores et al., 2022). In this context, teaching runs the risk of being reduced to a purely technical and instrumental function, stripped of its ethical, political, and ontological dimensions. In this regard, and according to Freire (2019), pedagogical practice must be seen as a non-neutral and situational act that demands an ethical and political positioning concerning the world, knowledge, and the other.

From this perspective, teacher identity and praxis must be analyzed from a viewpoint that transcends technicist or positivist approaches. Philosophical hermeneutics, as in the tradition of Gadamer (2018) and Ricoeur (2018), constructs a framework that, by defining understanding as a situated, interpretive process measured in terms of language, historicity, and experience, proves appropriate. Thus, pedagogical practice is a positional interpretive practice in which the teacher re-signifies their role, responsibilities, and ethical decisions in and for the educational and social context.

The responsibility of an educator centers on ethics when one considers that educating means relating to the other. For Levinas (2019) and the ethics of alterity, the educational act is a commitment to the face of the other, a commitment that calls for a response from the educator. Therefore, it is an act that requires from them care, recognition, and commitment. Such understanding finds an echo in Morin (2020), when he states that education must be oriented towards the integral development of the human person, in a complex and inseparable manner, constructing knowledge, ethics, and affectivity. Consequently, it is teaching practice that constitutes the convergence point of personal identity, ethics, and pedagogy.



This article aims to analyze the current tension between the real and ideal roles of the teacher in contemporary education, through a hermeneutic perspective that integrates ontological, ethical, and pedagogical dimensions. The intention is to conduct a comprehensive investigation of teacher otherness, considering the professional experience of educators, and the ethics, ontology, and pedagogy that emerge from such practices.

The research design was developed under a qualitative hermeneutic approach, utilizing semi-structured interviews, as well as reflective observation, participation, and documentary analysis. The research was conducted in public education in Colombia and included practicing educators and teacher trainers. The analysis was divided into three phases corresponding to pre-understanding, interpretation, and the fusion of horizons, in relation to [Gadamer's \(2018\)](#) hermeneutic circle. Consequently, the emergence of interpretive categories in teacher identity, professional ethics, and pedagogical praxis was facilitated.

As a result, the study proposes a model termed the *Hermeneutic Triangle of Being, Ought to Be, and Teaching Practice*, which offers the possibility of understanding teaching as a praxis in which identities, ethics, and pedagogical action are integrated in a dialectically articulated manner. This contribution to reflection on teacher training and practice aims precisely to restore the humanistic and ethical perspective that must accompany education, as it confronts the challenges inherent in contemporary education.

Methodology

The research was conducted from a qualitative hermeneutic approach, aimed at understanding the ethical, ontological, and pedagogical meanings that configure the being and ought to be of the educator within the contemporary educational scenario. This approach is based on the assumption that educational reality cannot be reduced to objectively observable and measurable facts, but must be understood and interpreted based on the experiences, narratives, and understandings that teachers have constructed regarding their professional practice. In line with philosophical hermeneutics, understanding was taken as a situated, historical, and relational interpretive process in which a fusion of horizons occurs between the researcher and the educational phenomenon ([Gadamer, 2018](#)).

The study was conducted with active teachers and teacher trainers affiliated with public institutions of primary, secondary, and higher education in Colombia. Participants were selected through purposive sampling, prioritizing criteria such as professional training, teaching experience, and reflective disposition regarding educational practice, as proposed by [Patton \(2015\)](#). Participants were viewed as hermeneutic subjects, considering them as agents capable of constructing meaningful interpretations of their teaching practice, and appreciated from their ethical, professional, and personal experience.

The interviews and documentary analysis were accompanied by reflective participant observation. The tension between teachers' professional identity and institutional expectations was addressed through the interviews. Teaching praxis was accompanied and understood through reflective participant observation, in didactic proposals, in training decisions, and in the ethical dilemmas that arise in the daily exercise of teaching. Document analysis focused on educational policies, professional ethics codes, teacher training programs, and academic literature, to situate participants' narratives within broader institutional and regulatory contexts.

Pre-understanding, interpretation, and the fusion of horizons constituted the stages of the information

processing practice, based on [Gadamer's \(2018\)](#) hermeneutic circle. In pre-understanding, the researcher identifies the hypotheses and positions, in this case, of the researcher, towards the phenomenon under study. Then, in the interpretive phase, analytical readings and dialogical readings of narratives and documents were carried out, allowing for the construction of meaning and the discovery of categories related to teacher identity, ethics, and teaching practice.

Throughout the research, the researcher executed a practice of reflexivity, systematizing in a journal the perceptions, intuitions, and ethical dilemmas that arose when interpreting the information. This practice is considered an exercise in epistemological transparency, which recognizes the researcher's role in executing data interpretation. In this sense, the researcher considers research objectivity not as a neutral stance, but as a practice of self-documentation of the reflective and monitoring role that the researcher has over the interpretations they make, as well as their critical perspective.

The ethical aspects of the study conformed to the regulations of the American Educational Research Association ([AERA, 2020](#)) insofar as they ensured informed consent, protection of identity, and the right to non-participation of the teachers. Additionally, the research focused on Levinas's (2019) ethics of encounter, who considers the connection with research participants as a responsibility. This responsibility refers to respect for and recognition of the dignity of the participants' voices as ethical and reflective subjects.

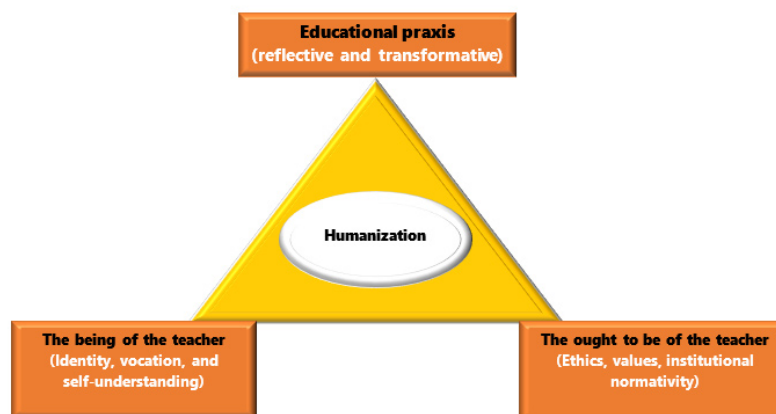
Results and discussion

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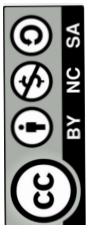
The hermeneutic analysis of teacher narratives and institutional documents allowed for an understanding of the educator's being and becoming within the framework of their insertion into concrete educational realities. From the interpretation process—developed in the phases of pre-understanding, interpretation, and fusion of horizons— three interpretive categories emerged that structure the core of teaching thought in the current context: (a) the ontological self-understanding of the teacher; (b) the ethical tension between the vocational calling and institutional regulation; and (c) pedagogical praxis as a space for mediation and reconciliation. These categories were articulated in an interpretive model proposed in this study, termed the Hermeneutic triangle of being, ought to be, and teaching praxis.

Figure 1

The hermeneutic triangle of being, ought to be, and teaching praxis



Note: Own elaboration (2026).



Category: The being of the teacher (identity, vocation, and self-understanding)

Figure 1 presents the Hermeneutic triangle of being, ought to be, and teaching praxis as an interpretive model that synthesizes the constitutive tensions of professional teacher identity in the current context. This model is elaborated from the hermeneutic analysis of teachers' narratives and, therefore, explains that identity is not conformed as a static category, or as a result, but is configured as a dynamic process of mediation where the ontological dimension of the teacher's being, the normative demands of the ought to be, and educational practice overlap and are actualized.

The vertex of teacher being refers to the ontological and vocational dimension of professional practice, which is associated with self-understanding, ethical convictions, responsibility, and the meaning that the teacher attributes to their work. This dimension, as Ricoeur (2006) points out when speaking of a narrative identity, is constructed and reconfigured throughout the professional trajectory, in dialogue with narratives and experiences. In this way, teacher being is not merely performing a functional role, but rather, it is a way of being in the educational world.

At the other vertex of the triangle lies the duty to teach, which encompasses all instructional guidelines, teaching policies, curricular frameworks, and institutional expectations that establish parameters for teachers' professional practice. This dimension attempts to provide, at least, some level of rationality which, however, is hostile to educational autonomy and the uniqueness of school contexts. As Hargreaves (2003) notes, teachers' ever-increasing workload and the standardization of teaching lead to what is known as simplification. This is especially true when the 'duty' is imposed uncritically without considering the teacher's experience and professional judgment.

Teaching practice, positioned at the third vertex, is that space where 'being' and 'doing' are located, confronted, and resignified in relation to one another. From the perspective of philosophical hermeneutics, practice is more than mechanical execution. It is an interpretive action that requires a certain intellectual work, and it is an action that entails responsibility and ethical decision-making in particular situations (Gadamer, 2018). It is in practice where the teacher balances regulatory needs and the actual needs of students, and it is here that pedagogical actions emerge in a situated manner, which do not necessarily conform to institutional edicts.

It should be clarified that, within this model, the triangular configuration does not mean that each dimension functions in isolation. Instead, the tension described by each dimension is fundamental in the construction of educational identity and reinforces the conflict between 'is' and 'ought to be' as a structural condition of the teaching profession. From the perspective of the ethics of alterity, this tension is aggravated in the relationship with the other—the student—whose very presence summons the teacher to respond, beyond the norm, in a responsible and contextualized manner (Levinas, 2019).

Figure 1 does not intend to offer a closed explanatory framework, but rather an interpretive distribution that allows us to glimpse some of the complex facets that configure teacher identity in the contemporary context. In this sense, educational practice is perceived as a space for ethical and pedagogical mediation in which professional identity is constructed and negotiated permanently, in the dynamic interrelation between teacher self-understanding, normative demands, and the situated exercise of education.

Category: The ethical responsibilities of teachers as a matter of routine

In a second category, the tension in educational policies between 'what ought to be' and 'what is'



emerged as a kind of ethical self-commitment. Teachers argued that institutional policies tend to focus on the centrality of imposing rigorous criteria on the functionality of teaching, its evaluation, and the productivity of teaching, which in turn strips away the human dimension of teaching and learning. Along these same lines, Flores et al. (2022) document that most educators consider professional ethics to be one of the most contradictory areas between ideality and practice, where norms and reality intertwine, and where administrative moral demands and unidimensional administrative ethical values intersect. De la Hoz (2023) states that some participants expressed the existence of a 'duty' that was defined horizontally, and was used, by analogy, to cardinal axes. 'Ethics is not taught, it is lived' is a phrase that many used and may lead to Freire's (2019) vision of education as a profoundly moral act. From De la Hoz (2023) because the ethical praxis of teaching must be situated, in this case, in the social and cultural context of the educational act. Complementarily, Baca et al. (2023) and their reflections on the new ethics of digital teaching and social responsibility regarding information, privacy, authorship, and digital property.

The analytical approach allows us to conclude that the enunciation that the teacher can make in terms of futurism cannot be anchored in a system of bureaucratic imposition. Moreover, it is a system of imposing action possibilities. For Gadamer (2018), this would be an ethics of understanding, thus named from the subject's openness to the encounter with the other. From this point of view, to understand is to sit at the table of dialogue, actively engaging in interaction and abandoning the imposition of closed or definitive truths. This explains why teacher training must appeal to ethics and philosophy and, in the case of teaching, to love and passion.

42 **Figure 2**

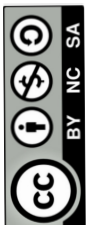
Tensions of the teacher's ought to be



Note: Own elaboration (2026).

Category: Pedagogical praxis (Space of reconciliation)

The third emerging category is the pedagogy of praxis that originates from the territory, conceptualized as the space where the teacher's being and ought to be intersect in action. The reflections indicated that a significant number of teachers, in their ethical dilemmas, choose to humanize the teaching process in their instructional strategies. One of the teachers expressed, "When I listen to students, I learn to be a better teacher. The ought to be comes from the classroom, not from the book." This expression captures the meaning of Freire (2019) when he maintains that teaching is not simply transferring knowledge, but creating conditions for students to appropriate meaning.



Mora (2024) argues that critical pedagogy materializes in teaching processes when teachers, through reflective and reasoned exercise, assume an ethical stance toward social injustices. Complementarily, Castillo et al. (2023) point out that the ethical leadership of teachers contributes to the construction of students' professional ethos, transforming the classroom into a space for moral formation.

The results indicated areas that led to positive constructions of the pedagogy of practice as an exercise in pedagogy, not as mere transmission of input, knowledge, or values. They exemplify transformative practice that articulates the ideal with the real, thought with action, being with ought to be. This resonates with Morin's (2020) elaboration describing education as a complex framework where knowledge, ethics, and affectivity intertwine to build liberated and responsible citizens.

Figure 3

The reflective spiral of teaching praxis



Note: Own elaboration (2026).

Contemporary educational practice can and should be recognized as a transformative and reconstructive process of the teacher's integrality. It is not merely an exercise of profession; it is also an exercise of meaning, where the teacher's identity is conjugated with the identity of being. This provokes a dialectical tension that articulates the meaning of educational practice. Along these lines, the educator does not teach from a norm, but from a consciousness that appropriates them. This transforms their praxis into a reflective experience where the pedagogical, the ethical, and the ontological are articulated in the same task which, fundamentally, is no longer only in the classroom. It is the humanization of education.

From the perspective of Levinas (2019), the origin of all moral action is responsibility toward the other. In this way, and within the realm of education, it is a matter of ethical recognition of otherness in the pedagogical relationship. To educate, in this sense, means to care, to listen, and to accompany with dignity, knowing that each encounter with the student is an encounter with the face of the other, which

poses a moral demand. Understood in this way, the teacher no longer conceives of themselves as a mere transmitter of content, or as an executor of institutional policies; they perceive themselves as an ethical subject who is in contact with the profound meaning of their pedagogical work in contexts marked by fragmentation and dehumanization. Their work is not limited to complying with pre-established standards; moreover, it is oriented toward the construction of a culture of ethical reflection, where teaching is conceived as a situated, committed, and transformative act in the here and now of the educational experience.

Under such circumstances, teaching practices could be thought of as a hermeneutic praxis, which implies a more distanced dialogue between what institutional frameworks, norms, and consciousness do. Only in this double ethical and creative tension can transformative teaching emerge that illuminates the meaning that each individual grants to the knowledge we construct in school. A teaching capable of integrating the technical and the sensitive, the norm and the human, and education and its true essence.

Conclusions

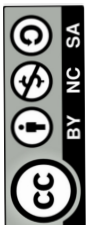
The interpretive analysis allows us to recognize that today's teacher faces existential crossroads where being and ought to be, in this case, are neither abstract nor philosophical; they are lived in the paradoxes of professional practice. The analysis illuminates that being a teacher means being in a continuous and repetitive process of enormous difficulty. Of forging and desperately seeking self-understandings, identity constructions within a constellation of vocation, a constellation of experiences, and a strong ethical commitment to the other. It is not a given being. It is a being that relates—to students, to knowledge, and to the world.

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The being, in this case, must be more than a list of institutional rules and prescriptions. It is an ethical horizon aimed at structuring educational practice, in terms of equity, responsibility, and alignment, as far as the ethical is concerned. The more a teacher incorporates this ethical 'being' into their professional role, the more ethics, as a protos position, transforms into something almost instinctive. This sense of teaching becomes acts that clothe the rule in a lived, human experience.

The idea of tension between two poles—identity and aspiration—becomes clearer and more significant. In this configuration, the pedagogy of praxis sees the potential to invert tension and convert it into growth. Teaching, in this configuration, is more than merely delivering content. Teaching, in this configuration, is a multifaceted experience that goes beyond the creation of meaning and includes the three primary domains of learning—cognitive, psychomotor, and affective. Education, in this case, is the opportunity to engage in intentional action that sustains the intrinsic value of all parties in the interaction. Education, in this case, is the opportunity to engage in intentional action that, at every moment, sustains the intrinsic value of all parties in the interaction.

The previous notion situates the teacher as a philosophical subject of discourse about education. In this notion, the teacher can reflect on existential questions about their being in the world and whether their teaching is consistent with their lived realities. Questions about the truth of their words and the weight of their actions. In this, the teacher is justified in constructing an ethics of care, presence, and consideration toward the other. In this, the teacher can participate in an ontological pedagogy of the person, which means that teaching is, at least, about the capacity to recognize the other and for the other to recognize the other.



The results of this study indicate that one of the most important challenges facing education today does not consist of the application of new technologies or the measurement of learning outcomes, but rather relates to the need to reconfigure the human dimension of educational activity. From this perspective, the school remains the place of dialogue, reflection, and integrality, where the teacher's voice regains relevance as pedagogical and ethical mediation, and not as a mere instructional resource. From the assumptions set forth, the teacher's being and doing are not assumed as dissociated dimensions, but as interdependent instances in the articulation between ethos and praxis, reason and affect in educational practice.

Teaching, understood thus, is an act of responsibility, an act of overflowing the dehumanization of education, and an act of invitation to commitment to a way of thinking, feeling, and acting in an integrated manner. The phenomenon of teaching in the sphere of being and doing reveals the teacher, first and foremost, as a humanizing being, a giver of meaning, and a beacon in the darkness. Teaching, of all things, educes a certain consciousness that, when Philosophy penetrates the civilizational fabric, elevates the function of teaching to the level of a true vocation, a vocation for justice, for the transformation of the human person.

Privacy: Not applicable.

Declaration on the use of artificial intelligence: The author of this article declares that no artificial intelligence has been used in its preparation..

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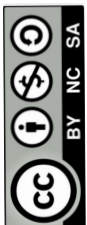
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** Arnold Barreto Rodríguez holds a Doctorate in Humanities from the Instituto de Estudios Superiores de Investigación y Postgrado (IESIP), San Cristóbal, Venezuela. He earned a Bachelor's degree in Philosophy and Religious Education from the Fundación Universitaria Católica del Norte, Santa Rosa de Osos, Antioquia, and a Master's degree in Educational Management from the Universidad Nacional Experimental del Táchira, Venezuela. He currently works as a secondary school teacher in the areas of Philosophy, Ethics, Social Sciences, and History at the Institución Educativa Departamental Real del Obispo, located in the township of Real del Obispo, municipality of Tenerife, Magdalena, Colombia. Contact email: abarretor75@gmail.com



Gamification in mathematics: a critical look at the tensions between innovation and teaching practice in Bogotá

Gamificación en matemáticas: una mirada crítica a las tensiones entre innovación y práctica docente en Bogotá



Miguel Chávez Marín*

Mathematics Teacher at Tomas Cipriano de Mosquera School, Bogotá / Colombia.

Abstract

In recent years, gamification has emerged as an innovative strategy in mathematics teaching; however, its implementation in the classroom remains limited. This article examines the tensions between the theoretical potential of gamification and the practical challenges faced by mathematics teachers in public schools in Bogotá. A critical review of experiences, teacher training, and institutional conditions reveals a gap between the discourse of innovation and the realities of the classroom. The lack of specific training, curricular restrictions, and limited technological infrastructure create a complex scenario for its adoption. This reflection invites us to reconsider gamification not only as a motivational tool, but as part of a broader pedagogical approach that requires transformations in school culture, the role of teachers, and educational management..

Keywords: Gamification, mathematics teaching, teacher training, pedagogical innovation, learning motivation, public education.

Resumen

En los últimos años, la gamificación se ha posicionado como estrategia innovadora en la enseñanza de las matemáticas; sin embargo, su implementación en el aula sigue siendo limitada. Este artículo examina las tensiones entre las potencialidades teóricas de la gamificación y los desafíos prácticos que enfrentan los docentes de matemáticas en colegios públicos de Bogotá. A partir de la revisión crítica de experiencias, formación docente y condiciones institucionales, se evidencia una brecha entre el discurso de innovación y las realidades del aula. La ausencia de formación específica, las restricciones curriculares y la escasa infraestructura tecnológica configuran un escenario complejo para su adopción. Esta reflexión invita a reconsiderar la gamificación no solo como herramienta motivacional, sino como parte de un enfoque pedagógico más amplio que requiere transformaciones en la cultura escolar, el rol docente y la gestión educativa.

Palabras clave: Gamificación, enseñanza de las matemáticas, formación docente, innovación pedagógica, motivación en el aprendizaje, educación pública.

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Introduction

Mathematical education has been questioned and renewed by various proposals that seek to transform its teaching through active, participatory, and contextualized methodologies. One of these is gamification, understood as the incorporation of elements from game design into educational contexts to motivate and generate meaningful learning experiences (Werbach & Hunter, 2012; Kapp, 2012). Although its use has spread to different educational levels and disciplinary areas, in the field of mathematics, resistance, doubts, and limitations for its implementation still persist. This situation raises a key question: why is a strategy that has shown benefits in terms of motivation and participation still marginalized in many mathematics classrooms, especially in contexts such as Latin America?

In Latin America, the incorporation of innovative approaches such as gamification faces structural and cultural barriers that go beyond the individual will of the teacher. Recent studies show that, although there is a favorable discourse towards pedagogical innovation, in practice, teachers must deal with rigid curricula, lack of specific training, and unfavorable institutional conditions (Zainuddin et al., 2020; Calderón, 2021).

In Bogotá, this gap between the ideal and the possible is deepened by inequalities in access to resources, work overload, and a traditional school culture that often privileges summative assessment over meaningful participation. Thus, the use of gamification becomes more of an exception than an established practice, even among those teachers who recognize its pedagogical value.

The resistance of many students towards mathematics is not only due to the difficulty of the content, but also to a deteriorated emotional relationship with the subject, marked by anxiety, a perception of irrelevance, and fear of error (Dondio et al., 2023). In the face of this panorama, gamification emerges as a strategy that not only incorporates motivational dynamics but also invites a rethinking of the very meaning of learning mathematics. By proposing challenges, levels, constant feedback, and symbolic rewards, spaces are opened for autonomous exploration, critical thinking, and the reframing of error as an opportunity (Homer et al., 2020; Scolari et al., 2018). Hence the importance of inquiring not only into the effects of gamification on learning but also into the role of the teacher as a mediator and designer of meaningful experiences.

Various investigations have demonstrated that gamification can favor both academic performance and motivation and the development of socio-emotional skills, relying on dynamic, creative, and intuitive tools that stimulate student participation (Páez et al., 2022). Furthermore, studies such as those by Högberg et al. (2019) point out that gamified experiences are powerful inducers of positive emotional states that strengthen the bond with learning. However, the success of this methodology does not depend on the simple incorporation of game mechanics, but on intentional pedagogical planning, capable of articulating playful elements with formative objectives, disciplinary content, and the particular characteristics of the students. In other words, gamification acquires educational meaning when it ceases to be a recreational strategy and becomes a purposeful didactic mediation, aimed at promoting permanent and meaningful learning.

In the specific case of Bogotá, mathematics teaching faces multiple challenges that go beyond the strictly academic. Various studies have pointed out the need to promote more transversal and creative learning environments that integrate gamification as a pedagogical strategy to revitalize student interest (Criollo, 2023; Sarmiento, 2020; Hernández, 2017). However, these efforts take place in a context marked by socioeconomic inequalities, low performance levels on standardized tests, and a notable disinterest in the subject (Rubiano, 2023; Acevedo & Ortiz, 2020; Flórez, 2024).

To these difficulties are added cultural and relational factors that affect the relationship of young people with knowledge, the loss of the cultural value of school (De la Hoz & Maestre, 2024), tensions in school coexistence (Causaso & Pacheco, 2018), and processes of exclusion that still persist in mathematics classes (García, 2025). In view of this panorama, narrative and gamified strategies emerge as an opportunity to reconstruct the pedagogical meaning of the discipline, recovering the joy of learning and strengthening understanding from more meaningful experiences (León & Cruz, 2021).

This situation demonstrates the need to adapt teaching methodologies and intentionally incorporate gamification in Bogotá's schools, especially in the area of mathematics. In this scenario, it is essential to understand how teachers perceive this strategy, their level of knowledge about its theoretical foundations and possible applications, as well as the attitudes they assume towards its curricular integration. Teacher training is therefore configured as a decisive axis; the absence of specific training in gamification can limit its implementation and significantly reduce its pedagogical impact.

This article aims to reflect on the knowledge, attitudes, and skills of mathematics teachers regarding gamification, in order to understand the factors that influence its adoption or resistance within the classroom. More than describing trends, it seeks to offer a critical and comprehensive look at how teachers perceive this strategy, what conditions facilitate its implementation, and what obstacles persist in the school contexts of Bogotá.

The analysis presented here is part of the doctoral project *"Análisis del conocimiento y de las actitudes de los docentes de matemáticas en la implementación de la gamificación como estrategia didáctica en escuelas públicas de Bogotá"* which has as one of its specific objectives to diagnose the technical skills, knowledge, and attitudes that limit or favor the effective incorporation of gamification in the classroom.

Based on this approach, a space for reflection is proposed to rethink the teacher's role in pedagogical innovation, recognizing that gamification is not a methodological fad, but an opportunity to transform the teaching of mathematics from creativity, motivation, and a meaningful relationship with knowledge.

The reflection is organized around five fundamental axes: the level of teachers' knowledge about the principles and elements of gamification; the predominant attitudes towards its use in teaching; the personal and institutional factors that influence its adoption; the strengths and weaknesses perceived in its implementation; and the implications that these findings have for teacher training and professional development in Bogotá. This approach seeks to articulate the investigative perspective with a pedagogical and transformative reading of the teacher's role, positioning gamification as a possible path towards more motivating, inclusive, and creative practices in mathematics education.

The justification for this study lies in the urgency of transforming mathematics teaching, overcoming the distance between the theoretical possibilities offered by gamification and its scarce implementation in classrooms, still marked by traditional approaches that limit participation and creativity. Understanding teachers' perceptions and experiences allows for the design of more context-adjusted support and training strategies, capable of fostering the critical appropriation of active methodologies. Reflecting on these practices not only contributes to didactic innovation but also strengthens the professional commitment of the teacher as an agent of change within public schools.

In this sense, the present work seeks to build bridges between theory, practice, and pedagogical reflection, offering an analytical framework that contributes to the continuous improvement of mathe-

matics teaching. Its results and discussions are consolidated as the basis for future research that deepens the integration of gamification and its potential to transform learning experiences in Latin American educational contexts.

Theoretical framework

Understanding the relationship between gamification and mathematics teaching requires an analysis that transcends the instrumental and situates itself in the pedagogical, cultural, and epistemological plane. In this sense, a space for reflection is constituted where ideas, debates, and perspectives that support the understanding of the addressed educational phenomenon converge. From a critical perspective, the conceptual foundations of gamification, the attitudes and knowledge of teachers towards didactic innovation, and the institutional challenges that condition its application are analyzed. These three axes allow for an integral reading of the problem, positioning the teacher not only as an executor of strategies but as a reflective agent who interprets, transforms, and re-signifies their practices in complex contexts such as those of public schools in Bogotá.

Gamification in mathematics teaching: Foundations and pedagogical scope

Gamification has emerged in recent decades as one of the most powerful strategies for re-signifying the relationship between students and learning. Its purpose is not limited to learning by playing but consists of incorporating the logics of the game within pedagogical structures to enhance motivation, commitment, and a sense of achievement (Werbach & Hunter, 2012; Kapp, 2012). From this perspective, learning is conceived as an active and emotional experience, where error ceases to be an obstacle and becomes an opportunity to explore, reflect, and improve.

In the field of mathematics education, gamification has shown positive effects on academic performance, motivation, and the development of socio-emotional skills, thanks to the use of dynamic, creative, and intuitive tools that promote student participation (Páez et al., 2022). Likewise, it has been shown that gamified experiences are powerful inducers of positive emotional states that strengthen the affective bond with learning (Högberg et al., 2019). By integrating challenges, levels, and constant feedback, autonomy, critical thinking, and problem-solving ability are promoted from a more playful and meaningful dimension (Homer et al., 2020; Scolari et al., 2018).

In this sense, gamification in mathematics cannot be understood as a set of recreational techniques but as a pedagogical approach that reconfigures the relationship between emotion, cognition, and disciplinary knowledge. Its impact transcends momentary motivation; it implies a change in the way students appropriate mathematical knowledge, favoring the construction of lasting and meaningful learning. Thus, gamification is projected as a tool to humanize teaching, transforming the classroom into a space of discovery, participation, and creativity.

Although the main interest of this work focuses on teacher attitudes and knowledge, the reviewed studies also show that gamification has a direct impact on student motivation and performance, factors that in turn affect teachers' perception and disposition towards its use. Recent research agrees that this methodology generates more active and sustained participation in learning mathematics, favoring the understanding of traditionally complex concepts and improvement in academic performance. Niampira (2023), for example, documents significant advances in the learning of fractions, algebraic terms, and

basic operations, such as addition, subtraction, multiplication, and division, from the implementation of gamified strategies. These findings suggest that the transformative potential of gamification does not lie solely in its playful component but in its capacity to redefine the student's emotional and cognitive relationship with mathematics, generating more motivating and meaningful learning environments.

In the Bogotá context, various educational experiences have demonstrated the potential of gamification as a tool for pedagogical mediation in mathematics teaching. [Hernández and Sarmiento \(2022\)](#) document interventions based on the use of video games and platforms like Scratch, aimed at strengthening geometry learning through the creation of interactive environments. Similarly, [Aldana \(2020\)](#) describes the design of gamified virtual spaces that integrate missions and challenges for teaching fractions to seventh-grade students. These experiences show that when gamification is articulated with problem-solving processes, feedback, and formative assessment, students not only improve their academic performance but also transform their attitude towards mathematics, perceiving it as a closer, more challenging, and meaningful field. Thus, the playful experience becomes a catalyst for motivation and conceptual understanding, reaffirming that pedagogical innovation must be accompanied by a formative intentionality, not merely a recreational one.

Similarly, the implementation of gamified virtual learning environments has shown positive effects on the development of mathematical competencies, particularly in problem-solving, numerical thinking, and geometric comprehension. While some studies show that student performance remains at basic levels, they also highlight a greater disposition towards learning and a more active interaction with digital resources. These experiences demonstrate that the use of missions, scores, and rewards, which are characteristic elements of gamification, favor motivation and persistence in the face of the challenges inherent in mathematical learning ([Castillo, 2021](#)).

Beyond immediate results, the incorporation of gamified strategies allows for the creation of more inclusive and participatory environments, where error is assumed as part of the process and constant feedback strengthens student autonomy. Consequently, gamification in digital environments not only expands didactic possibilities but also reconfigures the emotional relationship with learning, generating meaningful experiences that transcend the mechanical repetition of exercises and promote a deeper understanding of concepts.

Various studies agree that gamification can significantly improve learning outcomes in mathematics, especially when it incorporates immediate feedback mechanisms and playful dynamics that facilitate understanding of content by presenting it in a clearer and more attractive way. Furthermore, this methodology promotes collaborative learning environments, in which students work as a team to overcome challenges, thus strengthening their communication and problem-solving skills ([García, 2021](#)).

However, the literature also warns that the effectiveness of gamification depends on its pedagogical design. [García \(2021\)](#) points out that inadequate planning or poor integration by the teacher can reduce the expected positive impacts. In the same vein, [Rodríguez and Visbal \(2022\)](#) emphasize the need to reformulate traditional didactic strategies through gamified proposals that promote a deep understanding of mathematical concepts. All this underscores the importance of the teacher not only mastering the technical aspects of gamification but also understanding its pedagogical sense and in-



tegrating it as a tool coherent with their formative objectives.

The incorporation of active methodologies like gamification in mathematics teaching depends, to a great extent, on the dispositions and knowledge of teachers. It is not enough for digital tools or innovative didactic strategies to exist; their appropriation requires teachers capable of interpreting, adapting, and re-signifying these proposals according to their school context. In this sense, pedagogical knowledge and attitudes towards innovation constitute decisive elements that mediate between theory and educational practice (Marcelo & Vaillant, 2013; Fullan, 2007). Evidence shows that when teachers understand the formative sense of gamification and feel competent to apply it, its impact in the classroom is deeper and more sustained, while a lack of understanding or confidence can generate rejection or superficial use of the strategy (Calderón, 2021; Ponte et al., 2019).

Recent studies show a notable variability in the level of knowledge that mathematics teachers possess about gamification and its pedagogical principles. Although a significant portion of the teaching staff has heard the term or has a general understanding of its purpose, few manage to identify in depth the mechanics, dynamics, and components of game design that support its educational application (Werbach & Hunter, 2012). This conceptual gap reveals that, beyond technological novelty, many teachers still perceive gamification as a recreational resource, without recognizing its epistemological potential to transform teaching. Understanding how rules, levels, or rewards can align with learning objectives requires not only technical skills but also solid pedagogical training that allows reinterpreting the logic of the game within teaching and assessment processes.

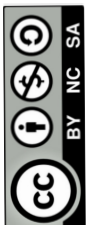
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A considerable number of teachers associate gamification almost exclusively with the use of points, badges, and leaderboards, reducing its scope to a practice of superficial reward or competition. This view, known as "pointification," reflects a limited understanding of the approach and often leads to ineffective implementations, where game elements are added decoratively, without a pedagogical integration coherent with learning objectives. As Palacios and Cimas (2024) point out, although many educators have heard of gamification, only a minority manage to distinguish the types of players or the motivations that this strategy seeks to activate. This gap between technical knowledge and pedagogical sense evidences the need for deeper training in instructional design and motivation theories, so that gamification is not reduced to a passing trend but consolidates as a transformative tool for mathematical learning.

The absence of specific training in gamification constitutes one of the most persistent factors explaining the identified knowledge gaps among teachers. Cáliz, Cerón and Hernández (2024) point out that when educators do not master the necessary technological tools or didactic strategies, their capacity to design innovative and meaningful learning experiences is limited. This lack not only affects the integration of gamification in the classroom but also widens the digital and pedagogical gap between those who are trained to teach and those who learn in technology-mediated environments.

In this sense, gamification represents an opportunity to reconfigure teaching processes, integrating game dynamics that promote exploration, creativity, and active learning. However, its implementation demands continuous teacher training, oriented towards understanding both the theoretical foundations of the approach and its potential to strengthen student motivation and academic performance.

The most consistent results in the implementation of gamified strategies are associated with training



processes that equip teachers in their design and pedagogical integration. When the instructions for developing activities are clear, dynamic, and articulated with approaches of meaningful and autonomous learning, more participatory and effective environments are achieved (Banfield & Wilkerson, 2014; Elles & Gutiérrez, 2021). In these cases, gamification ceases to be an intuitive practice to become a conscious didactic strategy, where the teacher assumes the role of designer of learning experiences rather than a transmitter of content.

Likewise, teachers who receive formal training in gamification develop a more analytical understanding of how game elements can enhance motivation, collaboration, and critical thinking in mathematics. Training, then, not only expands theoretical knowledge but also strengthens the technical skills and professional confidence necessary to integrate digital resources and interactive environments into daily practice. In this sense, teacher training becomes the bridge between innovative intention and real transformation of teaching.

Although studies on teacher attitude towards gamification are still scarce (Martí et al., 2016), existing research shows a positive trend towards its use in the classroom. Claros et al. (2020) point out that many university professors express a favorable disposition to integrate playful elements into their classes, recognizing their potential to dynamize teaching and strengthen the pedagogical bond with students. In the same line, Sagnier et al. (2020) highlight that the proactive attitude of the teaching staff becomes an effective means to incorporate innovations, as those who positively value gamification tend to explore and adapt it more frequently.

In the Bogotá context, Criollo (2023) emphasizes that gamified strategies in mathematics elevate student motivation and commitment, generating more attractive and participatory learning environments. These findings suggest that teacher attitude acts as a catalyst for educational change; when teachers believe in the pedagogical value of innovation, teaching transforms. However, this individual disposition requires institutional support and formative accompaniment to consolidate as a sustainable practice within school culture.

Most studies agree that teachers perceive gamification as an innovative strategy capable of increasing student motivation and commitment. Its potential to transform the classroom into a more dynamic and participatory space makes it a valuable tool for reducing mathematical anxiety and fostering participation. However, these positive attitudes often coexist with concerns and resistances related to its practical application. Tafur et al. (2023) warn that many teachers who use gamification do not fully understand the elements that structure it, which limits its impact on teaching and learning processes.

Likewise, Cunza et al. (2020) found that teachers with greater affinity for games often also show greater apprehension towards their implementation, fearing that the playful component may displace curricular content or trivialize mathematical learning. These tensions reflect a central challenge: achieving a balance between the playful dimension and academic rigor, so that gamification is not perceived as a distraction but as an opportunity to rethink the relationship between emotion, knowledge, and motivation in mathematics teaching.

Another aspect to consider in the adoption of gamification has to do with the material and organizational conditions that teachers face. Designing gamified experiences requires time, creativity, and re-

sources, which represents a significant challenge for those working with extensive workloads or in institutions with limited technological infrastructure. The lack of access to adequate digital tools and scarce institutional training in the use of interactive platforms not only restricts the possibilities of innovation but also affects teachers' attitudes, generating frustration and demotivation towards the implementation of these strategies. In contrast, teachers who have achieved successful gamification experiences report highly favorable attitudes, accompanied by improvements in academic performance, student collaboration, and classroom climate. These cases show that perceived self-efficacy, understood as the teacher's confidence in their ability to successfully integrate gamification, becomes a determining predictor of the disposition towards pedagogical change. When the teacher recognizes themselves as an agent of transformation, gamification ceases to be an external technique and becomes a meaningful practice that enhances learning and creativity.

Institutional challenges and formative projections

Favorable attitudes toward gamification lose strength when confronted with institutional contexts not conducive to innovation. The implementation of playful strategies in mathematics teaching does not depend solely on the enthusiasm or individual preparation of the teacher, but on a network of internal and external factors that determine its viability. Among the internal factors are training, self-efficacy, and pedagogical beliefs; among the external ones, technological resources, administrative support, curricular alignment, and the socioeconomic conditions of the students. In this sense, gamification cannot be understood only as a methodology, but as an indicator of the tensions and possibilities of the educational system; its success or failure reveals to what extent the school is willing to reinvent itself to respond to the challenges of contemporary education.

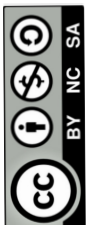
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The identified challenges reflect a reality shared by numerous educational institutions in Bogotá, where teacher training and the availability of technological resources remain critical factors for pedagogical innovation. Insufficient specific training in designing gamified experiences, added to deficient curricular integration, limits the effectiveness of this methodology and prevents its benefits from consolidating over time (Céspedes, 2022). To this are added persistent problems such as high failure rates in mathematics and low student motivation, evidenced by Castaño and Vargas (2020), who warn that interest in learning decreases when pedagogical strategies fail to connect with the realities and languages of the students.

The scarcity of technological resources, connectivity difficulties, and the lack of institutional support worsen this panorama, especially in vulnerable contexts. These factors not only restrict innovation but also deepen educational inequalities, reproducing the distance between transformation discourses and real possibilities for action in the classroom.

The identified limitations should not be understood solely as obstacles, but also as opportunities for pedagogical and technological innovation. The implementation of gamification in mathematics teaching offers a fertile field to rethink teaching practice, provided teachers receive adequate training and equitable access to necessary resources. With appropriate institutional support, teachers can become pioneers of educational change, developing models and good practices that benefit the entire school community.

Collaboration between universities, educational authorities, and school institutions is essential to build continuous training programs and contextualized pedagogical materials. However, this purpose re-



quires sustained investment in technological infrastructure and teacher training, ensuring the participation of all teachers, regardless of the type of institution or its geographical location. Only in this way will it be possible for gamification to cease being an isolated experience and consolidate as a systematic strategy of educational innovation, capable of transforming teaching and learning dynamics in Bogotá's public classrooms.

Strengthening teacher training in gamification requires going beyond simple technical training. It is about rethinking educational policies and institutional environments so that innovation does not depend solely on individual enthusiasm, but on a school culture that sustains it. Investment in technological infrastructure must be accompanied by continuous and collaborative formative processes, where teachers can design meaningful experiences and reflect on their practice. Only in contexts that articulate support, training, and a shared pedagogical vision can gamification consolidate as a sustainable strategy for educational transformation, capable of humanizing mathematics teaching and contributing to more equitable and creative education in Bogotá.

Specialized literature points out that there is no single definition of gamification, but a wide diversity of interpretations that reflect its conceptual evolution and adaptation to different educational contexts (Lozada & Betancurt, 2015). Beyond its technical nature, gamification is based on constructivist and connectivist principles, which conceive learning as an active, social process mediated by interaction. From this perspective, its efficacy lies not only in playful or technological elements, but in its capacity to stimulate motivation, favor meaningful participation, and generate environments where error is assumed as part of the learning process.

Its psychological foundations centered on motivation, autonomy, self-efficacy, and applied game design models in education allow us to understand why gamification works, not as a methodological adornment, but as a strategy that re-signifies the meaning of learning. Training teachers in this area involves preparing them to create activities adapted to curricular objectives and the characteristics of their students, where game mechanics, dynamics, and components align with clear learning purposes. Designs of this type allow students to develop numerical thinking and problem-solving in interactive and challenging environments (Becerra et al., 2023). Along the same lines, Cárdenas and Chacón (2023) propose the implementation of gamified mathematical challenges as a strategy to strengthen student motivation, autonomy, and participation, demonstrating that pedagogical creativity can transform traditional teaching into a meaningful and collaborative experience.

The use of technological tools and platforms represents an essential component in teacher training for the implementation of gamification. It is not just about learning to use software or applications, but understanding how these resources can be integrated in a meaningful and contextualized manner into teaching and learning processes. In this regard, the Ministerio de Educación Nacional (2018) has promoted spaces like the Colombia 4.0 workshop in Bogotá, where 80 preschool, elementary, and high school teachers were trained in the use of gamified tools from the educational portal *Colombia Aprende*.

Complementarily, universities in the country have developed projects aimed at strengthening teachers' technological competencies through immersive gamified experiences. The Universidad de Santander (2025), for example, promotes an innovative methodology that accompanies real pedagogical practice, considering the institutional and community contexts of the teachers. These initiatives show that technological adoption cannot be reduced to instrumental mastery; it must be understood as a com-

prehensive formative experience, where technology is put at the service of creativity, collaboration, and educational transformation.

The evaluation of gamification constitutes a central challenge in educational innovation processes. Training teachers in this competence involves teaching them to assess the effectiveness of gamified strategies not only based on academic results, but also considering indicators of student motivation, participation, and commitment. Although in Colombia there have not yet been specific studies on teacher evaluation of gamified strategies in mathematics, previous research offers relevant conceptual foundations (Mera, 2016; Cáceres & Gómez, 2022; Cárdenas & Chacón, 2023).

This research agrees that evaluation should be conceived as a formative and reflective process, allowing the teacher to analyze not only what students learned, but how they learned it and what emotions, decisions, and cognitive strategies were involved in that learning. In this sense, evaluating gamification involves rethinking the criteria of educational success, incorporating affective and collaborative dimensions that transcend traditional grading and consolidate a more human, participatory, and meaningful mathematics teaching.

To overcome the identified barriers and fully harness the potential of gamification in mathematics teaching in Bogotá, it is necessary to move towards comprehensive actions involving both educational policymakers and practicing teachers. It is not only about incorporating technological tools or game dynamics, but reconfiguring the institutional, formative, and cultural conditions that allow gamification to consolidate as a sustainable pedagogical strategy, capable of transforming the teaching and learning of mathematics in the city's public schools.

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Ensuring that all educational institutions in Bogotá, especially public ones, have adequate technological infrastructure is an indispensable condition for implementing gamified strategies. This includes equitable access to connectivity, updated devices and educational software, as well as safe and sustainable digital environments. According to the [Ministerio de Educación Nacional \(2025\)](#), "educational infrastructure not only supports the teaching-learning process, but also plays a crucial role in creating an inclusive, motivating, and healthy environment for the entire educational community."

In line with this, the regional convergence strategic line of the National Development Plan 2022–2026 emphasizes the need to "promote territorial equity and overcome gaps in access to education from preschool to higher education" (Findeter, 2023). This vision reinforces the principle that pedagogical innovation, and particularly gamification, cannot consolidate without material conditions guaranteeing universal access to technology as a tool for learning and educational justice.

It is essential to promote the creation, dissemination, and use of Open Educational Resources (OER) specifically designed for the Colombian mathematics curriculum. These materials can include digital platforms, educational games, design templates, pedagogical guides, and collaborative repositories that facilitate adaptation by teachers to different levels and school contexts. Besides promoting methodological innovation, OERs contribute to democratizing access to knowledge and strengthening teacher autonomy, allowing teachers to share, modify, and improve materials according to their students' needs. Their development requires joint work between universities, ministries, and teacher communities, ensuring these resources are free, accessible, and culturally relevant, in coherence with an



open and equitable public education.

It is indispensable to incorporate gamification as a structural component in initial and continuous training programs for mathematics teachers. In this way, future educators can develop pedagogical and technological competencies that allow them to apply active methodologies from the start of their professional practice. As stated by [Lozada and Betancur \(2015\)](#), "the constant need to update educational methods must be considered to improve the quality of education, which depends mainly on the content taught, the needs of society, and coverage." From this perspective, teacher training must go beyond technical updating; it implies rethinking teaching as a space for creativity, autonomy, and commitment to innovation, where gamification becomes a key tool for connecting mathematical learning with the realities and motivations of students.

It is fundamental to promote action-research as a permanent practice among mathematics teachers, allowing them to analyze, evaluate, and improve the effectiveness of gamification in their own contexts. This approach turns the classroom into a pedagogical laboratory, where reflection on practice generates situated knowledge relevant to the educational realities of Bogotá. Besides strengthening professional autonomy, action-research promotes a collaborative and critical teaching culture, in which educators not only apply innovative methodologies but also construct and validate their own pedagogical knowledge, thus contributing to the development of more contextualized, participatory, and sustainable education.

Methodology

This reflection is framed within an analytical and critical review related to gamification in mathematics teaching and teacher attitudes towards its implementation. The work is based on a process of theoretical review, but approached from an interpretive perspective, focused on understanding how previous studies have explained the relationship between pedagogical innovation, teacher training, and educational practice. More than applying a meta-analysis protocol, the interest lay in identifying the main debates, tensions, and gaps present in the literature, to contribute a contextualized reading of the phenomenon within the framework of mathematics education in Bogotá.

For the development of this reflection, an exhaustive documentary review was carried out aimed at recognizing advances, challenges, and contemporary approaches regarding gamification in mathematics teaching. Recent and representative studies from both the international sphere and the Latin American context were prioritized, to articulate global perspectives with the educational particularities of Bogotá. This analysis allowed building a solid theoretical base that supports the reflection and accounts for the main debates surrounding the incorporation of active methodologies in mathematics education.

In addition to reviewing specialized academic sources, a process of contrasting and dialoguing between different theoretical perspectives was carried out, with the purpose of broadening the understanding of the phenomenon and avoiding a fragmented view of gamification. This exercise allowed identifying coincidences, tensions, and conceptual gaps in studies on mathematics education, as well as recognizing the most recent approaches to teacher training and attitudes towards innovation. The articulation between classical authors and contemporary contributions enriched the analysis, offering an integral vision that combines theoretical foundations, classroom experiences, and pedagogical reflections.

The selection of literature supporting this reflection was based on conceptual and pedagogical criteria rather than procedural ones. Those studies that offered significant contributions on teacher knowledge, attitudes, and perceptions regarding gamification and its relationship with mathematics teaching were prioritized. Likewise,



research that addressed educational innovation from qualitative, quantitative, or mixed approaches, contributing to understanding the human and contextual dimension of pedagogical practice, was considered.

Both scientific articles and book chapters, as well as documented experiences and case studies that allowed contrasting international perspectives with Latin American realities, were included. The selection responded to criteria of relevance and timeliness, rather than exhaustiveness, with the purpose of constructing a critical and situated vision of the analyzed educational phenomenon.

Similarly, the analysis process involved an intentional delimitation of the focus, avoiding the inclusion of studies that did not directly address mathematics teaching or the teacher's role regarding gamification. Works focused exclusively on student learning or game experiences disconnected from pedagogical analysis were discarded. This decision allowed maintaining the thematic and epistemological coherence of the reflection, focusing it on teaching practice as a privileged space for understanding the reach and limitations of gamification in the classroom.

Likewise, priority was given to academic texts with scientific backing, excluding dissemination materials or proposals without research foundation. This selection did not seek to restrict debate, but to preserve the rigor and pertinence of the analysis, ensuring that the sources provided evidence or solid arguments about the examined educational phenomenon.

The analysis process was developed in several interpretive stages that allowed organizing and understanding the information from a critical perspective. First, an identification of predominant approaches in recent literature on gamification and mathematics teaching was carried out, recognizing the contexts where this strategy has had greater development and the factors that have limited its adoption.

Subsequently, an analytical and comparative reading of the selected studies was undertaken, with the purpose of identifying convergences, contradictions, and conceptual gaps. This phase focused on reconstructing the educational discourse that has been configured around the teacher's role, making visible how attitudes, knowledge, and beliefs influence the implementation of gamification.

Finally, the information was synthesized into thematic axes that articulate the reflection presented in this article: gamification as an emerging pedagogical approach, teacher training and attitude towards methodological innovation, and the institutional challenges conditioning its integration in the classroom. This process allowed transcending the description of results and advancing towards an interpretive reading of the educational phenomenon, coherent with the reflective purpose of this work.

Search strategy

The search strategy was designed to identify the most relevant and up-to-date literature in high-impact academic databases. Combinations of keywords in Spanish and English were used, including terms related to 'gamification', 'mathematics', 'teachers', 'attitudes', 'knowledge', 'perception', 'training', and 'education'. The databases consulted were Scopus, Web of Science, ERIC, Scielo, Dialnet, and Google Scholar, selected for their coverage in the field of education and their indexing of quality scientific journals. The search was limited to publications from 2010 to the current date (2025) to ensure the relevance and currency of the studies. The general search string used was as follows:

(gamificación OR gamification) AND (matemáticas OR mathematics) AND (docentes OR teachers OR professors OR educators) AND (actitudes OR attitudes OR percepción OR perception OR conocimiento OR knowledge OR formación OR training) AND (educación OR education).

In addition to the database search, a manual search was conducted in the reference lists of identified key articles, in institutional repositories, and in specialized journals in mathematics education and gamification to identify additional studies that might not have been captured by the initial search. This search via other methods allowed expanding the scope of the review and ensuring the inclusion of relevant literature.

Eligibility criteria

For the selection of studies, clear and predefined inclusion and exclusion criteria were established:

Inclusion criteria

- **Empirical studies:** Quantitative, qualitative, or mixed-methods works that investigate teachers' knowledge, attitudes, or perceptions regarding gamification in mathematics teaching.
- **Publication status:** Articles published in peer-reviewed scientific journals, book chapters, or research works (theses) were included.
- **Data:** Studies had to report the author's institutional affiliation.
- **Language:** Study reports had to be available in English or have a partial English translation in which the methods and results were clearly described.
- **Thematic focus and educational level:** Studies that included gamification at any educational level (primary, secondary, higher education) as long as the focus was mathematics teaching.
- **Type and quality of included studies:** Studies that included primary data or systematic reviews that met the quality criteria.

Screening: All identified records were imported into a reference manager to remove duplicates. 200 duplicate records were removed, leaving 1350 records for screening. At this stage, the titles and abstracts of the remaining records were examined to assess their relevance against the inclusion criteria. 1100 records were excluded at this stage for the following main reasons:

- **Reason 1:** Not relevant for gamification in mathematics (n=500): These studies addressed gamification in other areas of knowledge or did not focus on its specific application in mathematics.
- **Reason 2:** Not focused on teachers (n=400): The studies focused on the impact of gamification on students, without analyzing teachers' knowledge, attitudes, or perceptions.
- **Reason 3:** Not an empirical study (n=200): These were theoretical review articles, essays, opinions, or project descriptions without a clear empirical research methodology.

After screening, 250 records remained and proceeded to the next phase.

Eligibility and inclusion: The 250 records selected in the screening phase were retrieved in full text. An attempt was made to retrieve 250 reports, of which 230 were retrieved and 20 could not be retrieved (e.g., restricted access, broken links). The 230 retrieved reports were assessed in full text by two independent reviewers to determine their final eligibility. 170 reports were excluded at this stage for the following reasons:

- **Reason 1: Does not meet inclusion criteria (n=100):** Despite passing the initial screening, the full-text reading revealed they did not meet all inclusion criteria (e.g., not an empirical study, not focused on teachers or mathematics).
- **Reason 2: Incomplete data (n=50):** The study did not provide sufficient information on methodology or results to be included in the analysis.



- **Reason 3: Unsupported language (n=20):** Although Spanish and English were prioritized, some retrieved studies were in other languages not handled by the reviewers.

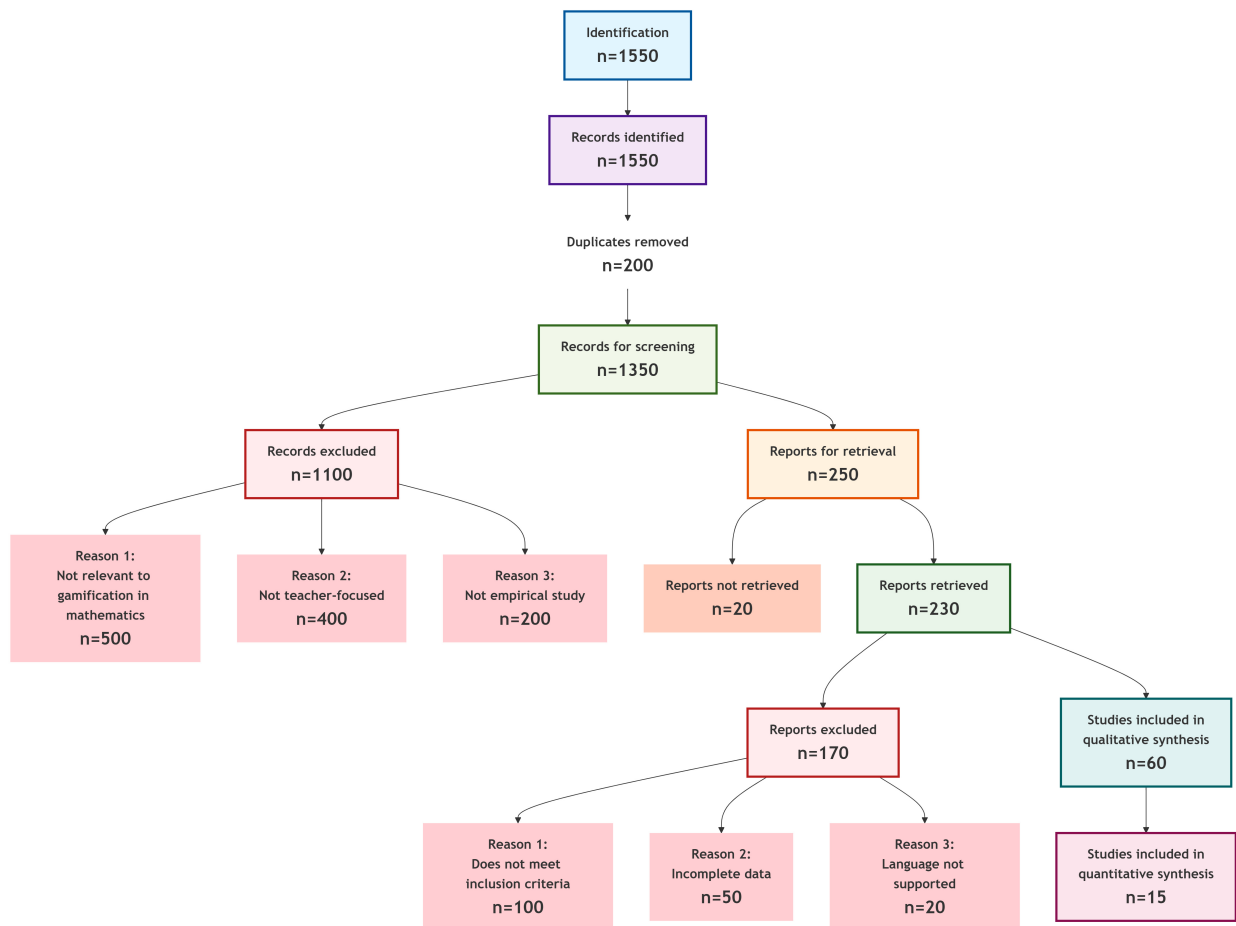
Finally, 60 studies were included in the qualitative synthesis. Of these, 15 studies provided quantitative data allowing their inclusion in a quantitative synthesis (meta-analysis, if applicable, or descriptive analysis of numerical data).

PRISMA Flow Diagram

The study selection process is summarized in the following PRISMA flow diagram (Figure 1):

Figure 1

PRISMA flow diagram of the study selection process

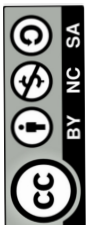


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Note: Own work (2025).

Data extraction and synthesis

For each included study, the following relevant data were extracted:



- **General information:** Author(s), year of publication, title, type of publication (article, thesis, other).
- **Study characteristics:** Research design (quantitative, qualitative, mixed-methods), population and sample (number of teachers, educational level, geographical location), context (type of institution, specific mathematics area).
- **Variables of interest:** Instruments used to measure knowledge, attitudes, or perceptions about gamification; key results related to these variables.
- **Main findings:** Synthesis of the most relevant results, including perceived strengths and weaknesses of gamification, influencing factors, and recommendations.

Data synthesis was conducted narratively for qualitative findings and descriptively for quantitative data. Studies were grouped according to emerging themes related to teacher knowledge and attitudes, identifying patterns, inconsistencies, and gaps in the literature. Special attention was paid to studies conducted in contexts similar to Bogotá or in Colombia to contextualize the findings. The methodological quality of the included studies was assessed using appropriate critical appraisal tools for each research design type, although the details of this assessment are presented in the Results section.

Results

The systematic literature review, following the PRISMA methodology, allowed for the identification and synthesis of key findings related to mathematics teachers' knowledge and attitudes towards gamification. A total of **60** studies were included in the qualitative synthesis, and of these, **15** provided quantitative data that contributed to a deeper understanding of the variables of interest. The results are presented in three main subsections: Level of teacher knowledge about gamification, teacher attitudes towards gamification, and influencing factors and perceptions of strengths and weaknesses.

Level of teacher knowledge about gamification

The reviewed studies indicate variability in the level of knowledge of mathematics teachers regarding the principles and elements of gamification. While a significant proportion of educators have heard the term or have a basic understanding of its concept, a deep knowledge of game mechanics, dynamics, and components, as proposed by [Werbach and Hunter \(2012\)](#), is less common.

Many teachers primarily associate gamification with the use of points, badges, and leaderboards (PBLs), suggesting a superficial understanding often referred to as "pointification." This limited view can lead to ineffective implementation of gamification, where game elements are added without meaningful pedagogical integration with learning objectives. It is known from international studies that although some teachers are familiar with the term gamification at some point, only a small group is able to correctly identify the different types of players or the underlying motivations that gamification seeks to activate ([Palacios and Cimas, 2024](#)).

The lack of specific training in gamification is a recurring factor explaining these knowledge gaps. According to [Cáliz, Cerón and Hernández \(2024\)](#), students who lack the necessary knowledge to handle technological equipment and tools face obstacles in their learning process and the development of digital competencies. This lack of knowledge creates a gap among students. Gamification offers a possible solution by providing an innovative approach that integrates game elements to facilitate learning processes and acquire new knowledge that improves students' academic performance.



Positive results in students are related to precise instructions for the development of applied activities, in a dynamic, diverse, and harmonious manner, through pedagogy, didactics, and gamification strategies, with designs that incorporate meaningful and autonomous learning (Banfield and Wilkerson, 2014; Elles and Gutiérrez, 2021). Likewise, when teachers receive formal training in the design and implementation of gamified strategies, they demonstrate significantly greater knowledge and a more nuanced understanding of how gamification can be used to enhance mathematics learning. In this way, training not only improves familiarity with theoretical concepts but also equips teachers with the technical skills necessary to integrate digital tools and gamified platforms into their practices.

Teacher attitudes towards gamification

There are few studies concerning teacher attitudes towards gamification in educational institutions (Martí, et al. 2016). However, there is a positive attitude among university teachers regarding the use of gamification in their classes (Claros, et al. 2020). It is known that teachers having an inclination towards using gamification and perceptions towards such innovations constitutes an effective means in teaching (Sagnier et al., 2020). Similarly, Criollo (2023) has mentioned that a gamified strategy in mathematics elevates student motivation and commitment, energizes the classroom environment, and makes content more attractive, in the Bogotá context. These nuances occur because teacher attitudes are positive.

Most studies indicate that educators perceive gamification as an innovative strategy with the potential to increase student motivation and commitment. Its capacity to transform the classroom into a more dynamic and attractive environment is valued, which can reduce mathematical anxiety and improve student participation. However, these positive attitudes often coexist with concerns and resistance. Some studies (Tafur et al. 2023) argue that teachers who use gamification do not always understand the elements that constitute it, which affects the teaching-learning process to some extent. Research has found that teachers with greater affinity for games show more concern about its application in the classroom compared to those with less affinity (Cunza et al. 2020). Hence the perception that gamification may divert focus from essential curricular content or trivialize mathematics learning.

Another relevant aspect is that designing effective gamified experiences requires time, creativity, and resources, which can be a challenge for teachers with tight schedules and limited resources. The lack of access to adequate digital tools or insufficient technological infrastructure in educational institutions also negatively influences teacher attitudes, generating frustration and demotivation to adopt these strategies.

In contrast, teachers who have experienced success with gamification in their classrooms report very favorable attitudes, highlighting improvements in academic performance, student collaboration, and the overall classroom atmosphere. Perceived self-efficacy, i.e., the teacher's confidence in their ability to successfully implement gamification, is a significant predictor of positive attitudes and the willingness to integrate this methodology into their practices.

Influencing factors and perceptions of strengths and weaknesses

The implementation of gamification in mathematics teaching is influenced by a variety of factors, both internal (related to the teacher) and external (related to the educational context). The reviewed studies identify the following key factors:

Internal factors

- **Prior training level:** It has already been indicated above that specific training is fundamental

for deep knowledge and positive attitudes when implementing gamification in mathematics teaching. Indeed, research conducted (Ponce, 2024) confirms that the fact that gamification is not carried out in different institutions has to do with teacher training, but also with the availability of resources and institutional support. Likewise, the incorporation of digital tools depends on teachers' digital skills and competencies (Rojas and Gallesse, 2025). However, its implementation faces several challenges, including structural limitations, lack of time, knowledge and skills on the part of teachers, and difficulties in designing effective and creative gamified activities (Quimí et al. 2024).

- **Teaching experience:** Teachers with more years of experience may show greater resistance to change, while younger or less experienced teachers may be more open to innovation (Guillén, 2025).
- **Perceived self-efficacy:** Confidence in one's own abilities to design and implement gamification is a strong predictor of its adoption. Indeed, studies conducted by Perochena et al (2020) indicate that the capacity to innovate and incorporate changes, and satisfaction with one's own work, are closely linked to self-efficacy.
- **Pedagogical beliefs:** Teachers' teaching philosophies influence their openness to active and playful methodologies. But they are also linked to their attitudes towards the use of communication technologies (Letwinsky, 2017; OECD, 2019b).

External factors

- **Resource availability and institutional support:** Access to technology, gamified platforms, and teaching materials is fundamental. However, the support of school administration, the availability of time for planning and training, and the recognition of innovation are important. In this vein, research focused on rural gamification in the Bananera zone (Magdalena) concludes that, although teachers see its potential, many face resource and time limitations for planning. This excessive demand can prevent a deep and sustained pedagogical implementation (Ponce, 2024).
- **Curricular alignment:** The perception that gamification can be integrated coherently with the objectives and content of the mathematics curriculum is vital for its sustained adoption. The work of Ponce (2025) emphasizes that strategic planning is the cornerstone for incorporating gamification in correspondence with educational objectives, competency standards, and subject area plans. This shows that it is not enough to introduce playful elements; they must be designed with pedagogical coherence in mind to have a real impact on learning.
- **Socioeconomic context:** The socioeconomic conditions of students and the institution can influence the viability and type of gamified strategies to be implemented. According to research by García (2025) the mere provision of technology is not sufficient to address digital competencies. Adequate pedagogical support and the implementation of inclusive and equitable educational policies are required. It must be taken into account that "only 51.9 percent of households at the national level in Colombia have access to the Internet" (Departamento Administrativo Nacional de Estadística de Colombia, 2020).

Regarding perceptions about the strengths of gamification in the mathematics classroom, teachers consistently highlight:

- **Increased motivation and commitment:** Gamification makes learning more fun and attractive, which translates into greater student participation. Gamification generates positive changes in student behavior and attitude, the process becomes pleasant and motivates knowledge appro-



priation (Mera, 2016). Experiences conducted with students from schools in Popayán confirm that 98% of 340 participants feel motivated and the applications used by teachers have allowed them to easily understand the content (Santa María, 2011 cited by Mera, 2016). Similarly, it has been achieved in international studies conducted in Spain (Cáceres and Gómez, 2022) that play elevates student motivation.

- **Improved academic performance:** The results obtained by performance levels in mathematics in the "Saber 11" tests in 2024-2 in the country's schools and published by the Colombian Institute for Educational Evaluation (Icfes, 2025) reveal the following:

Table 1

Schools in Bogotá by performance levels in mathematics in the "Saber 11" tests in 2024-2

Ranges by level	Institutions	Sections	Evaluated	% Evaluated	Weighted average
<35	1	1	1	0,00	31,00
36-51	221	376	15,853	20,43	47,91
51-70	852	1026	59,845	77,11	56,96
>71	38	39	1,915	2,47	73,68
General total	112	1442	77,614	100,00%	53,53

Note: Prepared by the author with data from Icfes 2024-1.

The results show that 20.43% of the students (15,853) are placed at Level 2, which indicates that the students read specific information (a piece of data, for example) related to everyday situations and presented in tables or graphs with an explicit scale, grid, or at least horizontal lines. Furthermore, they demonstrate that:

- They compare data from two variables represented in the same graph without needing to perform arithmetic operations.
- They identify representative values or points in different types of records based on the meaning they have in the situation.
- They compare the probability of simple events (favorable cases/possible cases) when the possible cases are the same in both events and in contexts similar to those presented in the classroom.
- They make decisions about the truthfulness or falsity of a statement when it can be explained by verbalizing the direct reading made of the information.
- They change bar graphs to double-entry tables.
- They recognize and interpret, according to the context, the meaning of simple average, mode, greater, lesser, maximum, and minimum. These students come from approximately 221 schools (Icfes, 2025, p. 3).

The majority of students (77.11% or 59,845) are concentrated at Level 3. These results, representing 852 institutions, point to traditional teaching centered on mechanical exercises more than on critical thinking. Icfes notes that these students need to strengthen the application of concepts in real contexts, through technological tools and problems linked to their environment. These results suggest that in addition to the domains of Levels 1 and 2, the students know how to:

- Select the graph (which can be a double-entry graph corresponding to the information in a table, or based on verbalizations (desired growth or growth characteristics), taking into account

for the selection the scale, the type of variable, and the type of graph. (b) Compare graphic information that requires some arithmetic manipulations. (c) Point out information represented in non-conventional formats (maps or infographics). (d) Recognize errors that occurred when performing a transformation between different types of records. (e) Recognize flat developments of a three-dimensional shape and vice versa. (f) Compare the probability of simple events in various contexts (favorable cases/possible cases), even when the possible cases of each event are different. (g) Select information necessary to solve problems involving arithmetic operations. (h) Select information necessary to solve problems involving measurable characteristics of elementary geometric figures (triangles, quadrilaterals, and circles). (i) They change the scale when the transformation is not conventional. (j) Justify statements using approaches and arithmetic operations or by making direct use of a concept, that is, based on a single argument. (k) Identify relevant information when the type of record contains information from more than three categories. (l) Perform simple algebraic manipulations (arithmetic of like terms) that are basic, but with limitations in skills such as graph interpretation and abstract reasoning (Icfes, 2025, p. 4).

Finally, only 2.47% (1,915 students) reach the Advanced Level, demonstrating excellent performance in mathematical modeling and argumentation. These cases, present in around 38 schools, are usually associated with institutions with innovative programs, use of educational technologies, and cross-curricular projects. The gap between these schools and those with low results evidences inequalities in resources and methodologies, which demands policies to share good practices and reduce disparities in educational quality. The indicators indicate the following about this level:

The evaluated person who is placed at Level 4, in addition to what is described in Levels 1, 2, and 3, demonstrates that: (a) They solve problems that require interpreting information from dependent events. (b) They perform transformations of subsets of information that may require the use of complex operations (percentage calculations). (c) They solve problems that require constructing an auxiliary representation (graphs and formulas) as an intermediate step for their solution. (d) They model using algebraic language information given in natural language, tables, or geometric representations. (e) They manipulate algebraic or arithmetic expressions using the properties of operations. (f) They model non-explicit variational phenomena using symbolic language or graphs. (g) They recognize in different formats (trees, lists, or diagrams) the sample space of a random experiment. (h) They solve counting problems that require the use of permutations. (i) They justify whether there is a lack of information in a problem situation to make a decision. (j) They make decisions about the truthfulness or falsity of a statement when it requires the use of several properties or formal conceptualizations (Icfes, 2025, p. 5).

Finally, it should be noted that the results of the Saber 11 tests indicate that the vast majority of students have Insufficient or Minimal performance in mathematics, evidencing difficulties in motivation and meaningful learning. Gamification emerges as a key pedagogical strategy by transforming content into interactive challenges, encouraging participation and the development of competencies, as already indicated in this article and substantiated by different studies. By integrating game mechanics (levels, rewards, and immediate feedback), it could improve performance in the most critical groups while consolidating skills at advanced levels in learning mathematical concepts and problem-solving. Likewise, gamification is an innovative strategy for teaching mathematics to fourth-grade students in Bogotá, which makes learning dynamic (Molina, 2024). Other international studies confirm that gamification in educational contexts favors student participation, motivation, and academic performance (Ayala et al., 2022; Deterding et al., 2011; Hamari et al., 2014; Hanus and Fo, 2015).



- **Development of soft skills:** It fosters collaboration, critical thinking, creativity, and resilience in the face of failure. Applications like Classcraft allow the design of gamifiable and workable activities in the classroom and it works because it drives the student less captivated in the area of mathematics, increases motivation as they succeed in the game, the system of risks and rewards is an ally for acquiring knowledge in progress, fosters collaboration and cooperation among peers. In the teaching-learning process, students know at all times what their objectives are and strive to achieve them. It generates healthy competitiveness among students. Student behavior in the classroom improves notably in attitude and in the apprehension of knowledge (Elles, 2020). Research has shown that the use of gamified applications helps achieve competence to pose and solve problems that comprise the translation of real situations into mathematical schemes/models and problem-solving using appropriate strategies, performing mathematical operations without the help of other instruments, fosters teamwork allowing students to share ideas and develop their interpersonal skills (Holguin et al. 2020). Likewise, through gamification, students have fun while learning and improve their knowledge in a meaningful way for their school development (Pérez, 2025). Similarly, gamification strengthens social skills (Calabor et al., 2018), allows students to develop their skills and enhance the teaching-learning process (Ortiz and Guevara, 2021).
- **Immediate feedback:** Game elements allow students to receive instant feedback on their progress, which facilitates self-regulated learning. Some studies confirm that the more gamification increases in its elements and formative assessment in the digital context, the more mathematics learning changes significantly (Prada, et al., 2021).

On the other hand, the perceived weaknesses include the following (see Figure 2):

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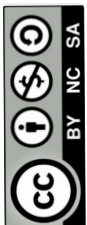
Figure 2

Perceived weaknesses



Note: Own elaboration (2025).

- **Lack of training and knowledge:** This is perhaps the main barrier to effective implementation; it hinders the ability to promote the development of logical-mathematical competencies in students (Gutiérrez, 2023). Other research reveals that teachers do not address the central aspects of gamification because they have weaknesses, which makes it difficult for them to generate changes in pedagogical practices and apply gamification (Mosquera and Londoño, 2022).



Among those weaknesses found are knowledge in design and implementation; studies (Wiggins, 2016) reveal that this is perhaps the greatest barrier affecting teachers when designing and implementing gamification, leading to low interest in carrying out didactic strategies in the classroom. The same happens with little knowledge of resources, which causes the applied gamified strategies to be inappropriate for the student's age or cognitive level (Canhoto and Murphy, 2016). Another aspect to note is that students must learn to apply their knowledge, to improve their socio-communicative skills (Teichler, 2007).

- **Difficulties in curricular integration:** In mathematics, difficulties persist such that "school failure and even abandonment, it is necessary to recognize different didactic approaches that invite motivation and focus the learner's attention on a syllabus linked to a laborious comprehension" (Castro, 2021, p. 21). Precisely, this situation represents a challenge of implementing gamification with learning objectives and the curriculum without it being perceived as an isolated activity. Studies conducted in Colombia confirm that the use of gamification as a methodological and didactic tool encourages student participation and interest towards mathematics and enhances the pedagogical praxis of the teacher in the classroom (Casalla and Mahecha, 2019). In turn, gamification is an innovative tool that enables and facilitates the understanding of knowledge by students; as well as establishing a challenge for the teacher to explore and integrate other methods and pedagogical resources in their classes (Sánchez, 2018).
- **Limited resources:** Although the "Colombia Aprende" Program (2009) of the National Ministry of Education has provided multiple technological tools for teachers and students for the development of competencies in problem-solving, reasoning related to posing hypotheses and problems, making conjectures, exploring examples using self-learning, directed learning, or instruction. These efforts have not been enough; the lack of access to technology, software, or specific materials can hinder implementation. It is known that the insufficiency in the quantity of devices to ensure that all students can interact with the gamified strategy is related to the lack of computers or alternative technological devices like cell phones or tablets (Piñeiro and Costa, 2015). But also, some of the free versions of certain online games or gamified platforms for education and the decrease in internet access correspond to obsolete technologies (Valencia and Orellana, 2019).

It is undeniable that in Colombia, as in most Latin American and Caribbean countries, there are problems of coverage, infrastructure, inadequate teacher training, as well as social and economic gaps, inappropriate teaching strategies, inequality in internet access while stratum six has 99.8%, for stratum one it is only 20.5%. 21.7 million have internet access and 23.8% do not. In reality, those most affected are poor families in neighborhoods and rural areas of the country (Murcia, 2023; Tamayo et al. 2015).

Impact of gamification on academic performance and motivation

Although the main focus of this study is teacher knowledge and attitudes, the reviewed works also provide evidence on the impact of gamification on students' academic performance and motivation, aspects that directly influence teachers' perception and disposition. Most empirical research reports a positive effect of gamification on student motivation towards mathematics. It is found that the application of gamification strategies produces significant advancement of most students regarding the concept of fractions, terms, operations (addition, subtraction, multiplication, and division) and the solution of mathematical problems (Niampira, 2023).

It is worth noting that educational experiences carried out in schools in Bogotá have developed intervention strategies focused on video games/gamification with Scratch to strengthen geometry lear-



ning (Hernández and Sarmiento, 2022). Other experiences have referred to the design of gamified virtual learning environments with missions and challenges to teach fractions to seventh-grade students. These situations generate changes in student attitudes that translate into better academic performance and motivation to learn since they contain elements typical of problem-solving, such as the assignment of a development context and the structuring of phases of diagnosis, feedback, and evaluation (Aldana, 2020).

Likewise, the implementation of a virtual learning environment has generated positive impacts on students, improving the competency of problem posing and solving, the numerical-variational component, and the geometric-metric component; although it is recognized that most students obtained a basic performance. Not all students appropriated the steps to solve the proposed problems. The students showed interest in the digital tools used in the virtual learning environment and interacted without difficulties in each of the sections, and most solved the proposed activities in it. Similarly, the use of gamified strategies in basic mathematics (such as addition, subtraction, place value), incorporating elements such as missions, scores, and digital rewards motivate students in the development of exercises like additions, division (divisibility criteria), multiplication, and subtraction (Castillo, 2021). These and other works indicate that a significant proportion of studies suggests that gamification can improve learning outcomes in mathematics and incorporate elements such as immediate feedback through playful interactions, which facilitates the understanding of mathematical content by presenting it in a clearer and more attractive way. On the other hand, gamification can foster a collaborative learning environment, where students work together to overcome challenges, which in turn improves their communication and problem-solving skills. However, studies by García (2021) mention that poor design planning or lack of teacher integration affects the result, that is, the simple adoption of playful elements does not guarantee progress if there is no pedagogical structure. In this sense, as affirmed by Rodríguez and Visbal (2022), changes are required in the design of didactic strategies to gamified strategies that allow understanding and enhancing knowledge in students. This reinforces the importance of teacher training not only in the technical aspects of gamification but also in its effective pedagogical application.

Challenges and opportunities in the context of Bogotá

Challenges and opportunities in the context of Bogotá

The identified challenges are similar to those of many educational institutions in the city, where the availability of teacher training and technological resources is often a critical factor. Just like insufficient teacher training, deficient integration into the curriculum that limits the effectiveness of gamification, the number of failures in mathematics, low motivation to learn (Castaño and Vargas, 2020), scarcity of technological resources and connectivity difficulties, lack of teacher preparation to plan adequate gamified experiences (Céspedes, 2022).

These presented situations represent the opportunity to innovate from the pedagogical and technological implementation in the classroom, provided that resources are provided and teachers are adequately trained, which would represent the opportunity to turn mathematics teachers into pioneers in the implementation of gamification, creating models and good practices that benefit the entire educational community. Collaboration between academia, educational authorities, and schools is fundamental to developing training programs and resources that are relevant and accessible to teachers in the city. However, to achieve these things, investment in technological infrastructure and training programs is required to ensure that all teachers, regardless of their location or the type of institution they work in, have the opportunity to acquire the necessary skills and knowledge to implement gamification effectively.

Implications for teacher training in Bogotá

The findings of this systematic review have direct and significant implications for the design and implementation of teacher training programs in Bogotá. It is evident that current training is not sufficient to equip mathematics teachers with the knowledge and skills necessary for the effective implementation of gamification. Professional development programs must go beyond introductory workshops and offer more in-depth courses that address:

- **Theoretical foundations of gamification:** The literature reviewed in this article makes it clear that not only is there a wide diversity of definitions about what gamification is, but there is no universal definition (Lozada and Betancurt, 2015). Furthermore, the epistemological bases of gamification lie in constructivism and connectivism. So, not only what gamification is, but why it works, its psychological bases (intrinsic vs. extrinsic motivation) and applied game design models in education.
- **Pedagogical design of gamified experiences:** Train teachers so they can design their own gamified activities, adapted to the specific learning objectives of the mathematics curriculum and the characteristics of their students. This includes the appropriate selection of mechanics, dynamics, and game components, as well as the creation of attractive narratives and meaningful challenges. The design of resources to strengthen students' numerical thinking by offering interactive spaces strengthens students' numerical thinking (Becerra et al., 2023). Design and implementation of a set of activities oriented towards the gamification of mathematical challenges (Cárdenas and Chacón, 2023).
- **Use of technological tools and platforms:** Provide practical training in the use of software, applications, and platforms that facilitate the implementation of gamification, considering the diversity of resources available in educational institutions in Bogotá. From this perspective, the National Ministry of Education conducted a workshop in Colombia 4.0 in Bogotá, training 80 preschool, elementary, and middle school teachers in the use of gamified tools available on the educational portal *Colombia Aprende* (Ministerio de Educación Nacional, 2018). Furthermore, in some universities, projects are being developed such as an innovative methodology to strengthen teachers' technological competencies through immersive gamified experiences. This project seeks to accompany the real pedagogical practice of teachers, considering the institutional and community context, with the purpose of promoting a solid and meaningful integration of emerging technologies (University of Santander, 2025).
- **Evaluation of gamification:** Teach teachers how to evaluate the effectiveness of their gamified strategies, both in terms of student motivation and engagement and academic performance in mathematics. Although no specific studies were identified in Colombia that teach teachers to evaluate the effectiveness of gamified strategies in mathematics in terms of motivation, engagement, and performance, there is research that can serve as a conceptual basis as already indicated in this systematic review (Mera, 2016; Cáceres and Gómez, 2022; Cárdenas and Chacón, 2023).

Furthermore, training must be continuous and accompanied by classroom follow-up and support. The creation of communities of practice among mathematics teachers implementing gamification can be an effective strategy to foster collaborative learning, experience sharing, and joint problem-solving. Universities and education secretariats in Bogotá have a fundamental role in articulating these training programs, ensuring they are relevant, accessible, and of high quality. But it is "necessary to continue researching the attitudes of mathematics teachers regarding the potential of game-based learning and gamification in teaching the subject" (Palacios and Cimas 2024, p. 3).



Recommendations for educational policies and practice in Bogotá

To overcome the identified barriers and maximize the potential of gamification in mathematics teaching in Bogotá, the following recommendations are proposed, aimed at educational policymakers and teaching practice:

- **Investment in technological infrastructure:** Ensure that all educational institutions in Bogotá, especially public ones, have access to adequate technological infrastructure (internet connectivity, devices, software) that allows for the smooth implementation of gamified strategies. Currently, there is an ongoing investment plan for improving infrastructure in educational institutions. [Ministerio de Educación Nacional \(2025, para. 1\)](#) "Educational infrastructure not only supports the teaching-learning process, but also plays a crucial role in creating an inclusive, motivating, and healthy environment for all members of the educational community..." This is why for the National Ministry of Education "The strategic line of regional convergence of the National Development Plan 2022-2026 raises the need to promote territorial equity and overcome gaps in access to education from the preschool level to higher education" ([Findeter, 2023](#)).
- **Development of gamified Open Educational Resources (OER):** Promote the creation of and access to gamified OER specifically designed for the Colombian mathematics curriculum, which can be adapted and used by teachers. This could include platforms, educational games, design templates, and pedagogical guides.
- **Integration of gamification into the teacher training curriculum:** Incorporate gamification as a fundamental component in mathematics teacher training programs, ensuring that future educators are prepared to implement these methodologies from the start of their careers. Therefore, as [Lozada and Betancur \(2015, p. 99\)](#) state, "the constant need to update educational methods must be considered to improve the quality of education, which depends mainly on the content taught, the needs of society, and coverage." From this point of view, the integration of gamification is usually fundamental when it comes to strengthening teacher training.
- **Promotion of action-research in the classroom:** Encourage teachers themselves to conduct action-research in their classrooms to evaluate the effectiveness of gamification in their specific contexts, generating situated knowledge adapted to the realities of Bogotá.

The implementation of these recommendations requires a coordinated and sustained effort from all actors involved in Bogotá's educational system. By comprehensively addressing knowledge, attitudes, and contextual conditions, the foundations can be laid for a meaningful transformation in the teaching and learning of mathematics, preparing students for the challenges of the 21st century and fostering a positive attitude towards this fundamental discipline.

Discussion

The results obtained in this phase of the research confirm a widely recognized trend in the reviewed studies and also observed in the context of Bogotá: gamification continues to be valued by mathematics teachers as a pedagogical strategy with high potential to strengthen motivation, commitment, and meaningful understanding of content ([Cáceres and Gómez, 2022](#)). However, its real incorporation into classrooms faces structural and formative challenges similar to those identified in other Latin American contexts.



The evidence reveals that the knowledge mathematics teachers possess about gamification tends to be limited and, in many cases, superficial. As warned by [Werbach and Hunter \(2012\)](#), this reduced understanding often manifests in the adoption of basic mechanisms such as points, badges, or leaderboards without a clear pedagogical intentionality. This finding, also reported in Colombian research ([Holguín et al., 2020](#); [Palacios and Cimas, 2024](#)), confirms that the absence of systematic training in gamification hinders the design of truly immersive learning experiences that are coherent with curricular objectives. Consequently, pedagogical innovation is frequently reduced to the superficial incorporation of playful elements, without achieving a significant transformation in mathematics teaching practices.

While teachers' attitudes towards gamification are predominantly positive, resistances persist that reflect tensions between innovation and pedagogical tradition. Some teachers express concern about the possibility that gamification might trivialize content or divert curricular focus, a perception also recorded by [Cunza et al. \(2025\)](#). These reservations are explained, to a large extent, by the lack of a comprehensive understanding of the methodology and the absence of institutional references guiding its application. National research, such as that by [Prada et al. \(2021\)](#) and [Cárdenas and Chacón \(2023\)](#), confirms that when gamification is implemented with pedagogical intentionality, structured planning, and curricular coherence, it generates significant changes in mathematics learning, even in populations with diverse educational needs. Thus, teacher attitude emerges not as an isolated factor, but as a key indicator of pedagogical appropriation and commitment to transforming traditional practices.

Among the external factors affecting the implementation of gamification, the availability of technological resources and institutional support emerge as the most determining. The findings of this review coincide with national reports that show the persistence of a significant digital divide in the country, where only 51.9% of households have stable internet access ([Departamento Administrativo Nacional de Estadística, 2020](#)). This inequality limits the possibility of integrating gamified tools in classrooms, especially in Bogotá's public schools. Although recent studies recognize advances in infrastructure and connectivity, structural and formative deficiencies persist that restrict the scope of these strategies ([Moya and Díaz, 2024](#)). In this way, teacher digital literacy and sustained investment in educational infrastructure are consolidated as indispensable conditions for an effective and equitable implementation of gamification in mathematics teaching.

Finally, the recent results of the Saber 11 tests ([Icfes, 2025](#)) offer an important context for interpreting the findings of this research. The fact that the majority of students are concentrated at a basic performance level (Level 3) and only a small percentage reach advanced levels highlights the need to rethink the pedagogical strategies used in mathematics teaching. In this scenario, gamification emerges as a viable alternative to strengthen critical thinking, problem-solving, and the application of knowledge in real contexts, competencies characteristic of the higher performance levels. Consequently, gamification, implemented in a planned manner and coherent with curricular objectives, can contribute to transforming traditional teaching, centered on mechanical repetition, into an active, motivating, and meaningful learning experience.

The main finding of this study is that teacher training constitutes the most determining axis for closing the gap between the theoretical potential of gamification and its real application in the classroom. It



is not enough to introduce digital tools or resources; it is essential for teachers to develop pedagogical competencies to design gamified experiences coherent with curricular objectives and the characteristics of their students. This requires a deep understanding of the psychological foundations of motivation, the appropriate selection of game mechanics, the didactic planning of challenges, and the ability to evaluate both learning processes and results. Gamification, understood from this pedagogical perspective, can become a strategy for educational transformation that enhances critical thinking, problem-solving, and student autonomy in mathematics.

Secondly, it is possible that teachers' positive attitudes towards gamification serve as a valuable starting point, though insufficient on their own. For these attitudes to translate into sustainable practices, an institutional environment that favors innovation is required. This implies guaranteeing access to updated technological resources, having time for the planning and design of gamified experiences, and promoting educational leadership that recognizes and stimulates transformative pedagogical initiatives. Without this structural and cultural scaffolding, teachers' motivation risks being diluted in the face of practical barriers, perpetuating the distance between innovative discourse and educational action.

Thirdly, the educational context of Bogotá and by extension in Colombia poses structural challenges that condition the implementation of gamification, among them the persistent digital divide and the inequality of resources between public and private institutions. For gamification to transcend isolated experiences and consolidate as a sustainable strategy, public policies are required that guarantee equitable technological infrastructure, accompanied by continuous teacher training processes. Furthermore, it is essential to promote the development of open and gamified educational resources, designed in coherence with the national curriculum and accessible to the entire educational community. Only through this articulation between pedagogical innovation, technological equity, and educational policy will it be possible to effectively transform mathematics teaching in the country.

Finally, gamification should not be conceived as a total response to educational challenges, but as a complementary strategy within an ecosystem of active methodologies oriented towards meaningful learning. Its true value lies in its capacity to transform the way students perceive mathematics, reducing anxiety and revealing the applicability of this discipline in solving real problems. For the students of Bogotá, a pedagogically well-founded gamification strategy represents a tangible opportunity to develop critical thinking, creativity, and conceptual understanding, competencies indispensable for facing the cognitive and social challenges of the 21st century.

Conclusions

This systematic review on the knowledge and attitudes of mathematics teachers in Bogotá towards gamification reveals a central paradox: there is broad recognition of its potential to motivate students and dynamize learning, but its practical and effective application is still incipient and faces significant barriers.

The main conclusion is that teacher training is the most determining factor for overcoming the gap between the theoretical potential of gamification and its reality in the classroom. Teachers require training that transcends the introduction to tools and focuses on the pedagogical design of gamified ex-

periences. This implies understanding the psychological foundations of motivation, adjusting game mechanics with curricular objectives in mathematics, and learning to evaluate both the process and the results of learning in gamified environments.

Secondly, it is concluded that teachers' positive attitudes are a valuable starting point, but insufficient. These must be supported by favorable institutional conditions, which include access to adequate technological resources, time allocated for planning and designing these strategies, and educational leadership that values and promotes pedagogical innovation. Without this scaffolding, teacher motivation can decline in the face of practical difficulties.

Thirdly, the context of Bogotá, and by extension of Colombia, imposes structural challenges such as the digital divide and resource inequality between institutions. A successful implementation of gamification on a large scale requires public policies that ensure equitable technological infrastructure and the development of open gamified educational resources, adapted to the national curriculum and accessible to all teachers.

Finally, gamification should not be seen as a panacea, but as a powerful complementary strategy within a range of active methodologies. Its true value lies in its capacity to transform the perception of mathematics, reducing anxiety and demonstrating its relevance in problem-solving contexts. For the students of Bogotá, mostly stuck in procedural mathematical performance, well-oriented gamification represents a tangible opportunity to develop critical thinking and a deeper conceptual understanding, skills indispensable for the challenges of the 21st century.

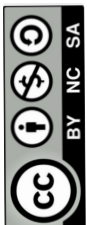
Declaration on the use of Artificial Intelligence: The author of the present article declares that we have not used Artificial Intelligence in its elaboration.

Privacy: Not applicable.

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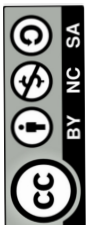
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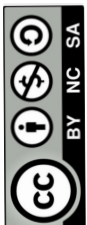
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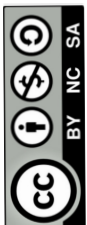


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Author's note:

* Miguel Chávez Marín holds a Bachelor's Degree in Mathematics from the Universidad Pedagógica Nacional, with postgraduate studies in University Teaching (Specialization, Universidad Cooperativa de Colombia) and Science Didactics (Master's, Universidad Autónoma de Colombia). He is currently a Doctorate candidate in Education at the Universidad Antonio Nariño. His professional training is complemented by certification in the English language and multiple participations in national and international congresses on educational innovation, mathematics education, and the use of applied classroom technologies. Contact email: miguel.chavez.marin@gmail.com



Initial training of primary education degree students through pedagogical management

Formación inicial en estudiantes de la licenciatura de educación primaria desde la gestión pedagógica



Romelia Colón Valdez*

Instituto Superior de Formación Docente Salomé Ureña, República Dominicana.



Clay Pérez Jiménez**

Universidad de Camagüey Ignacio Agramonte, Cuba



Ángel Luis Gómez Cardoso***

Universidad de Camagüey Ignacio Agramonte, Cuba.

Abstract

The article proposes a scientific solution to the shortcomings identified in a study conducted between January and December 2024. The aim of this text is to present key elements of a training program for teachers involved in the initial education process of Primary Education graduates, with the purpose of strengthening pedagogical management. The theoretical-descriptive methodology combined documentary analysis of current regulations and specialized literature with the technique of critical opinion and collective construction workshops, in which 17 experts participated. The main outcome is a comprehensive, flexible, and contextualized training model that systematically integrates the theoretical and practical components of teacher education. The proposal was validated by experts, who highlighted its relevance and potential to address the deficiencies identified in initial teacher training, emphasizing the development of knowledge, skills, habits, and values.

Keywords: Initial training, training, pedagogical management, primary education.

Resumen

El artículo propone una solución científica a las insuficiencias detectadas en una investigación desarrollada entre enero y diciembre de 2024. El objetivo de este texto es exponer elementos fundamentales de un entrenamiento para los docentes que participan en el proceso de formación inicial del licenciado en Educación Primaria, con el fin del fortalecimiento de la gestión pedagógica. La metodología, de tipo teórico-descriptiva, combinó el análisis documental de la normativa vigente y la literatura especializada, con la técnica de talleres de opinión crítica y construcción colectiva, en los que participaron 17 expertos. El resultado principal es un entrenamiento de carácter integral, flexible y contextualizado, que articula de forma sistémica los componentes teóricos y práctico de la formación. La propuesta fue validada por expertos, quienes destacaron su pertinencia y potencial para la subsanación de las insuficiencias identificadas en la formación inicial docente, enfatizado al desarrollo de conocimientos, habilidades, hábitos y valores.

Palabras clave: Formación inicial, entrenamiento, gestión pedagógica, educación primaria.

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Introduction

In the Dominican Republic, regulations define the new teacher profile for professional performance, which is oriented toward the areas of personal development, professional development, pedagogical training, and curricular management. From this, fundamental approaches to pedagogical management in initial teacher training emerge, supported by regulations in educational policy matters.

These become challenges for education in the country: teacher training according to the established profile, due to the institutional nature, and the responsibility of the decision-making bodies aimed at ensuring compliance with regulations 01-23, approved by the Ministry of Education (MINERD) and based on Higher Education Law 139-01, by higher education institutions offering the Bachelor's degree in Primary Education.

Initial training has been addressed by various authors, including: (Agenda 2030, 2015; Juárez et al., 2024; Loja & Quito, 2021; Malpaso & Lapa, 2022; Pila, Andagoya & Fuertes, 2020; Sánchez & Murillo, 2010; Vega, 2020; Zamora, 2022; Zhurakovskaya et al., 2020), who have emphasized topics related to the role of the teacher, their performance and professional development, as well as working conditions, their training, professional growth, and teacher evaluation.

Various approaches and theoretical conceptions have been used to refer to initial training, such as the preparation of professionals with a high degree of humanism, agents of change, and trainers of leaders and independent rational subjects (Díaz, 2020; Vera et al., 2023). The epistemic criteria of these authors are assumed because they have emphasized the topic related to the role of the teacher.

This training implies a greater degree of transferability, professionalization, and social responsibility in the student; it favors the capacity to mobilize the knowledge and aptitudes necessary to respond to various challenges in their natural, social, and personal environment (Bedoya et al., 2021; Escarbajal & Martínez, 2023; Romero, 2018).

As Susanto et al. (2024) point out, the university has become the institution responsible for the training of future professionals, and its prestige is related to the capacity to place its graduates in the labor market. From an educational-formative perspective of higher education, and based on the statements in the 2030 Agenda, this new competency-based model for "sustainability" entails a broad review of good formative practices (Gutiérrez et al., 2023).

Currently, higher education is aware of and, at the same time, stands as an active part of the development of social commitment in student training, thus seeking to deepen social engagement practices. To this end, it strives to generate spaces that allow the development of participatory practices for students, with human resources being those who will act upon the various existing problems (Trejo et al., 2024).

It is essential to emphasize that, according to Pérez (2022), the initial training of the graduate in primary education is a fundamental process that prepares future teachers to perform their work with competence, ethics, and social commitment. This process not only involves acquiring theoretical knowledge but also developing practical skills, attitudes, and values that enable quality teaching and effective interaction with students, families, and the educational community in general.

Regarding pedagogical management in initial training, from the perspective previously addressed, authors such as: (Barragán, 2012; Díaz, 2020; Farfán & Reyes, 2017; Malpica & Navareño, 2018; Vera et al., 2023; Zhurakovskaya et al., 2020) consider that this process facilitates the orientation and coor-

dination of actions deployed by teachers at different levels for the administration of the educational teaching process in the efficient achievement of the proposed objectives for the comprehensive training of professionals in the design of meaningful learning experiences adapted to the needs of their students.

Therefore, the objective of this text is to present fundamental elements of training for teachers participating in the initial training process of the graduate in primary education, aimed at strengthening pedagogical management and ensuring academic success, in order to combine the epistemological foundations of the theoretical and practical components.

Materials and methods

This study is framed within a theoretical-descriptive research approach, oriented toward the construction of a teacher training proposal. Its design is based on a conceptual and structural analysis aimed at integrating the epistemological foundations of the theoretical and practical components in the initial training of the graduate in Primary Education.

For the development of the proposal, a methodology based on two central phases was employed: Systematic review and documentary analysis of research by leading authors in the field of pedagogical management and teacher training (Barragán, 2012; Jiménez et al., 2023; Juárez et al., 2024; Pérez, 2022).

Design and validation by expert judgment: The structure and fundamental components of the training were developed and refined through the technique of critical opinion workshops and collective construction. In this phase, a team of 17 teachers and specialists in primary education and pedagogical management from universities participated, acting as expert judges. Their role was to enrich the design, validate the internal coherence of the proposal, and ensure the integration between theory and practice through reflective dialogue and the collective identification of needs and potentialities.

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Results and discussion

The training for the initial preparation of the graduate in Primary Education, from the perspective of pedagogical management to guarantee academic success, takes into consideration the theoretical references presented in the introduction and development, and its orientation corresponds to the postulates of the systemic-structural-functional paradigm of research.

Of cardinal significance is the essential role that communication plays in the pedagogical process, the role of experiences as a fundamental aspect in the formation of personality, with the recognition of the significance of the different experiences and events that subjects face, and the meaning of all the influences of people, groups, and institutions.

For authors such as Bernaza et al. (2018) and Pérez (2022), training contributes to developing skills, attitudes, and knowledge to improve and strengthen the quality, impact, and social incidence of the activities carried out. According to Peralta et al. (2023) and Vera et al. (2023), training is a form of professional development that leads to an enrichment of content, especially skills and abilities, with a higher level of depth, systematicity, or assimilation.

According to the above, training enables the basic and specialized formation of university graduates, particularly in the development of skills and the assimilation and introduction of new procedures and technologies with the purpose of complementing, updating, perfecting, and consolidating their knowledge. Its tutorial and dynamic nature allows its linkage with other organizational forms of professional



development, fundamentally with self-preparation.

Authors such as Pérez (2023) consider that training is the act of providing means that allow learning in a positive and beneficial sense so that individuals can develop their knowledge, aptitudes, and skills more rapidly; granting benefits such as:

- Preparing personnel for the immediate execution of the various tasks peculiar to the organization.
- Providing personnel with opportunities for continuous development in their current positions, as well as in other functions for which the person may be considered.
- Changing people's attitudes, to create a more satisfactory climate among employees, increase motivation, and make them more receptive to supervision and management techniques.

From this perspective, training contributes to self-realization and the achievement of organizational objectives. Training helps professionals to prepare comprehensively and also provides them with knowledge about all technical aspects of the work; it tends to be oriented toward short-term performance issues and the development of a person's skills in light of future responsibilities.

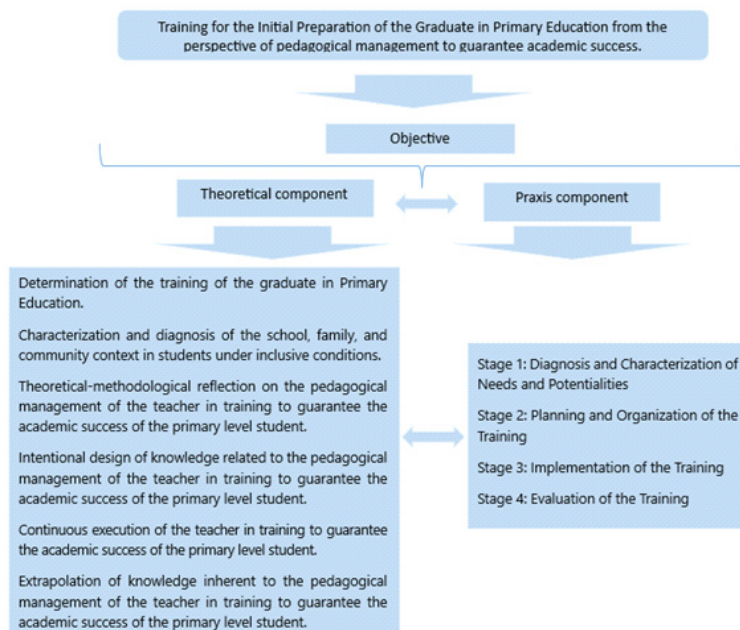
The training proposal was configured from the analysis of theoretical foundations, with distinctive features of an integral, flexible, contextualized, and participatory nature, which fosters the relationship between the affective, the cognitive, and the attitudinal. It combines different forms of organization (courses, scientific debates, consultations, experience exchange meetings, and self-improvement), and harmonizes in its structure a close relationship between theoretical and practical components.

The harmonious combination of the theoretical as the foundation for subsequently developing praxis is expressed in the following figure.

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Figure 1

Training for the initial preparation of the graduate in primary education from the perspective of pedagogical management to guarantee academic success.



Note: Own elaboration.



The general objective proposed for the training is to contribute to the cognitive, instrumental, and attitudinal appropriation (knowledge, skills, habits, and values) by teachers in the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success, taking as theoretical support a theoretical component that harmonizes coherently with the practical component.

Stage 1: Diagnosis and characterization of needs and potentialities

Objective: To diagnose and characterize the initial and prospective state of initial training of the graduate in Primary Education from the perspective of pedagogical management for guaranteeing academic success.

Theoretical component: Determination of the initial training of the graduate in Primary Education. This component aims to determine needs and potentialities for the design of actions for initial training. The process of determining initial training must be directed toward consolidating adequate professional performance through the identification of needs and potentialities.

To achieve this, their training must respond to at least three basic requirements:

- First, personal development in terms of qualities, attitudes, and values that allow them to offer a positive educational model, with knowledge, scientific, psychopedagogical, and socio-educational skills for solving real-world problems;
- Second, it must be directed toward promoting habits and values that allow the exchange of experiences and good practices;
- Third, they must possess pedagogical, methodological, and organizational independence that allows them to implement their assessments and criteria for continuous growth in professional activity.

The preceding analyses allow for the understanding of the initial training of the graduate in Primary Education as the necessary process of reflection on the current state of their preparation so that, based on existing epistemic gaps, they are capable of updating their knowledge, self-evaluating, co-evaluating their professional performance, and directing the different processes, particularly pedagogical management for guaranteeing academic success.

Theoretical component: Characterization and diagnosis of the school, family, and community context in students of the Bachelor's Degree in Primary Education. This component takes into account specifying the essential elements that initial training must consider, from the processes of characterization and diagnosis, for the purpose of successful intervention in the contexts where they develop their pedagogical activity.

The processes of diagnosis and characterization need to be separated methodologically to understand the reason for each of them in pedagogical praxis; they harmonize, feed back into each other, and condition one another—that is, they possess a cyclical character in daily life and in systematic practice (Pérez, 2022).

In general terms, one starts from an initial diagnosis and characterization that gradually becomes enriched as one delves into the comprehensive knowledge of the context where the lives of students in training unfold, which unquestionably presupposes the contextualization of knowledge learned in their undergraduate training, as well as from the professionals with whom they must interact.

In the school context, pedagogical direction must be carried out based on the characteristics of each student in training, their experiences, and needs arising from their sociocultural context. Diagnosis becomes a mandatory requirement in this context for the conception and direction of the process with the level of efficiency required for attention to diversity in the initial training of the graduate in Primary Education.

Practical component: Actions for this stage.

- Specify the dimensions and indicators to consider in the collection of information on shortcomings and needs in the initial training of the graduate in Primary Education from the perspective of pedagogical management for guaranteeing academic success.
- Determine the methods to employ for identifying the needs of initial training of the graduate in Primary Education from the perspective of pedagogical management.
- Develop the instruments corresponding to the methods determined for identifying initial training needs.
- Apply the developed instruments.
- Process the results obtained through the application of the instruments.
- Prepare a report reflecting the results obtained, both qualitatively and quantitatively.

Stage 2: Planning and organization of the training

Objective: To design the training program with pedagogical activities for the initial training of the graduate in Primary Education from the perspective of pedagogical management for guaranteeing academic success.

Theoretical component: Theoretical-methodological reflection on the pedagogical management of the teacher in training to guarantee the academic success of the primary level student. This component aims to ensure that the initial training of the graduate in Primary Education from the pedagogical management perspective can project, with the necessary wisdom, activities to guarantee academic success.

In the specific case of pedagogical management to guarantee academic success, tasks must be oriented toward the assessment of knowledge management, systematization, performance, innovation, and communication that the professional achieves regarding the process, and the achievement of skills for self-organization of what has been learned; therefore, without neglecting the recognition of the value and importance of the various forms of professional development organization most commonly used.

Theoretical component: Intentional design of knowledge related to the pedagogical management of the teacher in training to guarantee the academic success of the primary level student.

In the case of this component, the purpose is to design the knowledge that the student in training for the Bachelor's Degree in Primary Education should possess, based on knowledge related to pedagogical management, taking into account topics that are currently essential such as: Curricular design, guides, guidelines, pedagogical processes, competencies, planning, inclusive and educational strategies.

Of particular importance is the teaching role in curricular processes; their actions should not be merely technical nor simply transmit knowledge; they require a reflective, analytical, investigative, and increa-

singly human teacher who constructs meanings with a critical and constructivist sense; thus responding in an articulated and coherent manner to the theoretical approaches of the educational system that drive and promote pedagogical practice.

Some teaching activities that can be developed to promote reflection, analysis, and deep understanding of the training process of future teachers in this area are: Text analysis and group discussion; conceptual maps or visual schematics; case studies and reflection; development of an evidence portfolio; debate on challenges and proposals for improvement; elaboration of a personal improvement plan.

These activities seek to promote an active and reflective understanding of the initial training process of the graduate in Primary Education, fostering critical, creative, and self-evaluation skills.

Practical component: Actions to be developed in this stage.

- Determine the requirements for planning the organizational forms for initial training: project the organizational forms in correspondence with the shortcomings and professional training needs of the students; project the organizational forms with a systemic character; organize training actions by content.
- Familiarize students and professors with the purposes of the strategy.
- Determine the forms of organization to be executed based on the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success: professional development courses; professional development workshops; scientific debates; consultations; experience exchange meetings; and self-improvement.
- Establish the schedule for the execution of the determined organizational forms.
- Specify the objectives, contents, methods, means, and evaluation forms for the initial training activities of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success, based on the problems identified.
- Plan the different organizational forms for the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success.
- Develop the necessary material resources for the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success.
- Determine the indicators and evaluation forms for residents to continuously assess progress in the appropriation of theoretical, methodological, and attitudinal knowledge.

In this training, evaluation is assumed both as a process and as a result, with the purpose of integrally evaluating knowledge, skills, and attitudes; this favors the progress of awareness of change, transformation, and professional development of students in training.

Stage 3: Implementation of the training

Objective: To implement the training program with pedagogical activities for the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success.

Theoretical component: Continuous execution of teacher training to guarantee the academic success of the primary level student.

This component assumes the responsibility of representing the continuity of initial training actions. It

is determined by the acquisition and solidity of new knowledge, skills, habits, and values. It delves into the need that, given the magnitude of their training, they constantly improve themselves, in correspondence with the needs of their future profession.

The institutions where students are trained must be capable of deepening, acquiring, and fostering profound theoretical and practical knowledge, with infinite fortitude, realistic optimism, motivational affective relationships, and empathetic communication, for better learning, and providing adequate guidance regarding pedagogical management, in light of the challenge currently posed by science, technology, and society.

A vital element in this execution stage is that they are capable of theoretical and methodological reflection on how to efficiently develop the initial training process of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success in the activities planned and organized in the preceding stage.

To carry out the actions, it is necessary to consider the following aspects: exploration of problems and determination of basic learning needs; programming of actions; educational and participatory action; evaluation; and new problems and needs. It is vital that they exercise systematic, consecutive, and regulatory control, with the consequent satisfaction of the needs that students constantly demand.

Practical component: Actions to be developed in this stage.

- Assess the training program: organization and planning of objectives and contents; selection of appropriate methods, procedures, material means, and organizational forms; and determination of the evaluation system. All aimed at improvements in professional performance.
- Organize implementation according to the organization of training actions, so as to allow individualized and personalized attention to the real needs of each student.
- Conduct methodological workshops for the purpose of joint assessment by students, main administrators, and researchers of the results achieved in initial training.
- Select appropriate methods, procedures, material means, and organizational forms.
- Determine the evaluation system.

Stage 4: Evaluation of the training

Objective: To evaluate the mastery acquired by students in the initial training of the graduate in Primary Education from the perspective of pedagogical management for academic success, based on the implementation of training actions.

Theoretical component: Extrapolation of knowledge inherent to the pedagogical management of the teacher in training for the academic success of the primary level student.

The purpose of this component is to transfer acquired knowledge to analogous situations. It implies the development of other knowledge arising during initial training, which may well be used during training, in satisfying the diverse problems that arise in daily life.

The extrapolation of knowledge variant must provide responses to comprehensive, flexible, contextualized identification in training and the incorporation into their knowledge of the most appropriate orientations in the direction of the process, referring to: Affection; understanding; participation; creation; identity.

Practical component: Although evaluation is present throughout the entire implementation process, with emphasis on each of the levels and actions, the following are considered:

- Assessment of successes and failures, identification of possible errors, and implementation of self-corrections of the proposed actions.
- Comparison of the level of correspondence between the previously prepared plan and the results achieved in the development of initial training.

Cardinal observations

From a methodological point of view, evaluation should not be conceived solely as the final moment of the training, but should be present throughout the implementation space, monitoring the effectiveness of each of the actions executed, so that partial evaluations are carried out and adjustments are made to the needs of the students.

Evaluation should provide attention to the general objective of the training and the specific objectives of the different stages, as well as the actions developed by levels, resources, time, and those responsible, insofar as this phase must achieve the identification of what have been the main achievements and dissatisfactions, in favor of the projection and generation of changes in its implementation and application.

This stage constitutes the final moment of the process and marks the beginning of a new stage in the development of the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success. The satisfaction of one need generates other needs, always in favor of raising the professional level of these students.

The training proposal presented here represents a concrete response to the shortcomings identified in the initial training of the graduate in Primary Education from the perspective of pedagogical management. Its fundamental value lies in the systemic articulation between theoretical and practical components, thus addressing one of the main weaknesses pointed out in the reviewed literature (Mero, 2022; Sánchez & Delgado, 2020).

The stage-by-stage design evidences coherence with the postulates of the systemic-structural-functional paradigm, where each phase dialectically interrelates with the others, creating a whole that surpasses the mere sum of its parts. This approach directly responds to the need identified in the introduction for the combination of the epistemological foundations of both components.

The theory-practice integration proposed by this training aligns with the findings of Barragán (2012) and Malpaso and Lapa (2022), who highlight that effective pedagogical management precisely requires this articulation to guarantee academic success. Particularly, the initial diagnosis stage reflects what Farfán and Reyes (2017) pointed out about the importance of characterizing specific contexts before intervening.

The flexible and contextualized nature of the proposal responds to the demands of the 2030 Agenda and Mero (2022) regarding the need to adapt training to changing realities. Furthermore, the focus on the development of critical-reflective competencies coincides with what Gutiérrez et al. (2023) proposed regarding the social commitment that should characterize teacher training.

It should be noted that the four-stage structure with theoretical and practical components in each constitutes a significant contribution compared to more traditional approaches that usually separate

these elements. This permanent integration favors what [Romero \(2018\)](#) calls "situated knowledge transfer," essential for teacher professionalization.

The inclusion of multiple organizational forms (courses, workshops, scientific debates) responds to the diversity of learning styles and training needs, thus addressing one of the challenges identified in the introduction: the need for innovative and flexible methodologies.

The contributions of the critical opinion workshops and collective construction deepened the discussion of the proposed training, obtaining reliable criteria from a collective dimension and based on analysis, argumentation, and specialist assessments of the validity of the theoretical contribution and the practical tool.

As a result of the workshops, a file was compiled that included: individual and collective characterization of the members of each group in question, record of experiences with the minutes of each workshop, synopsis, summary document evidencing the dynamics of change in the proposals made and that were incorporated into the proposal submitted to the workshops, resulting version of the proposal, and document evaluating the quality of each workshop.

Three workshops were planned and executed, to which professionals from the following areas were invited: Universidad Autónoma de Santo Domingo (UASD), Instituto Superior de Formación Docente Salomé Ureña (ISFODOSU), and Universidad Católica de Barahona (UCATEBA), with the presence of ten professors, all holding the scientific degree of Doctor of Sciences and with more than 20 years of teaching experience; and 5 experienced teachers, all masters in different areas of knowledge and with more than 20 years of teaching experience.

All the selected professionals are accredited by their practical activity, teaching experience, and theoretical preparation for issuing value judgments on the proposed training, for the purpose of detecting irregularities in the proposal and seeking its improvement.

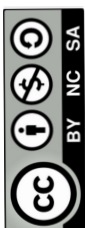
Main results of the workshops:

- They evaluated the foundations of the training as pertinent; they reflected on the immediacy of its application once the pertinent corrections are made, which, in the specialists' criterion, are necessary to include and unquestionably guarantee the initial training of the graduate in Primary Education from the perspective of pedagogical management to guarantee academic success and consequently their professional performance.
- It was proposed to deepen the sociological and pedagogical foundations.
- They evaluated the designed stages and established contents as pertinent, but suggested incorporating others related to social interaction.
- Updating of the bibliographic inquiry to support some of the proposals contained in the theoretical components.

Conclusions

The proposed training constitutes a systemic and structured response to the shortcomings in the initial training of the graduate in Primary Education, coherently articulating theoretical and practical components from the perspective of pedagogical management.

The four-stage design (diagnosis, planning, implementation, and evaluation) with theoretical and prac-



tical components in each guarantees a comprehensive approach that considers both training needs and specific contexts of professional practice.

The integration of multiple organizational and methodological forms responds to the diversity of training needs, facilitating the appropriation of knowledge, skills, and attitudes necessary for effective pedagogical management.

The articulation between epistemological foundations, regulatory frameworks, and concrete practices positions this proposal as a significant contribution to raising the quality of initial teacher training and, consequently, guarantees the academic success of primary level students.

Evaluation conceived as a continuous and formative process, present in all stages, allows for permanent adjustments and ensures the effectiveness of the training based on the proposed objectives.

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CRediT authorship statement

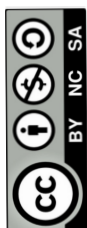
Author	Role performed
RCV	She was responsible for the theoretical inquiry and the construction of the proposal.
CPJ	He was responsible for the methodological direction of the research.
ALGC	He contributed to the development of the training and the systematization of the results from the research methodology.

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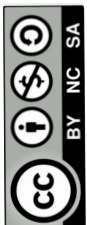
Email for correspondence: perezjimenezclay@gmail.com

Notes on the authors

* Romelia Colón Valdez is a Master in Higher Education and in Trainer Training, and a doctoral candidate in the Doctoral Program in Educational Sciences. She has professional experience at the primary, secondary, and higher education levels. She currently works as Coordinator of the Practicum Area and Professor at the Instituto Superior de Formación Docente Salomé Ureña, Recinto Urania Montás, Dominican Republic. Email: rcolon@isfodosu.edu.do

** Clay Pérez Jiménez holds a Bachelor's degree in Primary Education, a Master's degree in Educational Sciences, and a Doctorate in Educational Sciences. He is a Full Professor and Research Professor at the Centro de Estudios en Ciencias de la Educación, Universidad de Camagüey Ignacio Agramonte Loynaz, Cuba. Email: perezjimenezclay@gmail.com

*** Ángel Luis Gómez Cardoso holds a Bachelor's degree in Defectology and Speech Therapy, a Master's degree in Educational Research, and a Doctorate in Pedagogical Sciences. He is a Full Professor and Research Professor at the Centro de Estudios en Ciencias de la Educación, Universidad de Camagüey Ignacio Agramonte Loynaz, Cuba. Email: angel.gomez@reduc.edu.cu



Experimentation in secondary education: how to develop higher-order scientific skills?

Experimentation in secondary education: how to develop higher-order scientific skills?



Omar Escalona Vivas*

Instituto de Estudios Superiores de Investigación y Postgrado, Venezuela.



Víctor Bless Gutiérrez**

Universidad de Ciencias Médicas de la Habana. Facultad de Tecnología de la Salud.
La Habana - Cuba.

Abstract

This article analyzes how experimentation in secondary education contributes to the development of higher-order scientific skills (HOSS): critical thinking, problem solving, argumentation, and hypothesis formulation. Through a systematic review using PRISMA methodology (2016-2026) in databases such as *Scopus*, *WoS*, *ERIC*, *SciELO* and *Redalyc*, seven thematic categories were identified: scaffolding, teaching based on international studies, collaborative problem solving, design-build-test (maker culture), STEM/STEAM education, contextualization of learning, and reflective exchange spaces. Findings reveal that experimentation alone does not automatically develop HOSS; explicit teacher scaffolding, pedagogical guidance, meaningful contextualization, and argumentation opportunities are required. Lack of teacher training and infrastructure in Latin America limits this potential.

Keywords: experimentation, higher-order scientific skills, secondary education, scaffolding, systematic review.

Resumen

Este artículo analiza cómo la experimentación en educación secundaria contribuye a la formación de habilidades científicas de orden superior (HCOS): pensamiento crítico, resolución de problemas, argumentación y formulación de hipótesis. Mediante una revisión sistemática con metodología PRISMA (2016-2026) en bases como *Scopus*, *WoS*, *ERIC*, *SciELO* y *Redalyc* y, se identificaron siete categorías temáticas: andamiaje, enseñanza basada en estudios internacionales, resolución de problemas colaborativa, diseño-construcción-prueba (cultura maker), formación STEM/STEAM, contextualización del aprendizaje, y espacios de intercambio reflexivo. Los hallazgos revelan que la experimentación por sí sola no desarrolla automáticamente HCOS; se requiere un andamiaje docente explícito, orientación pedagógica, contextualización significativa y oportunidades de argumentación. La falta de formación docente y de infraestructura en América Latina limita este potencial.

Palabras claves: experimentación, habilidades científicas de orden superior, educación secundaria, andamiaje, revisión sistemática.

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Introduction

When teaching science in secondary education, the aim is to educate citizens capable of understanding the world from a scientific perspective, developing critical thinking and problem-solving skills (Jiang et al. 2023). Undoubtedly, such consideration implies that education must correspond to the demands of today's world, as UNESCO (2017) affirms, along with the challenges and aspirations of the 21st century through relevant learning objectives and content. In this perspective, how can we achieve what Furman (2016, p. 32) calls "the possibility of experiencing first-hand the very process of investigating the world"? The answer is none other than through experimentation. Laboratory practices in natural sciences have long been considered a backbone connecting theoretical knowledge with empirical reality. But what role does the teacher play in this epistemic shift in the classroom? García and Moreno (2019, p. 157) respond:

The teacher can foster the learning process through experimental work that involves active observation, questions and hypotheses, the artificialization of natural phenomena, and the search for solutions to everyday situations, and simultaneously, the development of scientific skills such as description, argumentation, analysis, appropriation, and application of scientific knowledge to question reality and transform it; finally, to understand science as knowledge that is built from everyday situations with no apparent answers, where students are the protagonists in the construction of their own new explanations.

A review of the published scientific literature shows that laboratory practices contribute to the development of experimental skills in secondary school students. Osorio (2022) and Jiang et al. (2023) mention that at this age, young people learn to handle chemical reagents, laboratory equipment and instruments, formulate hypotheses, conduct experiments to confirm them, and measure variables related to the phenomena under study.

Similarly, voices from the scientific community argue the benefits that experimentation brings to secondary education and how learning is generated across multiple dimensions. Along these lines, Bretz et al. (2013) and Hakim et al. (2013, 2016) have found that conducting scientific experiments allows for conceptual understanding and helps correct erroneous ideas. Furthermore, they affirm that laboratory practices help achieve meaningful learning by creating a motivating environment that awakens students' interest and curiosity to learn, while also favoring a deep understanding of complex concepts such as mediating space (Escobar, 2016; Pillajo et al., 2025).

However, if considered from a procedural perspective, it is worth mentioning that laboratories contribute to the development of specific skills. Thus, the study by Hernández et al. (2018) argues that experiments in secondary education are a source of knowledge and a means to confirm hypotheses, contributing to the development of experimental skills and habits.

Similarly, the University of San Pedro Sula (2017) states that laboratories contain measuring instruments, reagents, and other elements that facilitate the achievement of objectives in the search for concrete scientific knowledge through discovery learning. Palacios (2016), for his part, affirms that these practices increase experimentation skills and foster respect for the environment.

From a reflective perspective on the attitudinal and epistemic level, it can be argued, as González et al. (2004) indicate, that experimentation in science teaching goes beyond facilitating hypothesis verification.

In this sense, experiments are actually a key means to promote content learning, solve problems, and reach solid conclusions, adding greater scientific rigor to secondary education teaching. This aligns with what the National Research Council (2013, cited in [Murphy et al., 2018, p. 1239](#)) states: "it requires a fundamental shift in scientific pedagogy to foster knowledge and practices such as deep conceptual knowledge, model-based reasoning, and oral and written argumentation where scientific evidence is evaluated."

In this line of thought, [López and Tamayo \(2012\)](#) insist on considering that laboratories strengthen both conceptual and procedural knowledge, allowing for deeper exploration of essential aspects of scientific methodology and fostering reasoning skills such as critical and creative thinking, as well as attitudes like open-mindedness, objectivity, and a healthy distrust of judgments not supported by sufficient evidence.

Now, one might ask: What are the conditions for experimentation to take place? Today, both physical and virtual laboratories are essential. [De Jong et al. \(2013\)](#) have stated that at the pre-university and university levels, attractive and stimulating scientific experiences are often offered. In this same vein, [Satterthwait \(2010\)](#) affirms that hands-on experiences in science laboratories play a fundamental role in enabling students to learn. [Ambusaidi et al. \(2018\)](#) add that by incorporating technology into these spaces, the way students learn science changes notably. [Bazán and Díaz \(2021, p. 18\)](#) synthesize this idea by stating that laboratories make possible "problem-solving based on their real experiences, and enable the improvement of school scientific skills."

However, despite theoretical consensus among researchers, it is undeniable that in Venezuela and some countries, many institutions face significant obstacles to implementation. For example, there are educational centers where experiments cannot be carried out because they lack equipped laboratories. Studies such as those by [Torres and Ayuso \(2025, p. 22\)](#), conducted in the Dominican Republic, indicate that:

50% of students in public schools and 52% in subsidized schools state that they have low or very low levels of proficiency in evaluating and designing experiments. Likewise, 73% of students in public schools and 70% in subsidized schools indicate that experiments are only sometimes or never carried out in the classroom. Also, 53% of students in public schools and 44% in subsidized schools state that the scientific method is only sometimes or never used in class.

The same situation has been found in Colombia, where, despite investment, a lack of clear guidelines persists. [Ortiz and Cervantes \(2015, p. 16\)](#) hold the State responsible: "there are no policies that define, regulate, support, and ensure the general development of scientific skills in the child population from their entry into the formal education system." This has prevented the widespread implementation of programs and proposals that have been presented, even though investment in resources has been made.

In the case of Ecuador, there is also a stated "need for training programs that promote the participation of the Natural Sciences teacher as a guide in preparing the student to become more independent in the search for and assimilation of scientific knowledge through experimentation" ([Ramírez, 2023, p. 637](#)).

Paradoxically, the opposite occurs: facilities exist, but teachers do not conduct laboratory practices, thereby depriving students of the opportunity to validate their hypotheses, refine their observation and analysis skills, and learn from their own mistakes—all of which are relevant aspects for the development of scientific competencies ([Osorio, 2022](#)).

Nevertheless, the problem is not only one of infrastructure and laboratory equipment. There are teachers who adopt teaching practices that undermine meaningful learning, giving greater importance to reading books or didactic materials than to situations where students acquire knowledge through experimentation. In this regard, [Ramírez \(2023, p. 634\)](#) states that these teachers show "a predominance of content development, knowledge, and terms over experiential activities." Coinciding with this, other researchers have mentioned that teachers implement few classroom activities where students engage in authentic argumentation within the science classroom ([Sampson & Blanchard, 2012](#); [Knight-Bardsley & McNeill, 2016](#)).

This behavior is based on a traditional role and rote learning focused on repetition without the possibility of knowledge reconstruction and without favoring the learning of natural sciences ([Muñoz & Charro, 2023](#)). As a consequence, classes often fall into boredom, with students assuming a passive role, neither awakening student interest nor promoting the everyday usefulness of what is learned ([Sanmartí & Márquez, 2017](#)).

These teacher behaviors set aside higher-order scientific reasoning such as transfer, heuristics, and argumentation—cognitive dimensions of learning according to the taxonomy proposed by [Bloom et al. \(1956\)](#) and revised by [Anderson and Krathwohl \(2001\)](#) and [Gallardo et al. \(2010\)](#).

It also often happens that some teachers ask questions to students instead of letting students ask questions to the teacher. This situation is contrary to what experts suggest ([Martin-Hansen, 2002](#)). Moreover, this classroom inquiry is often of a low level ([Fay et al., 2007](#); [Tamir & García, 1992](#)). Furthermore, the teacher ends up providing answers based on content, which is why the question is not investigable because it is structured inquiry and not true inquiry ([Ferrés, 2017](#)). This is the case even though constructivist curricula suggest that content should be an instrument to formulate a hypothesis that guides the research process ([Domènech, 2014](#)). This is by no means easy for the teacher to achieve. [Lombard and Schneider \(2013\)](#) state that question formulation is an interactive and iterative process between student and teacher, leading from vagueness to complexity and appropriateness, and that it takes time.

Based on the above, experimentation is an unavoidable component in the scientific training of secondary school students. However, upon a deeper observation of the nature of the learning that typically derives from the development of experimental activities in laboratory practices, a fundamental distinction emerges. While the acquisition of basic skills—such as following a protocol or a set of steps to conduct an experiment in biology, physics, or chemistry and measuring a variable or handling a reagent—appears automatically during laboratory practice, the development of so-called Higher-Order Scientific Skills (HOSS) presents a less clear picture from an epistemological point of view.

While some studies focus their attention on basic skills, other higher-order aspects are neglected. In this regard, it is worth mentioning that [Coronado \(2024\)](#) and [Hernández et al. \(2018\)](#) describe experiments as spaces where students confirm hypotheses and develop habits. However, such a characterization may be omitting the deep cognitive process.

When students conduct experiments in the natural sciences laboratory, they carefully follow the steps corresponding to that analytical procedure of the experience, which implies prior planning of the experiment, design, selection of necessary materials and equipment, as well as safety rules to follow. This demonstrates the student's ability to solve problems and learn scientific concepts validated in their context ([Coronado, 2024](#)).

Despite the above, conducting a laboratory experience is, as [Silva and Cáceres \(2024\)](#) argue, a way of approaching scientific knowledge, but one might ask: Is confirming a hypothesis a mechanical act of verification, or does it imply a genuine exercise of contrast and reflection? Likewise, does the design of an experiment emerge from the student's initiative and reasoning, or is it guided step by step by the teacher only to confirm what is already known rather than posing new perspectives and scientific hypotheses according to the student's interest?

Undoubtedly, these questions become more important if one considers what is meant by complex scientific skills. Researchers such as [Faicán and Manzano \(2024, p. 100\)](#) state that "critical thinking, problem-solving, cognitive and communication skills, the ability to formulate hypotheses, experimentation, and interpretation" correspond to the core of authentic scientific competence, and that this is not usually developed automatically simply by conducting experimental activities.

Furthermore, it could be considered that, in many secondary education classrooms, the experiences carried out in natural sciences laboratories might be merely procedural activities without educational intentionality, rather than being motivating and useful for illustrating concepts that challenge students to think like scientists. As [Ramírez \(2023\)](#) has explained, when a traditional approach focused on repetition and content prevails, even laboratory practices can be used to follow a logic of memorization or simple verification, wasting their epistemic potential.

Although a large amount of published literature exists regarding the role of experimentation in the development of basic skills in students, there is still a significant gap in understanding the actual mechanisms that establish a link between experimental activities or laboratory practices and the development of HOSS in secondary school students. Without exaggeration, some studies aim to discern what is learned in the laboratory, but they do not direct their attention to how this complex learning occurs in students. It is worth mentioning that this distinction is of utmost importance when designing curricula, developing training and professional development programs for natural sciences teachers, and proposing didactic strategies that can be used in teaching natural sciences to young people in educational institutions.

In this sense, the present article has as its cardinal point the following scientific question: In what way does experimentation, when carried out in the context of secondary education, truly contribute to the formation of higher-order scientific skills? The logbook to follow has as its operations center a systematic review of the literature published between 2016–2026, seeking to analyze the pedagogical, contextual, and epistemological factors that determine whether a laboratory practice becomes a mere procedural exercise or an authentic inquiry experience that develops students' scientific thinking.

Methodology

In the research, a systematic review of the literature was conducted following the guidelines of the PRISMA 2020 statement ([Page et al., 2021](#)). The research question guiding the review was: In what way does experimentation in secondary education contribute to the formation of higher-order scientific skills (HOSS)?

Search strategy. Search equations were developed in English and Spanish, combining key terms with Boolean operators (*AND*, *OR*) and wildcards (*). The main concepts were: **(a) population/context: secondary education;** **(b) intervention/phenomenon:** experimentation or laboratory practices; **(c) outcome:** higher-order scientific skills (critical thinking, problem-solving, hypothesis formulation, ar-



gumentation, inquiry). The equations were applied to the *Scopus*, *Web of Science*, *ERIC*, *SciELO*, and *Redalyc* databases, covering the period 2016–2026.

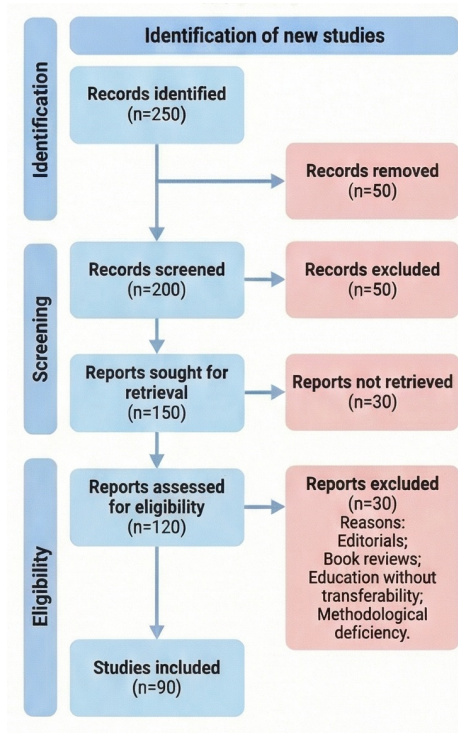
Inclusion and exclusion criteria. Empirical articles (qualitative, quantitative, or mixed), systematic reviews, and controlled trials, published in English or Spanish, that addressed experimentation in secondary education and its relationship with HOSS were included. Editorials, book reviews, studies focused exclusively on primary or university education without explicit transferability, and those that did not present original data or methodologically explicit syntheses were excluded.

Selection process and data extraction. Two reviewers independently examined titles and abstracts (phase 1), then full texts (phase 2). Disagreements were resolved by consensus. From each included study, the following were extracted: author(s), year, country, educational level, research design, type of experimentation (physical, virtual, mixed), HOSS evaluated, main findings, and limitations. Methodological quality was assessed using the MMAT (*Mixed Methods Appraisal Tool*) version 2018.

Synthesis of results. For the synthesis of results, a thematic analysis was performed following the phases of [Braun and Clarke \(2006\)](#). A total of 250 studies met the inclusion criteria and were subjected to thematic analysis. The emerging themes are presented in the results section.

PRISMA diagram: Study selection process

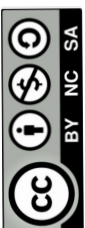
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Results and discussion

Category 1: Scaffolding in learning how to research

In the research community, scaffolding is a construct of singular importance when posing scientific questions. It is not about offering immediate answers, but about providing the means for the auto-



nomous construction of knowledge. From our perspective, we propose an illustrative example: in a biology experiment on photosynthesis, the teacher can model thinking and act as a mirror of reasoning, provoking doubt:

"I observe that bubbles are coming out of the Elodea branch through the test tube that is in the water tank. What will happen if I bring the lamp closer to the glass tank?"

The teacher can also encourage the student to connect variables: "If oxygen is a product of photosynthesis, then does the rate at which these bubbles are produced indicate the rate of production in the plant?"

Likewise, the teacher can suggest measurement: "Kids, how do you think it is light, not the heat from the lamp, that controls the result? What do you think we can keep constant?"

Similarly, the teacher can use another common variant such as "do and then reflect on what happened" (Strat et al., 2023). In this type of experience, the student works collaboratively and actively. It has been found that under this methodology, students acquire both knowledge and key skills. However, the essential element is the motivational support provided by the teacher to the student to achieve the experience. Studies indicate that there is a positive correlation between teachers' motivational support and students' expressions of motivation (Adler et al., 2018). Although, Zhang and Cobern (2020) have also mentioned that it is important to make scientific content available to students. The reason is that it is not always easy for students to develop inquiry-based activities without them being linked to scientific concepts (Rönnebeck et al., 2016).

Category 2. Science teaching based on results from international studies

Various publications mention that in many educational systems, science instruction with an emphasis on inquiry is advocated, but studies based on large-scale international assessments often show that inquiry is negatively associated with achievement. Aditomo & Klieme (2020) show a positive association of inquiry with outcomes when teacher guidance is present. The study, with 151,721 students, indicates that multi-group confirmatory factor analyses further confirm that measurement invariance cannot be established, suggesting substantial regional variation in the pattern of inquiry-based instruction.

Likewise, Aditomo & Klieme (2020) point out that at the conceptual level, many regions exhibit a contrastable pattern between 'guided inquiry' and 'independent inquiry'. Inquiry is positively associated with outcomes when it incorporates teacher guidance and negatively when it does not. However, the strength of positive associations is stronger in regions where guided inquiry is measured with fewer items referring to student-centered activities. Such results correspond to what current theories propose regarding the role of scaffolding in learning how to research.

Other international research reveals that in experimental science teaching, a fundamental aspect to consider is the didactic training of teachers. In this perspective, Ríos (2021) raises the need to consider the onto-epistemological and gnoseological reality of the science to be taught without neglecting the articulation with the Philosophy of Science and Methodology from an ethical realism standpoint (Quijano et al., 2022). From the last two decades of the 20th century, an epistemological shift occurred in science didactics, moving from positivism to considering how teachers should take positions regarding phenomena of reality, that is, to see the repercussions of scientific research on them and make "socio-scientific" decisions in this regard (Adúriz & Ariza, 2012). These proposals represent a move from logical-positivist procedures to a civic humanism (De Hoyos, 2020).



This situation paves the way for the need (and at the same time the difficulty) for the philosophy of science and metasciences together with experimental sciences to set aside their mutual distrust because something fundamental is lost when one ignores the other. In this sense, collaboration between scientists from the metasciences and object sciences is necessary for disciplinary actions. However, such an approach is not easy to achieve. On the one hand, there are philosophers who disdain laboratory work. For them, it is not important to know what scientists study or how they do it. Hence, this scientific praxis is not relevant. Perhaps this is the reason why their eidetic process is merely mental, with a degree of abstraction whose basis is ideas, and the theories constructed are disconnected from empirical reality.

On the other side are experimental scientists who downplay the benefits of philosophy in a context dominated by hyper-specialization. From our point of view, the problem for experimental science teachers is taking sides with one of these extremes. Therefore, the challenge for secondary education natural science teachers is not only to choose between guided or independent inquiry methods, but also to overcome the false dichotomy between philosophy and scientific practice.

Logically, it is necessary to think about the development of higher-order scientific competencies such as critical thinking, modeling, or argumentation. This requires an integrative approach that combines experimental rigor with epistemological reflection. In other words, teachers must be capable of designing learning experiences where students not only manipulate variables but also question the nature of scientific knowledge, its methods, and its social implications. Only then can we advance toward a science education that forms citizens capable of participating in socio-scientific debates with a deep and contextualized understanding of science.

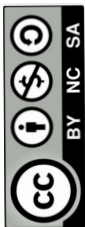
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Category 3. Problem-solving through collaborative individual experiences

Different studies suggest that problem-solving competence is of great importance both academically and professionally. In fact, a recurring question in natural science classes, from our experience with secondary school children and even at university, is these two questions: "What use is this content in real life?" "What utility does it have in the things we do in our lives?" These two questions always destabilize teachers' lesson planning and in some cases generate unsatisfactory answers for the students, while for teachers they provoke a critical look at the curriculum provided by the ministries of education.

Young people always connect that knowledge with their lifeworld. However, contents are fragmented and explained from the perspective of disciplines. Teachers rarely contextualize and give little importance to the questioning and implications of the content. Although the epistemological foundations of curricular designs include aspects of meaningful learning and constructivism in the classroom, these aspects remain in the official document, and teachers assume the role of transmitting and reproducing knowledge as the central axis, leaving aside critical thinking and student participation, turning them into passive entities in their learning process.

This described scenario suggests the need for change. In the United States, it has been proposed that a program of excellence requires "effective teaching that engages students in meaningful learning through individual and collaborative experiences" (National Council of Teachers of Mathematics, 2014, cited by [Koskinen & Pitkäniemi, 2022, p. 2](#)). Isolating knowledge only to the realm of science means the student does not understand its relationship with their lifeworld, let alone develop reasoning competence. [Cruz \(2021, p. 55\)](#) states that "teachers must be capable of creating innovative teaching practices." Likewise, [Cruz and Cabero \(2020\)](#) suggest that one way to achieve this meaningful learning is



through problem-solving. Through this, creativity is implemented in learning in an active, personalized, and dynamic way. But not only that, students also become active agents of learning, make decisions, and stop being mere reproducers of knowledge.

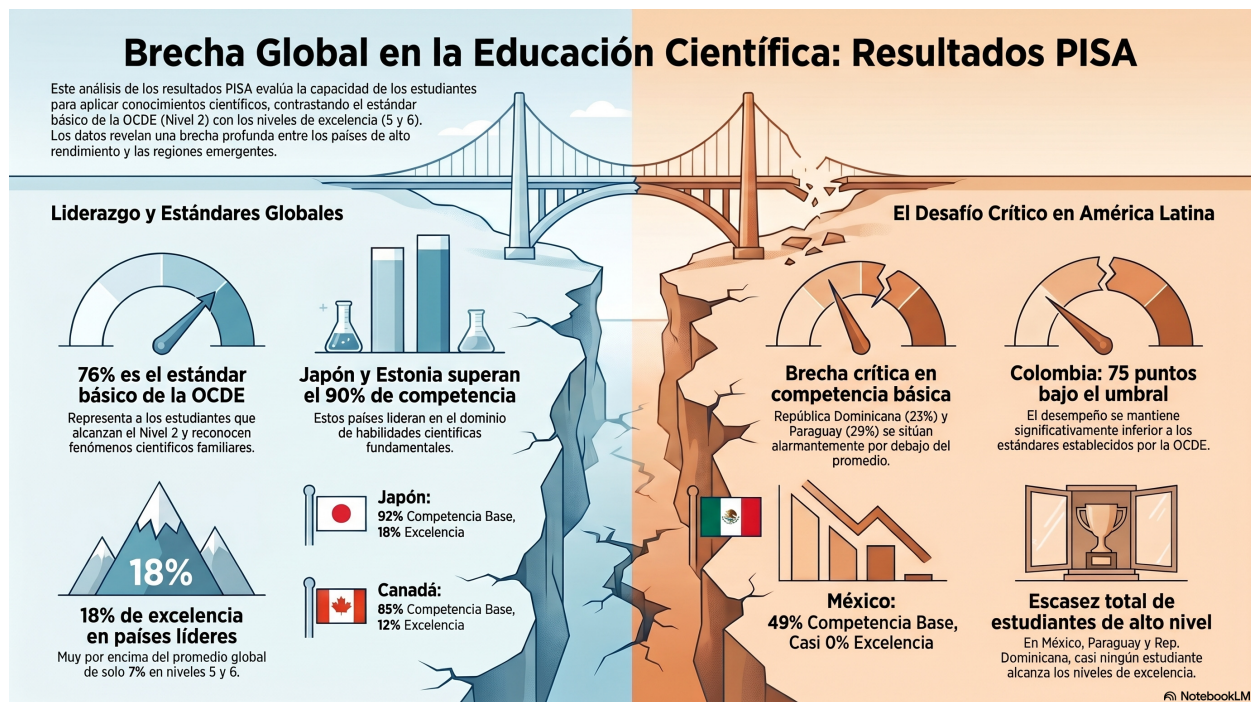
Now, what should be done to implement teaching based on problem-solving effectively in natural sciences? From our perspective, we believe that one way would be to pay attention to what certain documents, such as the Programme for International Student Assessment (PISA), suggest. A review of this document allows us to make some important considerations regarding science teaching.

At level 2, that is, where students are able to recognize the correct explanation of familiar scientific phenomena and can use that knowledge to identify, in simple cases, whether a conclusion is valid based on the data provided; we find that the situation is very concerning in countries such as Colombia, which is among the lowest performers, about 75 points below the threshold established by the OECD (2019); Argentina has only 46% of its students, Brazil 45%, Dominican Republic 23%, Mexico 49%, Peru 47%, Panama 38%, Paraguay 29%, compared to the OECD average of 76%. However, Turkey has 75%, United States 78%, Vietnam 79%, Canada 85%, Korea 86%, Estonia 90%, and Japan 92%.

Now, at levels 5 or 6, where students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations, including unfamiliar ones; the OECD average is 7%. Brazil, Panama, and Peru reach only 1%; Colombia is not reflected; Chile 2%; Dominican Republic, Mexico, Paraguay, almost no students achieved the best results in science. The following infographic illustrates what we have stated.

Figure 1

PISA results



Note: Prepared in NotebookLM based on data from Lerma et al. (2023), OECD (2018, 2023), and PISA 2022. The data are universal and the infographic is in Spanish, but their understanding is immediate: 76% of global students reach Level 2 (basic proficiency); only 7% reach Levels 5 or 6 (excellence). Japan: 92% (Level 2+) and 18% (excellence); Canada: 85% and 12%; Mexico: 49% and 0%; Colombia: 75 points below the OCDE threshold; Dominican Republic: 23%; Paraguay: 29%.

Category 4. Designing, making, and testing as a shift toward active learning and the materialization of knowledge

One of the important aspects in teaching natural sciences is to provide the opportunity to design, make, and test. This implies going beyond observation or hypothesis verification and going through the process of knowledge construction. This principle has its roots in maker culture and active STEM methodologies. [Lidueña and Alcocer \(2025, p. 311\)](#) argue that maker culture focuses on creativity, "collaboration, and solving real problems, not only improving academic performance but also promoting educational equity and the development of essential competencies for the 21st century."

Logically, these scientific skills are higher-order, and among them we can mention creativity, complex problem-solving, and critical thinking because students are architects of their own experiment or design. Allowing teaching practice to unfold in this way means moving from a structured laboratory practice that often develops by following an analytical procedure and recording each experience in a manual or laboratory guide, i.e., simply following a predefined script. However, "designing, making, and testing" implies an iterative cycle of ideation, construction, error, reflection, and redesign.

[Domínguez \(2023\)](#) affirms that maker culture is based on the idea formalized as "do it yourself" and "do it with others." Epistemologically, knowledge is then seen as a construction, hence its connection to constructionism, a learning theory proposed by Seymour Papert. In this process of collective construction, real or virtual social networks intervene to share the created knowledge. Most people tend to access these networks where they find support or guidance. Interestingly, the knowledge created is subsequently left open so that it is accessible to others and better solutions can be found ([Domínguez, 2021](#)). [Morales and Dutrénit \(2017\)](#) synthesize this by saying that the Maker movement is involved in the processes of knowledge generation, transfer, and use.

Precisely, a study that materializes this philosophy of maker culture was conducted by [Zulfa and Adam \(2025\)](#) in Indonesia with secondary education students, where they implemented Project-Based Learning integrated with STEM (PjBL-STEM) through chemistry teaching on electrochemistry content. These researchers improved learning outcomes and developed Higher-Order Thinking Skills (analysis, synthesis, and evaluation, key cognitive steps that led them to a holistic understanding). Beyond experiments, they designed and completed authentic projects, where "making" was guided by a real question or problem that allowed the integration of engineering and technology into experimental design as a powerful vehicle for complex thinking. This project made it clear that an expensive, specialized laboratory is not needed; rather, when designing, one can reconfigure familiar objects for scientific purposes. This fact allows students to understand physical concepts and principles more deeply than a laboratory apparatus or equipment would allow.

In the same perspective, recently at the University of Malaya, they integrated design with action, but from social innovation and accessibility, in the project "Toying with Science." Through the experience, students participated in the co-creation of learning modules. Finally, the strategy employed awakened interest in STEM disciplines and facilitated the assimilation of essential transferable skills such as perseverance, critical thinking, creativity, and teamwork ([Universiti Malaya, 2025](#)).

In the line of discussion raised, the technological dimension also offers new possibilities in the cycle of "designing, making, and testing," especially if physical resources are limited. Research conducted

in Nigeria mentions the impact of virtual laboratories in biology, chemistry, and physics on secondary school students. The results confirm significant differences in problem-solving skills between students who used virtual simulations and those who received traditional teaching (St. Clair et al., 2024). Likewise, students are able to modify variables, design new parameters, and test hypotheses iteratively in simulated environments, developing scientific reasoning ability without the barrier of physical input availability. However, tactile experience should not be completely replaced; rather, it is complementary. Similarly, scaffolding is needed to guide students' thinking.

Category 5. STEM or STEAM education

In this category, according to the research found, we focus on didactic strategies and technological environments for the development of HOSS. These strategies serve as scaffolding and technological mediation, allowing for higher-order reflective experimentation, that is, going beyond procedural experimentation or recipe-based manipulation of instruments (St. Clair et al., 2024).

In the case of countries with limited physical infrastructure, as mentioned in previous paragraphs, and also in cases where there are gaps in teacher training, as in Colombia and Ecuador, an epistemological shift in natural sciences teaching is necessary. Similarly, in situations such as the COVID-19 pandemic, where students could not attend classes and virtual laboratories were implemented (Gamage et al., 2020), these should not be seen as substitutes but rather as a valuable environment for scientific modeling and evidence-based reasoning (Solbes et al., 2025).

Meronda et al. (2025, p. 2020) argue that: "Virtual laboratories have emerged as a significant innovation in science education, enriching learning experiences, deepening conceptual understanding, and providing more flexible and safer access to experiments." It is important to mention that these technological tools allow students to focus on scientific argumentation and critical decision-making in the case of unexpected data—skills that define the scientifically literate citizen of the 21st century.

Raman et al. (2022) and Zhang et al. (2024) mention that these laboratories are effective solutions for the challenges of modern learning. Meanwhile, Chen and Wang (2023) argue that they foster motivation, enthusiasm, and creativity among students. Bazie et al. (2024), referring to virtual laboratories, state that in practical chemistry courses, they offer electronic simulations that replicate real laboratory experiences.

Recent studies confirm that there is currently a transition from traditional modes to online modes, facilitated by interactive simulations (Vo & Simmie, 2025). Thus, the challenge for teachers lies in transforming the laboratory into a space of explicit inquiry, where error and material resistance become the engine of critical thinking rather than an obstacle to learning.

From our perspective, we consider it necessary to train students to evaluate the validity of claims. The secondary school laboratory is the ideal place to practice this media scientific literacy. By designing their own experiments, students learn to identify biases, control variables, and understand that science does not offer absolute truths, but rather conclusions supported by evidence. This process elevates the activity from a low-order skill (memorizing steps) to a higher-order one (evaluation and synthesis). The major epistemological obstacle often encountered in secondary education is that some teachers are very comfortable with confirmation laboratories (where the outcome is already known), but they fear the uncertainty of an open, problem-based laboratory.

Category 6. Contextualization of learning

A few years ago in Hong Kong, despite being a pioneer in PISA results, several curricular reforms were undertaken because, as [Kwok \(2018, p. 533\)](#) expressed, "Our students succeed in exams, but they do not know to what extent science and mathematics are relevant to their lives." This statement leads to a highly valuable reflection: how to achieve meaningful learning that is accessible to all students, especially in secondary education. The answer lies in the contextualization of learning.

In this regard, [Hüfner et al. \(2025, p. 1\)](#) argue that "Context-based science education (CBSE) has played a central role in reorienting scientific literacy for all students." The idea of using context as a support for pedagogical purposes considers that content is connected to everyday phenomena, social issues, and students' prior experiences.

Along these lines, [Fayzullina et al. \(2023, p. 2\)](#) affirm that "context-based learning has become a cutting-edge educational strategy that seeks to bridge the gap between theoretical scientific concepts and their real-world applications." Moreover, context-based learning is widely valued for education within the scientific community ([Sevian et al., 2018](#)). Studies also indicate that context as a learning environment and social construction is sustained by continuous interactions ([AlabdulRazzak et al., 2018](#)).

In science teaching, context-based learning is recognized as a promising method ([Nagarajan & Overton, 2019](#)). But beyond that, there is talk of context-based science curricula ([Fensham, 2009](#)). In this sense, contextualization makes it possible for content to cease being complex and become a bridge between school learning and real life, logically awakening students' interest and facilitating their understanding of science ([Aydin-Ceran, 2021](#)).

In this system, one starts with a sociocultural context that is familiar to the student; each concept is taught from that starting point, but the effectiveness of the process is truly reflected when the student is able to associate the taught concepts with other, more complex contexts ([Aydin-Ceran, 2018](#); [De-Girolamo et al., 2024](#)). This situation gives rise to a "need to know" in order to explain the scientific phenomena being studied. For this reason, it is necessary to understand the underlying concepts and principles to clarify the questions triggered by the context. This fact generates student engagement in their own learning process ([Vogelzang & Admiraal, 2017](#)). Studies show that students connect academic knowledge with everyday life through practical applications ([Demelash et al., 2024](#)).

In the case of secondary education students, from our disciplinary perspective, biology, physics, and chemistry present themselves as fertile domains for context-based learning because there are many real-world phenomena connected to the content included in curricular designs. For example, in biology, laboratory experiments can be contextualized with issues such as antibiotic resistance, the biodiversity of the students' nearby environment. Changes occurring in local ecosystems could also be considered; this would help students formulate hypotheses based on authentic observations, design small samplings, and argue using ecological and physiological evidence. Regarding physics, contexts such as home energy efficiency and road safety can be used. Likewise, designing simple technological devices transforms the measurement of variables and the application of physical laws into an exercise in modeling and informed decision-making.

Similarly, in chemistry, contextualization is possible through water quality analysis, food composition, or recycling processes. This prompts students to connect abstract concepts with inquiry practices that

demand critical thinking and creativity. In all cases, contextualization is not exhausted in an initial anecdote; its formative potential unfolds when it becomes the structuring axis of the entire didactic sequence, promoting inquiry processes that require not only the application of procedures but also the formulation of relevant questions, the evaluation of evidence, and the construction of scientifically based arguments.

Precisely, these latter elements constitute the core of HOSS. Therefore, contextualization is not a pedagogical ornament; rather, it is an epistemic scaffold that gives meaning to experimental practice and mobilizes complex cognitive processes, essential for forming citizens capable of critically intervening in their reality. Thus, from a theoretical perspective, situated learning is one of the frameworks that underpins contextualization. [Ojo \(2025\)](#), when investigating the teaching of genetics concepts in secondary education in Nigeria, used this theory to demonstrate that when scientific content is addressed in authentic contexts linked to socio-scientific controversies (such as reproductive cloning or genetic modification), students develop more positive attitudes toward concepts that are traditionally abstract or distant.

Category 7. The need to offer spaces for exchange and reflection to make thinking visible

The need to offer spaces for exchange and reflection to make thinking visible constitutes a fundamental category in the formation of HOSS in secondary education. As [García and Moreno \(2019, p. 149\)](#) point out, it is a priority "to implement experimental practices in the classroom, especially at the basic education level, where curiosity and observation skills are configured as a key element in the articulation of the biological and the social." These practices to be developed, according to Harvard University's Project Zero, are based on "a thinking routine called I think–I wonder–I explore, which makes students share what they think about a topic, identify questions that intrigue them, and point out directions for exploration" ([Ritchhart & Perkins, 2008, p. 57](#)).

Although this thinking develops in the person's mind and is invisible to oneself and others, it becomes externalized when the thinker expresses their ideas through speech, writing, drawing, or other means, thus allowing them to direct and improve their own cognitive processes. However, this externalization is not a mere communication exercise, but an epistemic condition for the development of critical thinking and metacognition.

Recent research has confirmed that the deliberate creation of dialogic spaces in the science classroom significantly enhances higher-order skills. [Wijesekera & Hameed \(2025\)](#), in an intervention study in science classrooms and English Medium Instruction in Sri Lanka, where traditionally exam-oriented rote learning predominates, limiting critical thinking and meaningful cognitive engagement, implemented two specific strategies: "What if?" questioning and "Notice and Wonder" observation within collaborative groups. The results showed substantial improvement in higher-order thinking: students' critical thinking, problem-solving ability, and deep cognitive engagement. Furthermore, greater curiosity and willingness to approach complex scientific concepts were observed, even in contexts where the language of instruction (English) represented an additional barrier.

In this analytical category under discussion, an important element that emerged from the reviewed literature is that discursive scaffolding is essential for these exchange spaces to be effective. A study on the effects of the argumentation-based teaching approach on students' critical thinking disposition and argumentation skills, as well as the relationship between argumentation skills and critical thinking disposition in secondary school students in Turkey ([Meral et al., 2021](#)).



The cited work demonstrated that: (a) *Argumentation-based teaching improves critical thinking disposition*. This fact is fundamental from our perspective because it is not only necessary for students to have skills, but also to have the disposition to use them. Critical thinking disposition is a prerequisite for activating HOSS. "The argumentation-based teaching approach had a positive effect on students' critical thinking disposition" (Meral et al., 2021, p. 17). (b) *Argumentation is not spontaneous*: it requires explicit and sustained practice. We have already indicated in this article that many teachers assume that experimentation automatically develops HOSS. This study demonstrates that without deliberate scaffolding (such as argumentation routines), students remain at low levels. (c) *Argumentation predicts critical thinking*. We consider that if experimentation is accompanied by argumentative activities such as designing, making, testing, STEM, HOSS can be enhanced. Furthermore, as evidenced, "Argumentation skills explained 34% of the variation in critical thinking disposition" (Meral et al., 2021, p. 17). This means that working on argumentation has a direct and measurable impact on critical thinking.

Conclusions

Throughout this systematic review, it has been shown that experimentation in secondary education, while constituting an unavoidable component in the scientific training of students, is not sufficient on its own to develop the so-called HOSS. Traditional laboratory practices, often focused on hypothesis verification and strict adherence to protocols, tend to foster basic skills such as instrument manipulation or variable measurement, but leave complex cognitive processes such as critical thinking, evidence-based argumentation, or creative problem-solving in the background. This finding invites us to move beyond the idea that simply conducting experiments automatically guarantees deep and meaningful learning.

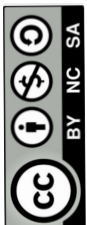
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It is also concluded that the teacher's role in this context is a determining factor for experimentation to achieve its true epistemic potential. It is not enough for students to follow instructions or confirm expected results; explicit scaffolding by the teacher is required, including modeling scientific thinking, formulating researchable questions, connecting variables, and sustained motivational support. The reviewed findings agree that deliberate pedagogical guidance turns a merely procedural activity into an authentic inquiry experience, where error becomes a learning opportunity and curiosity becomes the engine of knowledge.

Likewise, it has been identified that contextualization of learning and the adoption of approaches such as maker culture or STEM and STEAM methodologies significantly enhance the development of HOSS. When experiments are linked to real problems in students' environments, everyday situations, or authentic social challenges, science ceases to be a set of abstract concepts and becomes a living tool for interpreting and transforming reality. The design-build-test cycle, characteristic of the maker movement, promotes iterative, creative, and collaborative thinking that is difficult to achieve with conventional laboratory practices.

It is also concluded that there is a close relationship between argumentation and critical thinking. The studies analyzed demonstrate that explicit teaching of scientific argumentation not only improves students' ability to support their claims with evidence but also explains a substantial part of the variation in critical thinking disposition. This means that fostering dialogic exchange spaces, question routines such as "what if...?" or reflective observation strategies are not complementary activities but central components of any didactic proposal that aims to form scientifically literate citizens.

Finally, it becomes evident that, despite the theoretical consensus on the benefits of experimentation, significant structural and training gaps persist in Latin America that limit its impact. The lack of equipped laboratories, connectivity difficulties, and, above all, insufficient teacher training in inquiry and



argumentation approaches keep many classrooms anchored in traditional practices focused on repetition and content. Overcoming these limitations requires not only investment in infrastructure but also a profound change in the initial and continuing training of natural science teachers, so that experimentation truly becomes a vehicle for the development of higher-order scientific skills rather than a mere verification exercise.

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CRediT authorship contribution statement

Author	Role performed
OEV	Writing – review & editing, Writing – original draft, Supervision, Conceptualization.
VBG	Resources, Project administration, Investigation, Data curation.

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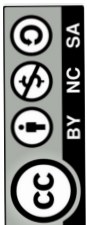
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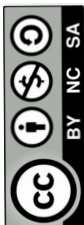
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Notes on the authors

* Omar Escalona Vivas holds a Doctorate in Educational Sciences (Universidad Nacional Experimental Simón Rodríguez), a Postdoctorate in Syntagmatic Processes of Science (International Lifelong Learning University, ILLU; International Center for Advanced Studies, CIEA-SYPAL), and a Bachelor's degree in Biological Sciences (Universidad Católica del Táchira). Contact email: omar.escalona@iesip.edu.ve

** Víctor Bless Gutiérrez holds a Doctorate in Pedagogical Sciences (University of Pedagogical Sciences) and a Doctorate in Mathematical Sciences (Universidad de Oriente). He is affiliated with the Department of Postgraduate Studies and Research of the Faculty of Health Technology (FATESA), attached to the University of Medical Sciences of Havana (UCMH), Havana – Cuba. Contact email: vblessgutierrez@gmail.com



The homeland in José Martí: Cuba, Our America and the world

La patria en José Martí: Cuba, Nuestra América y el mundo



Rosa María Medina Borge*
Universidad Médica de La Habana., Cuba.

Abstract

The conception of homeland in Martí's work is approached from three possible dimensions (Cuba, Our America, and the world). Martí configures an emancipatory subjectivity for Latin America in relation to foreign models. The objective is to assess the constitutive elements of Martí's conception of homeland, through some of his relevant texts. The methodology applied is the reflexive analysis of Martí's texts, articulating his ideas based on the terminological framework of his era, which he masterfully transcends. Formally, this is achieved through the use of metaphorical language of exquisite quality. Essentially, it is achieved through a revolutionary and transgressive reading of the excluded. It is concluded that in his work there are three moments of synthesis and conceptual recomposition regarding the homeland, which materialize in: *La República Española ante la Revolución Cubana (1873)*, *Nuestra América (1891)*, and the *Revista Literaria Dominicense (1895)*.

Keywords: José Martí, Fatherland, Cuba, Our America, Cosmopolitanism.

Resumen

Se aborda la concepción martiana de la Patria desde tres dimensiones posibles (Cuba, Nuestra América y el mundo). Martí configura una subjetividad emancipatoria para Latinoamérica respecto a modelos foráneos. El objetivo es valorar los elementos constitutivos de la concepción martiana de la Patria, a través de algunos de sus textos relevantes. La metodología aplicada es el análisis reflexivo de los textos martianos, con la articulación de sus ideas a partir del instrumental terminológico de su época, que supera de manera magistral. En lo formal por el uso de un lenguaje metafórico de excelsa calidad. En lo esencial, mediante la lectura revolucionaria y transgresora de los excluidos. Se concluye que en su obra existen tres momentos de síntesis y recomposición conceptual acerca de la Patria, que se concretan en: *La República Española ante la Revolución Cubana (1873)*, *Nuestra América (1891)* y la *Revista Literaria Dominicense (1895)*.

Palabras claves: José Martí, Patria, Cuba, Nuestra América, Cosmopolitismo..

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Introduction

The entire work of José Martí was aimed at social education for the happiness of our peoples of the Americas. Having studied the independence processes of the continent and organizing that of Cuba, he understood very deeply the need to pursue an education for human freedom and the exercise of a democracy based on the participation and inclusion of excluded social sectors. An issue that still remains unresolved in almost all Latin American countries today.

One might affirm that through the term "Patria" (homeland/fatherland), José Martí configures an emancipatory subjectivity for Latin America, with respect to certain foreign models. This article aims to assess the constituent elements of the conception of "Patria" in José Martí, through some of his most representative texts. At the same time, it is approached from three possible dimensions (Cuba, *Our America*, and the world).

The novelty of the result lies in the transversal tracking of the enrichment of the term "Patria" throughout his entire work. From this, it was possible to verify that it is not reduced to Cuba, but rather the evolution of the idea of "Patria" over time and across the three mentioned dimensions is examined. The theoretical-conceptual precision of core writings, where the referenced author manages to synthesize ideas deployed in many articles, chronicles, and speeches, constitutes a relevant finding.

Materials and method

The research is bibliographic, exploratory, and documentary, with a qualitative purpose. Numerous Martían writings are compiled, selected, and reflectively analyzed. It is possible to follow the critical path through which José Martí articulates his ideas based on the terminological instruments of his time, surpassing them from this perspective. Formally, through the use of a metaphorical language of superb quality and very characteristic. Essentially, by carrying out a revolutionary and transgressive reading of the world, from the position of the excluded.

Results and discussion

Cuba took him in her arms and kissed his forehead

From the end of the 18th century to the mid-19th century, a strong struggle for freedom was waged in Cuba—from cultural and pedagogical circles. The battle for the independence of thought would be the prelude to the independence revolution that began in 1868. In Martí, as in his predecessors, reflection on the homeland would occupy an essential place.

Among his early patriotic publications is the dramatic poem *Abdala* (Martí, 1983). Through the apparent and distant Nubia, the conflict of Cuba is settled. The young man is transfigured into the Nubian fighters. It is a veiled participation, given the real impossibility of fighting in the first war of independence (due to his young age and living far from the region of events). He would express that the people are the homeland, as well as the dilemma of his entire existence: homeland versus family, the solution of which he defines in the text with dramatic heartbreak. In this early writing, he offers an ethical model for Cuban mothers, daughters of an elder mother (Cuba).

In his future political preaching, it would become a constant to symbolize community relations through filial ties, which was very common for the time. On the other hand, it would be in *Abdala* where Martí first defines his understanding of love for the homeland. He would not consider it merely as attachment

to a geographical entity but based on two pillars: invincible hatred and eternal resentment toward the oppressor, as well as historical memory (an indispensable element in processes of national identity).

His bitter experience in the provincial prison of Havana (Medina, 2023), of profound significance for his personal and political maturation, would lead him to renounce hatred and resentment as concomitant elements of patriotic feeling. His testimony—published during his stay in Spain in 1871—would be marked by a deep humanism that connects (possibly) with the debates taking place at that time in France and Spain about the homeland and patriotism. Until then, the exaltation of national values was based on opposition to a foreign power. Now, aspects related to the inner forging of each people in terms of memories, affections, and the intellectual element would be enhanced.

The aforementioned idea appears explicitly in Martí's writing: *The Spanish Republic before the Cuban Revolution* (Martí, 1991a). He proposes a dialogue between two nations with equal rights, where Cuban independence is founded on the will of the people as the sole source of legitimation. Meanwhile, Spanish national integrity (the ideological foundation of its colonial space) was already unsustainable. He dedicates half of the pamphlet to demonstrating the falsity of this concept.

The historical weakness of the Spanish bourgeoisie—tested in the liberal movements that occurred in the first half of the 19th century, together with the limitations of the Republic of 1873—leads him to dismiss the possibility of a change in the colonial policy of the new government. The Cuban Apostle uses the very postulates of political liberalism upheld by the Spanish republicans to validate the democratic ideals of the Cuban people: *And Cuba rises thus; its plebiscite is its martyrdom, its suffrage is its revolution*. He defines the essential features that configure the Cuban homeland: freedom by its own right is consubstantial to it, and a social life presided over by the confluence of unity of traditions, community of interests and purposes, as well as the affective moment of love and hope.

And it is not the land that which they call integrity of the homeland. Homeland is something more than oppression, something more than land without freedom and without life, something more than the right of possession by force. Homeland is community of interests, unity of traditions, unity of purposes, the sweetest and most consoling fusion of loves and hopes (Martí, 1991a, p. 93) (translation by the journal).

It can be affirmed thus far that the early cycle of Martí's patriotic conception closes and, simultaneously, his creative maturity begins, on the discontinuous frontier of *The Spanish Republic before the Cuban Revolution*. His life experiences in various Latin American countries and the United States will strengthen and broaden his vision of the Cuban homeland. He will never offer an ontological or metaphysical definition of it, but rather places it as the result of the history and struggles of a people for which he himself will exercise leadership, starting in the 1890s.

The Cuban homeland: the discourse that names and, in naming, generates

Throughout his entire work, José Martí exercises social pedagogy since he aims to contribute to the education of Cubans in the "ought to be" of the homeland through the "can be" and the "doing." The most representative of this founding work can be found in his letters, press articles, speeches, and documents of the Cuban Revolutionary Party (PRC). The homeland in Martí (García, 1992) has various denominations, which makes understanding the subject, as well as the components of his idea throughout the vastness of his writing, difficult. Among the most common are: people, country, Cuba, Island, Land, Republic, and Nation. On the other hand, by associating it with family, nature, buildings, the home, the

workshop, or the human being, great effectiveness of the educational and political message is achieved because it admits recipients from a wide range of social, generational, and cultural positions.

In his revolutionary preaching, Martí reviews Cuban history and culture and returns to the figures (poets, thinkers, warriors) who contributed with their work and word to building *cubanía* (Cubanness). The abundant examples of heroism and virtue occupy a special place. Four aspects stand out as elements that define the transcendence of the spiritual creation of the first half of the 19th century in Cuba: a) in literature, the use of satire as a liberating resource and ethical reaffirmation; b) from a cognitive point of view, the love of science and the study of natural laws, the tendency toward polemic and criticism as an exercise of judgment; c) the vocation to sweep away, in the intellectual arts, the philosophy and pure-blooded law, the science of the mummy and scientific snobbery; d) the institution of the Cuban variant of the Spanish language, as a vehicle for the crystallization of a culture with its own roots, not only because it displaced Latin from teaching but also because it included popular and Creole terms in its heritage. These ideas would be accompanied by the recognition of the San Carlos and San Ambrosio Seminary as the main precinct where the first battle for Cuba's independence was fought: the battle for the independence of thought.

He would also frequently write or discourse about the independence epic of 1868 (or the Ten Years' War), highlighting its role in the fraternization of masters and slaves, blacks and whites, rich and poor; and the idea of sacrifice as a purification of the National Being. From 1878, when he was still unknown, he began to gather information about the Ten Years' War, with the aim of studying the practical results of that first revolutionary experience and the constitution of its human factors, in order to know what could be expected or feared from the future. In his first letter to General Máximo Gómez, he confessed:

I am writing a book and I need to know what main charges can be brought against Céspedes, what reasons can be given in his defense... glories should not be buried but brought to light... Perhaps no one will account for me, Rafael María de Mendive was my father: from school I went to prison and to a penal colony, and to one exile and another—here I live dead with shame because I do not fight. I will be a chronicler since I cannot be a soldier (Martí, 1991b, p. 263) (translation by the journal).

The assessment of the missteps of the first attempt to give democratic institutions to Cuba is of special interest in Martí's future projection of politics, war, and the republic:

That magnificent decade, full of epic impulses and necessary wanderings, is reborn with its heroes, with its naked men, with its cunning peasants... now the weapons have been tested, and the useless is discarded, and the usable is utilized. Time will no longer be wasted on trials; it will be used to conquer..." (Martí, 1991c, p. 184) (translation by the journal).

With the "*Reading at Steck Hall*" Martí began to cement the importance of historical past for the future of Cuba as an independent and democratic nation. This guiding thread is reiterated in successive speeches before the emigrant communities, in documents of the Cuban Revolutionary Party (PRC), and in the newspaper *Patria*. During the political and moral preparation for the Necessary War (or the 1895 war), the argument of tradition was not sufficient. It was unavoidable to strengthen the capacity of the people as a social agent for the forging of the community of interests and the unity of purposes.

Beginning in 1892, in a letter sent to Máximo Gómez (Martí, 1991d), he expressed the need for a political instrument to achieve unity of action, based on the conjunction of objectives and social motives

that would allow giving a true and lasting character to the new Cuban society: "...I only aspire that once a visible and compact body is formed, they may appear united by the same serious and judicious desire to give Cuba true and lasting freedom..." (p. 169). To this end, he uses timely and tireless propaganda and, through apostolic work, gradually achieves what seemed most difficult: the integration of all patriotic forces, a process he described as the agony of edification (Martí, 1991e).

In that unifying work, he clarifies that the Cuban was not rebelling against the Spanish father but against the oppressor. There is, therefore, a recognition of the Hispanic root of Cuban culture, which would not be denied in the new republic but rather would have its place for the honorable Spaniard: "...we will never cast out from our side, rather we will call with honest voice and wide-open arms, the son of Spain who helps us to rebuild the town that his compatriots destroy..." (Martí, 1991f, p. 231) (translation by the journal).

The role and place of Afro-descendants in Cuban society (their real incorporation or exclusion) were essential points of the ideopolitical debate of the time. In some way, the issue was interwoven with the confrontation that arose in academic and political circles in Europe and America regarding the positioning of "races" in nations. The year 1882 seems to have been one of the moments of greatest intensity and controversy. As a trend, two positions were observed: one that considered the necessity of racial purity and homogeneity of nations, and another that dismissed the ethnographic consideration in the constitution of modern nations, considering "racial" and cultural mixing as necessary and legitimate.

On March 11, 1882, the French philosopher Ernest Renán gave a speech at the University of the Sorbonne, the central theme of which was the term "nation" and its link with the racial component (Renán, 1947). The importance that the Apostle attributes to it for the analysis of the Cuban problem is evidenced in his comments published in a journalistic chronicle:

Human history," Renán said, "is not a chapter of Zoology. Man is a rational and moral being. Free will is above the base suggestions of the spirit of race... Oh! The times are dawning when nationalities will no longer stand up, either as threats or as barriers, and when all men on earth, given to loving one another, will feel in their robust chest the beneficial fruition and the marvelous ennoblement that come from virile human love..." (Martí, 1991g, p. 449-450) (translation by the journal).

Within the island, conservative circles echoed the aforementioned speech. The idea that Cuba should consolidate itself as a nationality was suggested by the Autonomist movement through the autonomist newspaper *El Triunfo*. Following Renán's authority, they understood the nation as a cultural and political factor. In that order of things, the future formation of the Island had to be based on the fusion of its different components under the leadership of the most "apt" sectors, as exclusive heirs of the country's political and cultural legacy. As bearers of a positivist conception of education, the autonomists sought to prepare the "inferior races" for modern Cuban society, whose paradigm rested on Europe. A racist ideology that sought to whiten Cuba through European immigration and the prohibition of entry into the country of "backward cultures" such as Asian or African ones.

The aforementioned political vision intertwines with the ideas of the North American sociologist Guerit Lausing, which appeared in that same month of April 1882 in the New York magazine *The Popular Science Monthly* and were reproduced by the autonomist organ, considering it "...a notable sociological

study on Chinese immigration, in which we find exposed and developed with extraordinary lucidity and solid erudition the same ideas that *El Triunfo* has always upheld on this serious matter, and which consist fundamentally of cataloging the necessity of racial and cultural homogeneity..." (*El Triunfo*, 1882).

It can be affirmed that the autonomist discourse was contradictory and exclusionary, dismissing popular protagonism. It responded to the nascent Creole bourgeoisie, which considered itself the critical conscience of the national process. Nevertheless, its political shrewdness led it to recognize Afro-descendants as part of Cuban reality and, to counteract that "accident," they proposed cultural whitening.

In Martí, modernization emanates from a radical and progressive political conception, based on the recognition of the existence of a mestizo culture where all ethno-social factors should exercise co-protagonism. Therefore, he points out that one of the core problems to be solved in Cuba was the accommodation of the races. The Martí writings that address this issue are numerous, and a good part of them appear during the preparation stage of the new war, with the aim of eliminating such prejudices.

According to Poey's criterion (1994), it is in *Mi Raza* (My Race) (Martí, 1991h) where the themes addressed by Martí in previous works are synthesized, considered the most complete of his texts dedicated to interracial relations.

Martí's project regarding the homeland-nation contains the revolutionary solution to the Cuban ethnocultural problem and rests on the following arguments: (a) The rights of man do not derive from belonging to one or another "race." (b) The word "man" inherently encompasses all rights. (c) There is no superiority of "races." (d) The insistence in Cuba on "racial" differences hinders public and individual fulfillment in a people immersed in a process of rapprochement and the search for a common life. (e) The category of "man" is superior to that of white, black, and mulatto. (f) The category of "Cuban" (man of Cuba) is superior to that of white, black, and mulatto.

In confronting the well-known racial fear, the Apostle uses a harsh epithet: "They lie!" those who do not recognize in the "black race" the qualities inherent to the human species: generosity, virtue, and the capacity to burst through the barriers of habits and customs instilled by those he calls "handlers of men" (Martí, 1991i).

Martí elaborates, in the Cuban economic and social context of the late 19th century, an autochthonous and radical conception of the rights of human beings, rejecting all types of racism. He considers the most accurate path to be the proclamation of the spiritual identity of all of them, above the values that supposedly might provide superiority. Although he uses the term "race" because it was common in his time, he empties the concept of content by explaining the non-existence of differences among human beings due to ethnic origin. As we have explained, that was very revolutionary in the debates taking place at that time.

Nor was he in favor of paternalistic or charitable treatment that in many cases sought to alleviate the status of inferiority. Cuba should not enter modernity with a country stagnant and divided by racial criteria. Massive access to education and culture, exercised from a democratic and just spirit, should contribute to the fullness of the human condition. Therefore, he declares as a principle of future republican politics: "There will never be a war of races in Cuba. The Republic cannot turn back" (Martí,

1991h).

On the ethical plane, he endorses the aspiration that true men (regardless of the color of their skin) should treat one another with loyalty and tenderness out of pride for the common land where they were born. The process of mestizaje and crystallization of the living elements of the homeland, more than a spontaneous process, had to be erected as a natural option, but at the same time a voluntary and unstoppable one; characterized by its complexity and conditioned by socioeconomic, psychological, and historical factors.

Martí's political strategy starts from the conjunction of all sectors affected by Spanish colonialism, where class or other contradictions occupied a secondary place. The idea of social equilibrium had by then a first trial: the process of life in the emigrant communities, the commitment of the majority of its members to independence, the capacity to place national interest above sectoral or class interests. The community of interests, an essential factor for the urgencies of Cuba at that time, took shape in the Cuban Revolutionary Party (PRC).

Martí does not dismiss the existence of social forces opposed to social equilibrium that emanated from conflicts between employers and workers in the Cuban emigrant community (only that delving into them and strengthening them endangered unity for achieving independence). The complexity of political change demanded that: "...much must be set aside, much must be tied down... one must plant one's feet on the ground with the homeland in turmoil, seizing sinners by the neck..." (Martí, 1991j, p. 140) (translation by the journal). Yet it was not impossible "...to found, through the frank and cordial exercise of the legitimate capacities of man, a new people and a sincere democracy capable of overcoming... the dangers of sudden freedom in a society composed for slavery..." (Martí, 1978, p. 3) (translation by the journal).

The speech *With All and for the Good of All* (Martí, 1991e), delivered at a crucial moment of the revolutionary movement, is all-encompassing and at the same time exclusionary for those who could not overcome in a short time the fear of the tribulations of war, of the Afro-descendant, of the honorable Spaniard; as well as for those who sympathized with foreign snow (annexationists). The embrace was for those who knew how to love Cuba. In the speech, there is a constant defining of what is ours: our heads, our country, our enthusiasm, our faith and hope; as well as the passion for equity, for right, for the habit of work, and for the strength of idea and action.

The Cuban people —described by the author as a mixed people, the very substance of the political work— were more advanced due to their heterogeneous composition and peculiar formation than the Spanish nation, burdened by feudal remnants. Their constitution from dissimilar individualities made them a mass of hopes and sorrows, where the human heartbeat never ceased:

All the defects and all the emulations that could compromise the most energetic virtues and the most grandiose conquests exist among us... Being Cuban does not free a man from the weaknesses of humanity, nor does being Cuban aggravate them (Martí, 1991k, p. 255) (translation by the journal).

Patriotism as a voluntary attitude, which places individual interest at the service of the public interest, was a consubstantial part of the modern conception of the State (contributed by the Enlightenment and the political and philosophical thought of the first half of the 19th century in Europe). The deep Cuban root that opened the path to national consciousness from an emancipatory paradigm (which grafted the world

based on the needs of its own culture) inaugurates a more open reading by interpreting patriotism as the general interest in the prosperity of the country and all its children. For Martí, patriotism is an essential virtue from which all virtues are possible. It embodies responsibilities such as simple and natural service that expects no material gratification and is based on the frank and free exercise of opinion.

The text by Ramón Elices Montes (1885), *Spanish Patriotism. Notes for a Book. Remembering the Glories of the Fatherland*, as its title indicates, systematized the Spanish vision of the term: "...to the eloquent voice of patriotism there is no Spanish heart that does not beat with joy, emotion, or feeling... there is no Spanish breast that fails to respond, whether to the immolation of the purest affections..." (p. 232). The coincidence of terms between the Cuban independence leader and the Spanish intellectual is evident. However, the significance for two politically exclusive identities determines that, for the Cuban, the exercise of patriotic duty entailed the breaking of Spanish national integrity, for which the Spanish citizen would be willing to give his life.

Regarding the Cuban homeland, the bases of the PRC express the objective of: "...founding in Cuba, through a war of republican spirit and methods, a nation capable of ensuring the lasting happiness of its children and of fulfilling, in the historical life of the continent, the difficult duties that its geographical situation points out to it..." (Martí, 1991l, p. 280) (translation by the journal). In other documents of the aforementioned party, it is defined as a complicated and risky building, whose first act was the 1868 war. *Meanwhile, in the Manifesto of Montecristi* or program of the revolution, the analysis revolves around the Cuban nation (Martí, 1991m).

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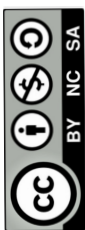
In summary, it can be affirmed that during the 1870s and 1880s, the guiding terms of Martí's preaching were "homeland" and "patriotism." It is significant that between 1892 and 1895, in the PRC documents and in press articles, the term "nation" appears frequently alongside the use of "homeland." On the other hand, the word "nationalism" is almost nonexistent in his preaching. Without disregarding the rationality contained in the conception of the homeland, Cuba's National Hero configures it as an expression of daily psychology, as a system of values and aspirations of the popular sectors. Meanwhile, the Cuban nation would endorse the homeland through its republican institutions.

Our America: the peoples who do not know each other must hurry to know each other

The dimension of the homeland, expressed in the qualities of the Cuban from the Island and the emigrant as a judicious commitment to national independence, includes the continental and universal link in the solution of the Cuban problem. In his writings, a marvelous interweaving is manifested among these three scenarios in which it unfolds.

Martí's pilgrimage through different countries of the Latin American continent would bring him into contact with realities unknown to him. From *The Political Prison in Cuba* we find the first reference to Latin America, where he recreates with literary sense the brutal methods of colonization and the independence process (Medina, 2023).

It would be during his stay in Mexico (1875-1877) that his first encounter with continental reality occurs. There he appreciates how the majority indigenous population was excluded from national life, noting that from that bloody absorption something would remain of the conquered "race": the spirit that always resists steel, iron, and fire (Martí, 1991n). He takes the opportunity to learn about the Mayan cultural centers of Yucatán, developing an interest in archaeology. From his Mexican stay onward, he would feel passionate about the continent's original cultures, a passion captured in various writings.



The Cuban learns the history of the Aztec nation, feels the disorders and pains of its reality, and has the privilege of witnessing liberal politics, as well as border conflicts with the United States of America (USA), all of which he reflects in his intense intellectual and journalistic work. In the *Revista Universal* he uses for the first time in his work the term "Our America." After the Porfirian coup, being subject to censorship, he declares a maxim of his life: conscience is the citizenship of the universe (Martí, 2016).

His experiences in [Guatemala \(1877\)](#) constitute a crucial moment for his advanced understanding of what would later be known as Latin American identity. He would express it this way:

Interrupted by the conquest the natural and majestic work of American civilization, with the advent of the Europeans a strange people was created —not Spanish, because the new sap rejects the old body; not indigenous, because it has suffered the interference of a devastating civilization— two words which, being antagonistic, constitute a process; a mestizo people was created in the way that, with the reconquest of freedom, it develops and restores its own soul. It is an extraordinary truth: the great universal spirit has a particular face on each continent (Martí, 1991o, p. 99) (translation by the journal).

In the above idea, two elements stand out that would be cornerstones in identity studies of the 20th century: conceiving the existence of acculturation/transculturation processes that, in their development, would generate — in a loop — new peoples, bearers — in resistance — of original cultural elements mixed with those of the dominant European cultures.

During his Venezuelan sojourn (1881), he had the opportunity to acquire experiences that would nourish his articulation of the Cuban issue with the continental one. He intended to bring together, through the creation of the *Revista Venezolana* (Venezuelan Review), all those willing to join forces to erect a new and solid America. The journal's main objectives included: recounting the glories of our peoples, celebrating the merit of their most illustrious men, dusting off history, becoming a project for studying and assimilating what is ours, as opposed to the Europeanization suffered by Venezuela during the era of Guzmán Blanco. Only two issues were published.

In Mexico, he had argued that once colonial ties were broken, proper forms of expression were lacking. In Venezuela, he would specify that this process of liberation would be through the patriotic path. Thus, for the first time in his writings, the place of Cuba's independence appears within the Latin American concert; seen as a community of destinies where the unresolved issue of America would knock at the door of Cuban problems, upon whose solution the fate of the continent would depend.

The young revolutionary's stay in the United States for 15 years (until 1895) — especially in the cosmopolitan city of New York — would bring him very close to a society experiencing the splendor of an unprecedented industrial boom. The capitalist mecca of the era was beginning to reveal itself, in the eyes of his judicious critique, with all its inhuman and alienating nature, acquiring definite forms in his American chronicles. At the same time, he was capable of recognizing the positive aspects of that country. The Cuban not only wrote about U.S. politics, but also produced numerous chronicles exalting popular customs, writers, and American philosophers. He also reported, for various newspapers of the time, on the astonishing scientific and technological advances of the era.

In 1889, he demonstrated in his writings that the first Pan-American conference called by the USA was not a coincidence, but rather the articulation of a predatory tradition that had been with it since its origins as a nation. They were educated in the ideology that their privileged position on the Ame-



rican continent was given to them as destiny. However, sympathy for free nations —Martí would point out— lasts until they betray freedom or put that of *Our America* at risk (Martí, 1991).

Since the mid-19th century, a conceptual rethinking had been taking place in Latin America about the survival of the colony within the republics. The most prominent representatives of Latin American liberalism expressed that independence would only be true when accompanied by political and spiritual sovereignty. However, these approaches were based on the conviction that, since Spanish America was a natural part of Europe, it should join its modernization process, as well as the dizzying economic takeoff of the USA.

The overcoming of these conceptions appears in the systematization of Martí's ideas about the Latin American homeland, synthesized in his essay *Our America* (Martí, 1991q), where the notion of the Latin American homeland is enunciated in the community of interests and the unity of traditions — an aspiration that had not taken place in the consubstantiality of human beings in this part of the world. Man and his alienated universe will take shape in the following figurations of life:

(a) *The vain villager*. Described as the false patriot. Lacking public utility. Sick with political and financial ambitions. Sustainer of fictitious modes of self-recognition. (b) *The seven-month-olds (premature ones)*. A kind of culturally colonized people who have no faith in their land and deny it to others. Those who feel ashamed of their humble origin and pretend to deny the seedbed of the original peoples. (c) *The arrogant ones*. For whom the earth was made to serve as a pedestal for them, not as an altar. A kind of verbose people who aspire to transplant forms of government alien to our realities and govern the country with imported laws. (d) *The defeated pedants*, the artificial men of letters, and the puny thinkers or lamplighters, together with the exotic creole, complete the picture of the social subjects who carry the disintegrating factors of *our American* homeland. Incapable of perceiving the danger derived from the geopolitical pretensions of the other America.

Martí's vision of the stunted modernity of Latin America was reshaped by his perception of excluded social sectors, to which he metaphorically refers as: the mute Indian, the dark-skinned black, the creative peasant. For him, salvation rested on the protagonism of these excluded sectors, unfolding into: (a) *Natural man*. This is not the human being in a state of nature, but rather the one who, after recognizing his authentic needs, positively assumes and values the heterogeneity of his cultural origins. Regardless of the color of his skin, he is a bearer of a sense of belonging to his world and his time. (b) *National politicians*. Those who have learned to govern by knowing the elements that make up their country, aided by methods and institutions born from those needs. (c) *The autochthonous mestizo*. He has rediscovered the magnitude and richness of his identities and otherness in order to dismantle the accumulated injustice of books. He represents the "ought to be" of national modernizing projects.

The aforementioned categories had to be embodied in statesmen, workers, economists, orators, playwrights; in short, in the new inhabitants of Latin America. He also makes special mention of the original peoples, with the need to preserve their cultures and traditions as the wise protagonism of the new Latin America. They would integrate naturally into true emancipation.

Autochthony and universality are deployed by the author in all spheres of Latin American life: in forms of government, politics, culture, and education. *Our America* has a defined content: from the Rio Grande to Patagonia. The geographical boundaries in this case allow naming a cultural and political reality. The other one — the one that is not ours — was the result of the geostrategic interests of the U.S. elites.

Martí's reflections on American continentality had been preceded by the projects of Bolívar and San Martín, which emerged from the heat of the emancipatory struggles of the first half of the 19th century. Inspired by encyclopedism and with a popular base, they had not managed to materialize in a reality Balkanized by the pre-national burdens of the colonial era (incompatible with the dream of achieving a single institutional and political structure). For the writer of *Our America*, the goal was to unite the continental soul in political coordination, cultural ties, and economic communion. A kind of continental internationalism that would lead to respect for each sister homeland.

Martí's writing *Our America*, in addition to constituting a political program for the second independence of America, is one of the most beautiful literary pieces ever written on this side of the world, for its exquisite language and colorfulness, as well as for its use of symbols and metaphors.

Homeland is humanity

Modern thought underpins the new realities of the capitalist economy through universal humanism or cosmopolitanism, which in the Romance languages developed from the Renaissance onwards. Initially, the term "cosmopolitan" (citizen of the universe) was not perceived as an antonym of patriot. This progressive strand can be found in the 16th-century French thinker Guillaume Postel, as well as in the political philosophy of Montesquieu and Rousseau (Aramayo et al., 1996).

Subsequently, cosmopolitanism would acquire a comfortable and pragmatic meaning (Cattafi, 2014). The homeland, not as the place where one was born, but as the place where one is well off — an idea that would become widespread in the 19th century. On the other hand, European thought — as a tendency — only saw human rights in the old continent, disregarding colonial realities. A humanist like Ernest Renán believed that the regeneration of the inferior races (inhabitants of colonized countries) should be undertaken by the superior races (European metropolises) in order to give a providential order to humanity.

According to Salomón (1986), it was the generous and altruistic meaning of the term cosmopolitanism that passed into Spanish and Spanish-American Enlightenment. In Cuba, it takes on a connotation mediated by the search for a homeland independent from Spain. This is how José de la Luz y Caballero felt when he stated: "...the philosopher, being tolerant, will be cosmopolitan; but above all he must be a patriot..." (de la Luz, 1981, p. 72) (translation by the journal). "What is needed more for the country, for humanity? Is not the interest of humanity better served by beginning with that of the homeland, without selfishness reigning in it, but rather universal love?" (de la Luz, 1981, p. 108) (translation by the journal).

The synthesis of Martí's idea of the homeland would take shape in three converging projects: the independence of Cuba and the Antilles, the second independence of America, and the balance of the world. The latter is resolved in the solution to the Cuban problem, in which homeland and humanity take concrete form, thus the Cuban patriot would affirm: "...Cubans recognize the urgent duty imposed upon them towards the world by their geographical position and the present hour of universal gestation... Cubans ask nothing from the world except recognition and respect for their sacrifices, and they give their blood to the universe..." (Martí, 1991r, p. 153) (translation by the journal).

The modern era was heading towards a new stage, and Martí perceives the clash between European powers and the USA for control of the Western Hemisphere. According to his criteria, achieving multiple influences without the predominance of any of the conflicting factors constituted an unavoidable



service. Martí's doctrine —according to [Lamore \(1990\)](#)— falls within the coexistence of national prides and cosmopolitan utopias.

In the view of the author of this article, Martí manages to explain the nascent antagonism that, as the 20th century progressed, would become abyssal.

Each one must set himself to the work of the world, to that which is closest to him, not because what is his own is, by being his own, superior to that of others... but because man's influence is exerted better and more naturally in that which he knows... and that distribution of human work, and nothing more, is the true and impregnable concept of homeland... homeland is humanity, it is that portion of humanity that we see closest, and in which it fell to us to be born... ([Martí, 1991s, p. 468](#)) (translation by the journal).

Final reflections

In Martí's vision of the homeland, two essential levels coexist: the popular sensibility that magnifies the heroic (the sense of belonging to a community) and the fruitful, reflective creation that unfolds as judicious apprehension or an ideological form that seals a social commitment. These ideas take shape over the course of his life experience and are aimed at changing Cuba's dependent status. Not only politically, but he also produced a work of social pedagogy (which includes cultural and educational aspects for the birth of new peoples and sincere democracy).

In his work, there are three fundamental moments of synthesis and conceptual recomposition concerning the Homeland, which materialize in the following works: *The Spanish Republic before the Cuban Revolution (1873)*, *Our America (1891)*, and *the Dominican Literary Review (1895)*, but which are substantiated and expanded in dissimilar texts (letters, chronicles, speeches, essays, among other literary forms).

Martí's work recomposes existing reality based on the understanding of continental events and the imperatives of the late 19th century, conceiving the Homeland as a community of objectives and social motives, formed with and for the oppressed, thus being indissolubly linked to the term "people."

José Martí's universal conception reaches its maximum humanist and solidarity expression when he defines Homeland as Humanity, the opposite of narrow nationalism that declares the ethnic and cultural superiority of certain groups or nations over others. His idea did not seek to divide Cubans from the rest of the world; rather, it carries the emancipatory ideal of the human being, which for other thinkers such as Ernest Renán was only valid for the inhabitants of the old continent.

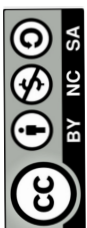
The Apostle of Cuba is a representative of a cosmopolitan vocation: practical and revolutionary, far from unnecessary abstractions and alien molds because it is rooted in autochthony. At the same time, he subverts the terminological apparatus of Spanish and French thought regarding homeland, patriotism, and nation, from a decolonized stance that gives it a peculiar content, bearer of a deep and progressive radicalism that transcends his era and reaches the present day.

In the essay *Our America*, he leaves open the possibility of transformation, through the creative and creating attitudes of the sons and daughters of Latin American lands, convinced of the complex nature of social changes.

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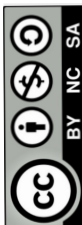
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Notes on the author

* Rosa María Medina Borge holds a Doctorate in Pedagogical Sciences from the Enrique José Varona Pedagogical University (Havana, Cuba). She completed a Postdoctorate in Social Sciences, Childhoods and Youth at the University of Manizales (Manizales, Colombia), a Master's degree in Contemporary History and International Relations (University of Havana, Cuba), and a Specialization in Didactics of Social Sciences (CLACSO Brazil). She is an independent researcher. Email: rosamedina2002@gmail.com





The teaching voice in rural key: speech accommodation and literacy as mediations of educational quality*

La voz docente en la educación rural: acomodación del habla y alfabetización como mediaciones de calidad educativa



Alba Lucía Barajas-Lizcano**

Aguada de Ceferino Institution, municipality of Girón, Santander Department, Colombia.



Adrián Filiberto Contreras-Colmenares***

Emeritus Professor of the Universidad de Los Andes-Táchira / Venezuela.

Abstract

Rural education in Colombia is characterized by significant unequal gaps compared to urban education. Equitable achievements that transcend contextual limitations are required. A determining element is the teacher's discourse in the teaching of reading and writing. The objective was to examine how rural teachers interpret and adapt the quality standards of the Ministry of National Education through communicative strategies adjusted to the sociolinguistic environment. Methodologically, documentary and field research was employed under the ethnographic method, with seven (07) key informants. The findings assert that the teacher's capacity to adapt language and methodologies to cultural reality is vital for meaningful learning. It is concluded that rural teachers' discourse, by integrating and accommodating speech, constitutes the fundamental strategy for quality standards to be internalized and applied during pedagogical practices, transforming them into pertinent and enriching processes.

Keywords: rural education, literacy, mediation, sociolinguistics, educational quality.

Resumen

La educación rural en Colombia está matizada por brechas desiguales significativas respecto a la urbana. Se exigen logros equitativos que trasciendan limitaciones contextuales. Un elemento determinante es el discurso docente en la enseñanza de la lectura y la escritura. El objetivo fue examinar cómo los docentes rurales interpretan y adaptan los referentes de calidad del Ministerio de Educación Nacional mediante estrategias comunicativas ajustadas al entorno sociolingüístico. Metodológicamente, se empleó una investigación documental y de campo bajo el método etnográfico, con siete (07) informantes clave. Los hallazgos permiten aseverar que, la capacidad del docente para adaptar el lenguaje y las metodologías a la realidad cultural, es vital para el aprendizaje significativo. Se concluye que el discurso del docente rural, al integrar y acomodar el habla, constituye la estrategia fundamental para que los referentes de calidad sean internalizados y aplicados, durante las prácticas pedagógicas y las transforma en pertinentes y enriquecedoras.

Palabras clave: educación rural, alfabetización, mediación, sociolingüística, calidad educativa.

* This article is a second progress report of the research: "This article is a second progress report on the research: "Didactic strategies for reading and writing: an interpretative study of the teaching practices of primary school teachers in the rural schools of the municipality of Rionegro (Santander, Colombia)", developed during the year 2023", carried out during the year 2023. (journal translation).

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Introduction

The present written discourse is aimed at examining how rural teachers interpret, adapt, and implement the quality benchmarks of the Ministerio de Educación de Colombia (MEN, 2006) in their literacy processes, through communicative strategies adjusted to the sociolinguistic context, from a critical perspective supported by speech accommodation theory and the sociocultural approach. Specifically, it concerns the reading and writing that teachers working in rural areas utilize. As has been noted, the literature has described the existence of a gap in educational quality in relation to the teaching practice that takes place in urban settings. Therefore, it is essential to understand the difficulties faced by teachers who carry out their pedagogical activity in rural areas. Likewise, one must understand how they interpret and adapt the educational quality benchmarks proposed by the MEN (2006) in their pedagogical practice, and within them, specifically those referring to the basic standards of language competencies.

It is necessary to take into consideration that the basic training teachers have received through universities often has an impact on how they approach pedagogical practice concerning the teaching of reading and writing. It must be said that there are notable differences when educators have a pedagogical background as primary education teachers, compared to those who are incorporated into teaching but have non-teaching professions. Hence, notable differences appear depending on the prior and specific training received by those who practice teaching.

Thus, it is necessary to be clear about the knowledge that rural teachers possess regarding the quality benchmarks for teaching reading and writing. Regarding their work, the rural teacher manifests the traces of their professional training, as well as their own conceptions about the teaching process. However, contradictions are evident between these theoretical knowledge bases and the personal beliefs that guide their teaching. This situation is aggravated because some rural teachers are assigned to multigrade institutions without knowing the requirements of the quality benchmarks, since universities do not include these topics in their training programs.

Under this prism, then, the intention has been to examine how the MEN (2006) quality benchmarks are integrated both in the discourse and in the pedagogical practice of teachers working in rural areas. In that context, the rural teacher needs to rethink, reconstruct, and adapt a didactic approach for teaching reading and writing in a context marked by developing their pedagogical practice in multigrade schools. From the point of view of educational needs, Núñez (2010) proposes a change that includes an educational policy. This implies reflecting on how to strengthen rural education with programs that incorporate the culture, knowledge, and interests of the learners. Likewise, the need to empower pedagogical practice by promoting communication open to the student's needs is highlighted.

In this perspective, it must be understood that education in rural areas currently represents a challenge, but it is also an opportunity to achieve social equity, based on the teaching of reading and writing as fundamental competencies for cognitive development and communicability. It is necessary to understand that, in rural contexts, with the diversity of ages and learning levels in multigrade classrooms, it is a priority to incorporate flexible pedagogical strategies grounded in the very principles required by educational quality.

Now, regarding the discursive dissertation derived from the research conducted, it is important to indicate that the teaching of reading and writing in rural areas is based on the principles of educational justice and the right to comprehensive education, as proposed by Freire (1977) and Vygotsky (1978),

who highlight the importance of the sociocultural context in literacy processes. The teaching of reading and writing in these settings requires methodologies that not only transmit knowledge but also enhance critical thinking and the autonomous construction of learning, considering the interconnection between language, identity, and community.

From a methodological point of view, the writing act is justified because it is elaborated based on research that has been developed under the qualitative approach. In congruence with this, ethnography was established as a means of approaching the research object. Now, given that the teacher's discourse regarding their own discursive particularities was taken as part of the inquiry, narrativization was used as part of the analytical process (Biglia and Boent-Martí, 2009, as cited in [Silva Batatina, 2017](#)). For the purposes of information, the informants were seven (07) teachers, distributed into two groups. The first group consisted of four (04) teachers who received studies offered by the [MEN \(2013\)](#) through the "Scholarships for Teaching Excellence" program. Meanwhile, the second group consisted of three (03) teachers with differentiated training. They were selected intentionally, for which specific criteria were established.

This discourse has delved into quality benchmarks, rural education, and teacher discourse. Quality benchmarks, because they establish the guiding epistemological and pedagogical axes linked to rural education. This is important for addressing how it meshes with the social and economic structure, since it is necessary to analyze the relevant mechanisms linked to the needs of teachers working in rural areas. Regarding teacher discourse, reference is made to the communicational process that the teacher includes as part of the interaction with their students. Thus, discourse refers to how the verbal, as well as proxemics and non-verbal language, are oriented to mediate the teaching and learning processes.

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The Quality Benchmarks of the National Ministry of Education (MEN)

In the first years of schooling, the [MEN \(1994\)](#) proposes epistemological and pedagogical orientations for the rural sector. In this context, the teacher must become familiar with and master the texts included in the curriculum to comply with the academic benchmarks that seek progress in student learning, with the purpose of improving student learning.

In this sense, it is essential to know the specific educational policies that concern the characteristics of the rural sector. Indeed, [Ley 115 \(1994\)](#) in Article 64 promotes the fostering of rural education. To such effects: "The National Government and territorial entities shall promote a formal, non-formal, and informal rural and peasant education service, subject to the respective development plans." Thus, it is necessary to recognize the importance of providing attention to dispersed communities, which is a frequent characteristic in the rural sector. This must be done through education. At the same time,



mechanisms are fostered for rural education that allow access to education with special treatment ([Mexican Legislation, 2022](#)). However, although the state promotes the training of rural educators, a debt persists in terms of offering a global education equipped with specific technological tools for each population.

In this context, to advance the attention to rural education, in *Los lineamientos curriculares de Lengua Castellana*, the [MEN \(1998\)](#) presents the quality benchmarks, which are linked to the spirit and purpose contained in [Ley 115 de Educacion \(1994\)](#). These guidelines offer curricular and pedagogical orientation, based on the approaches of various theorists who guide the educator's work. The document is structured in five chapters, which are succinctly specified below:

In the first chapter, reflection is made on the importance of constant interaction with texts so that the subject appropriates information. In this mediation process, the teacher finds strategies that facilitate discourse comprehension.

In the second chapter, the organization of the curriculum is developed, as it proposes guided teaching through projects. In the third chapter, it delves into the concept of language, aided by specific theories. This structure proposes the development of communicative competencies in conceptualization (reading, writing, speaking, and listening).

Chapter 4: *Los lineamientos curriculares de Lengua Castellana*, focuses on the teaching of reading and writing, approaching the construction of alphabetic code processes. According to the [MEN \(1998\)](#), the development of meaningful systems is proposed, which favor thinking about how the child understands and writes about their environment with their own graphics. From their written production, the child, with their own production, approaches conventional graphics, identifying them in all texts. Over time, this graphics become part of their knowledge and they internalize it. The teacher knows how graphics develop, creating plans, methodologies, and strategies supported by the proposals of Ferreiro, Teberosky, Rincón, and Villegas (as cited in [MEN, 1998](#)). Meanwhile, in axis five, considerations are made regarding the development of thought. This approach is based on Vygotsky's proposal to enhance learning through active experiences.

The teaching of reading and writing is contemplated in the *Lineamientos curriculares de Lengua Castellana* of the [MEN \(1998\)](#). In principle, it is expected and hoped that teachers know these guidelines when planning and adapting strategies in congruence with the established postulates for guiding reading and writing. However, in practice, it is observed that although many educators master the curricular guidelines and the theoretical foundation related to these areas, they still face difficulties in articulating this knowledge with their practice. Consequently, the development of reading and writing competencies is reduced to superficial compliance with content, without truly evaluating student progress. This approach prevents fulfilling the teleology established in the curriculum, especially regarding the development of these competencies in the first grades of primary education.

On the other hand, in the *Estándares básicos de competencia de Lenguaje*, the [MEN \(2006\)](#) proposes the development of communicative competencies. That is, actions that allow the student to communicate and interact effectively in their social environment within society. In this sense, teachers guide students to become aware of their context, thus fostering literate and literacy-promoting school environments. In this way, the teacher not only imparts knowledge but also offers the student tools to face their own learning. And here, the speech accommodation theory of [Giles et al. \(1973: 189\)](#) is es-

tablished as a foundation, who have expressed:

Language accommodation then has been seen to be more than just wholly an all-or-none process at least in this experimental situation. Some EC¹ Ss² in the sample were prepared to alternately mix the two languages, thereby shifting the emphasis from one code towards another (a phenomenon akin to the modifications apparent in response matching).

What has been expressed brings together the fundamental idea that human communication is dynamic and active. Therefore, when the speaker performs the accommodative act of their speech, it is not only about choosing a linguistic criterion, but rather establishes a bond and a kind of attunement that leads the speaker to provide an appropriate response, according to their experience with the environment.

On the other hand, the sociocultural approach of [Bourdieu and Passeron \(2008\)](#) is also assumed, aimed at strengthening communication within the classroom, but going beyond the simple relational act of interaction. Therefore, [Bourdieu and Passeron \(2008: 63\)](#) state that:

Reducing the pedagogical communication relationship to a pure and simple communication relationship prevents understanding the social conditions of its properly symbolic and properly pedagogical effectiveness, which consist precisely in hiding the fact that it is not a simple communication relationship.

Likewise, it is appropriate to consider that educational policy, according to Reyes (in [MEN, 1998: 48](#)), proposes a literacy approach through guidelines that propose "a literacy focused on four competencies (reading, writing, orality, and listening)." (translation by the journal). However, transferring this theory to practice in rural contexts implies adapting to multiple challenges. For example, in many rural schools, there is insufficient access to printed materials or digital connectivity, which limits the development of competencies under equal conditions. Despite this, teachers use creative strategies to mediate the content. Thus, the literacy process is guided by the interests and realities of the subject, to develop competencies that go beyond a single meaning.

Undoubtedly, training in literary competencies allows not only the enjoyment and appreciation of culture but also fosters text comprehension. Likewise, it promotes ethical communication, linked to the social environment and open to dialogue, which can be consolidated through classroom projects. Now, linguistic competencies, according to the standards, reinforce teaching, concretized in reading and writing. This is achieved through the organization of thoughts to present them in words that will be written and read.

Another aspect is the sequence and coherence in classroom planning subject to the required demands of changing a curriculum that leads to improved learning. To this end, the question arises: what realistic actions does the teacher need when implementing the teaching of reading and writing by including the standards? In answering the question, [Báez and D'ottavio \(2019: 9\)](#) affirm that the teacher requires "professional training for the educator that allows the learner to make mistakes." While it is true that the construction of contextualized exercises that express reality enables competencies (as set out in the standards), even so, the teacher needs to analyze, understand, and execute competencies correlated with texts that reflect the student's reality.

¹ EC: Controlled Trial or Experimental Group.

² ubjects or participants.



A key aspect is the sequence and coherence in classroom planning, aligned with curricular changes that seek to improve learning. This raises the question: what concrete actions should the teacher take to implement the teaching of reading and writing, integrating the standards? According to [Báez and D'ottavio \(2019\)](#), to achieve this, the teacher must receive professional training that allows the learner to learn from mistakes. In this way, the construction of contextualized exercises that reflect the student's reality facilitates the development of competencies. However, the teacher must adequately analyze, understand, and apply these competencies so that the texts used are relevant to the students.

In conclusion, it is necessary to delve deeper into the educational reality that takes place and develops in rural areas and into the specific preparation of teachers who work in these contexts. It is essential that educators who support students in this environment have specialized training in pedagogical theories. In congruence with this, [Ferreiro \(1944: 86\)](#) observes that:

Learning theory of rural pedagogy or theory of rural sociology is easy and fits perfectly within the possibilities of any student. But, specifying that theory in the practice of living is very different. The 'ruralization' of the teacher is a problem of adaptation to the environment; it is a matter of social formation, not intellectual. (translation by the journal).

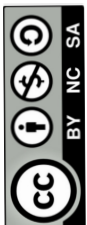
From the above, it can be said that the true challenge of rural pedagogy is not based exclusively on the intellectual learning of theories about rurality—such as those of sociology or rural pedagogy—but on the teacher's ability to embody those theories in their daily pedagogical act. Internalizing them will contribute to making learning more accessible to the learner; however, translating them into ways of life, sensitivity, and relationship with the rural environment requires a much deeper transformation. The expression "ruralization" of the teacher, for its part, becomes a process of adaptation to the environment that transcends the conceptual and relies on the experiential, on ethical roots, on the affective and cultural part that is typical of the rural environment. It is not only about knowing about the countryside but about inhabiting and living it with meaning; one must understand its rhythms, its resistances, and its forms of symbolic production, as well as the "modus vivendi" of its students and their parents. In that sense, the training of the rural teacher is above all a process of social formation, not merely intellectual, in which the pedagogical is interwoven with the human.

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Rural education

Venturing into the study of rural education in these times—as it has been for years—is a vast, necessary, and important task. Several authors have been exploring the notion that education developed in rural settings is as valuable as education developed in urban settings. Thus, as Barba (2011, as cited in [Santamaría-Cárdaba & Sampetro Gallego, 2020: 153](#)) points out: "the rural school is a different reality and a focal point for educational innovation proposals that respond to its own needs." (translation by the journal). And through this unique response to needs, rural education also has an impact on educational equity, which is why teachers face structural challenges in incorporating pedagogical strategies that are adapted to the needs and interests of students and the community in these rural contexts.

Correspondingly, it must be said that rural education faces multiple challenges, as institutional infrastructure is most often not adapted to the required pedagogical demands to accommodate learners and the teacher. Furthermore, teachers who carry out educational work must have a different sensitivity and a willingness to transform processes, since, very often, the teacher training they have received



does not prepare them to share knowledge and generate meaningful learning for students in rural settings. According to [Santamaría-Cárdaba & Sampedro Gallego \(2020: 148\)](#): "the rural school suffers the same economic and symbolic marginalization as the rural environment, but it has great potential as a space for pedagogical innovation and as a driving institution for rural communities." (translation by the journal). This approach highlights the need for educational policies that recognize the specificity of these environments and promote adapted strategies.

For their part, [Mendoza-Ponce \(2024: 151\)](#) points out that "insurmountable gaps still exist between urban education and rural education, given the misguided educational policies both in Peru and in other countries." (translation by the journal). This analysis reveals the urgency of developing proposals that respond to the needs of rural students and foster the revaluation of their cultures and customs, with the purpose of promoting the greatest degree of equity for students in rural settings.

In congruence with this, the contribution of [Carrero Arango & González Rodríguez \(2016: 81\)](#) is valued, who state:

In rural areas, the educational service has been influenced by the socio-economic, cultural, and infrastructural conditions of rural populations. In general terms, a rural school can be described as a poor, run-down establishment, with little equipment and poorly functional furniture—conditions that make them seen as uninteresting, and in the same way, the State and policies forget the rural environment. (translation by the journal).

From this perspective, it must be noted that spaces in these classrooms are small, which makes teaching groups of different ages and learning levels difficult. Likewise, the lack of adequate technological resources represents a significant barrier to implementing quality educational policies in these contexts. Then, from a psychoeducational consideration, [Silva Zapata & Rodríguez Bedoya \(2022: 6\)](#) highlight the importance of situated cognition in rural education, stating:

This is how rural education, currently on the Latin American scene, develops under a complex reality, since many of the models through which the teaching-learning process is carried out do not assertively integrate the promotion of necessary elements in the dimensions of participation in educational practices along with individual and social construction in the development context of all rural communities.

This approach suggests that rural education must integrate methodologies that respect cultural identity and community dynamics. In the area of didactic resources, the educator in the rural context faces the challenge of working with several courses with different ages in one classroom. Given this reality, the teacher needs to delimit flexible methodologies that encourage teamwork among peers, with environments that invite students to reflect on their own actions in the development of tasks.

In this sense, it is appropriate to cite [Terigi \(2013: 1\)](#), who points out:

...rural schools offer the opportunity to study the dynamics of learning that occur when content overflows the graded sequence and when children (...) who are at different points in their schooling interact around the same content. (translation by the journal).

This leads to the conclusion that in rural teaching contexts, learning is enhanced through peer collaboration, where the higher grade can teach the lower grade, thus enriching the educational experience. This is linked to the attribute established by [Contreras-Colmenares \(2004: 451-452\)](#), which he



called: coevalness.

[This attribute] (...) has to do with the existence of mediators within the classroom who are contemporaries and have the same needs and interests: that is, they are students, in the process of learning, but who have advanced further than others. Hence, their peers feel more confident approaching them rather than the adults around them. (translation by the journal).

From the above, it can be said that coevalness in the classroom introduces a relational and affective dimension to the learning process, based on generational closeness and mutual recognition among peers. Coevalness, as an educational principle, implies that interaction between students who share formative periods generates a more accessible, dynamic, and collaborative learning space. Given that these are other students, who are classmates, who have advanced further in the process but maintain cognitive proximity with the others, a horizontal mediation is established, in contrast to the traditional vertical relationship between teachers and students.

From a socio-constructivist perspective, this is linked to learning that occurs in a social environment, where knowledge is constructed through interaction with others, especially with those who are in a zone of proximal development (Vygotsky, 1978). With this vision, coevalness means that more advanced students do not impose knowledge, but rather facilitate access to it from a position of accessible peers, generating trust and reducing the cognitive gap.

This facilitation of learning by peers will be more powerful in terms of its implementation in multigrade schools, a very particular model of rural schools. This model is common in rural areas and communities with low population density, where student distribution does not allow for traditional grade-level organization. In principle, it should be noted that multigrade schools are considered educational institutions in which the same teacher teaches students of different levels in the same classroom.

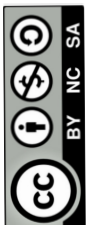
In this regard, Terigi (2013: 1) states: "The multigrade or plurigrade (technically called 'multiple section' in Argentina) is a school section that groups students who are attending different grades of their primary schooling simultaneously with the same teacher." (translation by the journal). Depending on the level, these multigrade schools can serve preschool, basic education, and even secondary education students. Another definitional perspective is provided by González Lira et al. (2021: 352), who state that: "multigrade schools are those where teachers or educational figures serve students from different grades in the same classroom." (translation by the journal).

Based on various investigations, it should be noted that:

...interest in the vindication of multigrade schooling as an educational modality that presents important pedagogical advantages over graded schools, under the premise that this form of school organization can be used in any educational situation and not only due to administrative impositions, since learning communities are configured in its dynamics." (González Lira et al., 2021: 352, translation by the journal).

As expressed, this is a particular characteristic of rural education; however, although they often have limited resources, such as didactic materials or, in some cases, primers that present outdated and de-contextualized information, they nonetheless have some prerogatives or advantages from a pedagogical point of view.

With that criterion, it is also important to note that in the last thirteen (13) years in Colombia, several



educational projects focused on improving rural education have been implemented. One of these efforts is the *Proyecto de Educación Rural (PER)*, which began implementation in 2009 (MEN, 2009), through which the governing education body has sought to expand access to quality education from preschool to upper secondary education. Among its strategies is the inclusion of resources such as the "game kit" to strengthen reading and writing processes in a playful manner. And according to the MEN (2009: 1):

The program's objective is to increase quality access to education in the rural sector from preschool to upper secondary, promote the retention of boys, girls, and young people in the educational system, and improve the relevance of education for rural communities and their school populations in order to raise the quality of life of the rural population. (translation by the journal).

Similarly, another implemented strategy has been the *Programa Todos a Aprender (PTA)*, in operation since 2012, which aims to improve teaching quality and learning levels in primary education through actions supporting primary school teachers. This program operates as a large-scale training tactic and also as support for teachers working in Colombian educational institutions, both for those working in rural and urban settings (MEN, 2022).

Now, despite these advances, it is still necessary for these policies to recognize the particularities of working in multigrade classrooms. It is urgent to include training spaces; government programs need to include specific training for multigrade teachers working in rural areas. And that training must include singular and specific orientations on how to promote the fundamental processes of reading and writing.

In that sense, it is necessary to rethink an educational policy that dialogues with the reality of rural education. This implies transforming teacher training, proposing methodologies adapted to remote contexts, with a pedagogical discourse that respects the way of life and the knowledge inherent to these communities for teaching reading and writing. Furthermore, it implies implementing didactic interventions considering the challenges these contexts have, with follow-ups that help advance knowledge processes.

Expectations and reality of teacher training in the rural sector

To speak of teacher training, it is necessary, in this respect, that the educator not only knows the knowledge to be taught but also reflects on how to bring that knowledge into interaction with the learner, so that learning is optimal in the rural context. Likewise, it is important to know that teaching in the Colombian rural sector takes place in multigrade settings. Thus, the teacher knows the context and the effects that teaching has. Furthermore, the educator must consider how the student reads their reality, taking the rural environment as a reference. The provisions of Ley 115 (1994) must be taken into account, since Article 1 states: "Education is a process of lifelong, personal, cultural, and social formation that is based on an integral conception of the human person, their dignity, their rights, and their duties." This precision must also be assumed during the training process of those who will work as teachers. But, likewise, it must be contemplated that permanent, continuous, or professional development training must be an action proper to and consistent with the State. All this with the purpose of supporting the teacher's activity in both the teaching and learning processes.

Therefore, it is necessary to investigate three related aspects of teacher training in dispersed localities.



First, it is essential to analyze how the educational policy of the Ministerio de Educación (Colombia) is implemented. Second, it is necessary to know how universities train teachers to teach in rural communities. Finally, one must investigate what happens in the teaching practice of the multigrade educator. The answers to these questions must be the subject of constant research and permanent interest for researchers, as they are essential for those dedicated to the study of education, especially in the rural sphere, and in fundamental processes such as the teaching of reading and writing in the first grades of schooling.

Rural education is of great importance to the development of society. Therefore, a more reflective citizenry is needed that connects knowledge to contribute to economic development. However, in this context, a large educational gap is observed, since the training of the multigrade teacher does little to foster an analytical subject who proposes solutions to situations in society.

According to the report on the educational level of rural teachers presented by the Bank of the Republic in Colombia, many educators are professionals (diploma holders, pedagogical career, and postgraduate degrees). However, despite having academic training, the question arises: how do universities train educators, given that the gap in rural education persists? To address this problem, universities need to rethink their programs and create a more critical, analytical profile focused on teaching reading and writing in rural contexts.

The governing body of education needs to provide teacher training in the development of competencies to teach in the rural sector. Likewise, faced with the decrease in certified teachers, professionals from other disciplines have been incorporated into educational work. Among them are engineers, lawyers, economists, whose basic training is far from pedagogical and, therefore, they find it difficult to work with multiple grades in the rural sector. This situation creates difficulties when working with multiple grades, since the lack of specific training in education limits the new teachers' ability to adapt to the particularities of the rural sector.

It must then be specified that teacher training in Colombia is at a crossroads; in a certain way, it is caught between a tension that emerges through a modernizing discourse and structures that resist change. The profile of the reflective, inclusive, and technologically competent teacher clashes head-on with a reality of theoretician training. There are precarious working conditions and a disconnection from the diverse contexts of the country.

Thus, overcoming this gap, this crack—one might say this existing hollow—is no small task and, therefore, demands more than mere curricular adjustments. Rather, it demands a comprehensive State policy that commits to the dignification of the teaching profession through better salaries and working conditions. Such a state policy must foresee a budget for a determined investment that results in educational quality and the relevance of initial and continuing training programs. Likewise, it must advocate for an evaluation system characterized by a genuinely formative vision and not punitive or sanctioning. Only to the extent that the desired state or "ought to be" is aligned with the real possibilities contained in the "what is," only to that extent can the immense transformative potential residing in the teachers of Colombia be unleashed. And thus it will turn them into the true architects and cornerstone of a society that aims to be more just, equitable, and at peace.

The figure of the teacher is a fundamental pillar in the construction of any national project. In Colombia, a country characterized by deep social inequalities and a historical longing for peace, the role of the teacher acquires a much more important and crucial dimension. In this context, public policies



and academic discourse have shaped a profile of the education professional that tends to be very ideal but is far from the actual performance and training they receive. This situation is marked by concern. This is so because the literature review in various reports reveals a significant distance between this normative construct and the permanent, daily practice of the teacher, derived from the training received.

Upon reviewing the literature, it has been found that in current regulations, linked to academic criteria, there is a multifaceted and highly demanding teacher profile for Colombian teachers, centered on three essential elements. They are:

- a) **The teacher as an intellectual and reflective professional:** Far from being an executor or applier of curricular programs, the ideal to be assumed must be to train an autonomous professional who researches their own practice (Schön, 1983). By conducting this inquiry, the teacher can transcend from pedagogical practice to pedagogical praxis and to metapractice (Contreras-Colmenares, 2021), which becomes a progression from pedagogical practice. Thus, the teacher is expected to critically analyze their pedagogical work and thereby generate situated knowledge and learning from the classroom and actively participate in learning communities to transform their educational environment.
- b) **Agent of inclusion, peace, and social transformation:** In line with the challenges of the post-conflict era and the country's inherent diversity, the teacher is expected to be a cultural mediator and a promoter of equity. Thus, teacher training must provide them with tools to manage the heterogeneity of thought and interests that occur in the classroom; likewise, the inclusion of students with special educational needs is mandatory, and they must develop socio-emotional competencies that foster coexistence and the construction of a culture of peace, thereby transcending what happens in the school space, impacting the community. Regarding the culture of peace, Sánchez Cardona (2016: 64) states that:

Speaking of a culture for peace has its degree of difficulty, since it is first necessary to define in which reference framework the concept of culture is situated and from there, proceed to develop what is understood by peace and consequently, contextualize the theory of the culture of peace in a specific country. (translation by the journal).

This complexity must be assessed in order to situate it in the specific context experienced in Colombia, to be able to understand, first, peace from the situations of conflict, thereby arriving at an understanding of the culture of peace.

- c) **The teacher must be an expert in 21st-century competencies and a technological mediator:** The discourse of supremacy, superiority, preeminence, and predominant hegemony demands a teacher capable of educating citizens for a globalized and digital world. This implies not only their own mastery of critical thinking, creativity, and collaboration but also the ability to integrate Information and Communication Technologies (ICTs). In this way, a teacher will be trained who can develop their pedagogical act relevantly. Thus, its unique application as an instrument will be overcome, turning ICTs into true mediational didactic resources that contribute to the construction of meaningful learning.

In congruence with this, teacher training in the Colombian rural sector faces structural challenges that affect educational quality and the preparation of teachers to respond to the needs of their commu-

nities. Expectations often focus on creating programs adapted to rurality, with approaches that integrate local knowledge, contextualized pedagogical strategies, and the strengthening of teachers' professional identity. However, the reality shows that most training programs are designed for urban contexts. Training for teachers who will work in rural areas is left aside and blurred. Added to this is that professionals from various professions who enter teaching will have greater difficulties in facing the teaching of rural education communities.

The discourse of rural teachers in the teaching of reading and writing

We must start from a singular definition of discourse. In that sense, we assume the definitional criterion of [Van Dijk \(1997: 22\)](#) provided as follows: "the term 'discourse' usually refers to a form of language use, public speeches or more generally to spoken language or ways of speaking" (translation by the journal).

In rural settings, the teaching role goes beyond the simple transmission of knowledge and becomes a deeply humanizing and transformative communicative act. The teacher's discourse, in this rural context, should not be neutral. The teacher, therefore, must actively participate in the construction of meanings, the shaping of imaginaries, and the dignification of rural communities. Thus, from this perspective, teacher discourse in rural contexts must integrate theories and pedagogies that recognize its contextual, dialogical, affective, and transformative dimension. In this sense, the role of the teacher in these rural spaces must be rethought.

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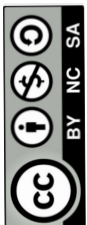
It has always been considered that, within the classroom, the teacher is generally the one who moderates or directs the execution of actions and guides the strategies to be carried out. Therefore, they are given a highly active role. Thus, they are considered a guide for the processes that take place in the classroom. In that sense, the type of communication the teacher establishes in the classroom defines their teaching role. According to [Cabrera Cuevas \(2003: 17\)](#): "The teacher has the power to define a discourse regarding their communicative relationship. [Therefore] their predominant type of communication is linked to a role of content conductor or learning guide." (translation by the journal).

In correspondence with this criterion, Vygotsky (1985, as cited in [Patiño Garzón, 2007: 58](#)):

...assigns a special meaning to the relationships existing between the participants of a process regarding development and learning, due to their impact on the diagnosis of intellectual capacities and the elaboration of a teaching theory that opens a new perspective for action. (translation by the journal)

This implies that the interaction context among members of a learning community, influenced by the role played by the teacher, can, in some way, support or restrict reflexivity and the collaborative construction of learning among all actors in the classroom. Undoubtedly, the teacher's discourse during the mediational process has a great impact on this.

Now, the teacher's discourse is much more than the simple transmission of content. Rather, it is a communicative act devised with intentions, affections, and meanings that constructs a space for human encounter. [Van Dijk \(1999\)](#), for example, considers that discourse, in general, is also an act of power and the construction of reality. Consequently, this implies that the teacher, with their words, not only provides information; on the contrary, in many cases, they shape imaginaries and configure power relations. Thus, "discourse is conceived as 'the complex structures and strategies of text and conver-



sation as they are actually carried out (produced, interpreted, used) in their social contexts" (Van Dijk, 1999, p. 251) (translation by the journal).

Thus, discourse, understood beyond its linguistic dimension, constitutes a situated social practice that shapes and reflects the power structures and cultural relationships that pervade all communicative interaction. According to Van Dijk (1999) himself, discourse should not be conceived as a transmissive form of content or mere transmission of neutral information. Discourse, then, is valued as a form of social action that organizes and legitimizes meanings, reproduces ideologies, and constructs shared realities. This critical perspective is based on the premise that discourses possess a macrostructure—the global organization of themes and main ideas—and also a microstructure—lexical selection, rhetorical resources, and nuances of meaning; these structures (macro and micro) interact in the configuration of a communicative act with transformative potential.

In this sense, the teacher's discourse, particularly in rural settings, must have clarity and awareness that it not only communicates academic content but also mediates between cultures and has the capacity to make visible or silence local knowledge. Thus, the teacher's discourse can become an act characterized by power, to the extent that it reinforces vertical relationships and ignores the cultural richness of the community. On the other hand, it can be taken as a human, humanizing, and dignifying act, insofar as it recognizes and respects the word, the speech, the voice of the rural student. From that perspective, their identity will be valued, and their culture and discursive acts proper to the rural environment will be strengthened.

Rural teacher discourse, therefore, must, in principle, recognize and value local knowledge. Since teachers "...contribute not only their academic knowledge, but also their local and regional knowledge and wisdom" (Dietz, 2010: 65, translation by the journal). Furthermore, discourse must promote and develop dialogicity, which can be achieved to the extent that it promotes the active participation of its students. And finally, the discourse must be marked by affectivity and a deep sense of transformation in its lexicon, without losing its contextual imprint and idiosyncrasy, marked by rurality. Thereby promoting the formation of rural students' identities, which positively affects their self-esteem and sense of belonging.

In rural settings, the teacher's discourse carries an even denser significance. In such settings, the classroom is not separate or isolated from community life, but rather is intertwined with rural dynamics and local worldviews. As Freire (1997) points out, education must be an act of authentic dialogue, starting from the real conditions of the students and not from an urban or technocratic logic that ignores the richness of the rural world. In this regard, Cruz Aguilar (2020: 197) states:

Freire's educational conception is an education that seeks the full and authentic development of the other, because it is constituted to the exact extent that the other is constituted; it is a biophilic act that seeks the full development of freedom, dialogue, communication, development with and through the other. (translation by the journal).

This Freirean vision is consolidated in what is currently known as otherness and alterity. Thus, discourse must be liberating and promote student dialogue and autonomy. Under this prism, it must be noted that it is necessary to understand that teacher discourse in rural spaces must be conceived as a contextualized, dialogical, and situated communicative act. Thus, it can never be a discursive exercise characterized by neutrality or impartiality. It has its own subjective charge. Therefore, it must be inter-

puted that it carries and contains decisions about what and how to say, and these decisions directly affect the way rural students understand and re-signify their world. Consequently, it is essential that teacher discourse in rural settings promotes a dialogical practice characterized by cultural mediation. Under this orientation, the self-esteem, participation, respect, idiosyncrasy, and dignity of rural students will be strengthened.

Additionally, regarding teacher discourse in rural settings concerning the teaching of reading and writing, it is essential to note that, on this topic, teacher discourse is an essential component in teaching and learning processes. In this way, it configures a means that allows students to interact with language and thus develop communicative skills. Likewise, the learner will develop an approach to textual production and reading comprehension in a pleasant, meaningful, and useful way for their actions in the rural community. Consequently, its impact transcends the classroom and becomes a determining factor in the construction of critical thinking and the appropriation of reading and writing practices.

Therefore, the way teachers structure their discourse directly influences students' reading comprehension and written production. To this end, they will employ strategies such as reformulation, open-ended questions, and connection with prior knowledge, allowing a meaningful approach to the text, fostering reflection and analysis. Furthermore, the teaching of reading is not merely a technical matter but is embedded in social and political dynamics that affect its implementation in various contexts.

In rural areas, for example, limited access to adequate materials and lack of specific training in reading processes can generate difficulties in knowledge appropriation. This must be remedied by the teacher through their discursive action and the production of meaningful resources. And in this way, they will promote and consolidate textual production in the classroom. And in that vein, they must overcome the singular and specific conventional action of correcting errors. To do so, they must use effective feedback messages, develop the ability to argue with oral discourse, and perform text analysis, in order to consolidate communicative competencies and develop writing with sense and meaning.

Finally, it is important to value that the discourse of teachers working in rural settings should not be understood exclusively as a means of transmitting knowledge; that discourse must be the way to promote the formation of critical and reflective citizens. In sum, the discourse of the rural teacher, concerning the teaching of reading and writing, is fundamental, decisive, and crucial for the formation of human beings capable of interacting with the world through language, whereby they can also become agents of social transformation. This is the aspiration toward which the rural teacher will tend, since through their discourse they will be a model for their students in the rural setting.

Methodology

The development of this academic discourse is based on the research conducted under the qualitative approach, whose purpose was aimed at examining the quality benchmarks proposed by the Ministerio de Educación Nacional (Colombia) and their integration or lack thereof in the discourse of teachers in rural school institutions regarding the teaching of reading and writing as part of literacy. Regarding information collection, the documentary technique was used, and in congruence with this, readings were carried out of: (a) the quality benchmarks of the [Ministerio de Educación Nacional \(2022\)](#), specifically the *Lineamientos curriculares de Lengua Castellana* and the *Estándares básicos de competencia de Lenguaje* with analysis categories, to then seek the integration established by the teacher in discourse; (b) each teacher's classroom plan; (c) the profile offered by the university in the training provided through the Scholarships for Teaching Excellence program.



In conclusion, the failure to align the training process with the needs of the rural sector in the performance of educational work seriously limits teaching effectiveness. In this sense, [Díaz Barriga \(2019\)](#) argues that the teacher must reconstruct their work and analyze their training. It is true that the teacher needs to transform their thinking in an evolutionary and conscious manner. Therefore, they must transcend methods that have proven insufficient in their teaching process and stand out by including innovative didactics. For this reason and for this purpose, it is essential that teachers receive continuous training. Or, in more recent terms, a professional development trajectory, as a reference to the process of growth and continuous training of a professional within their field of action. This process concerns skills, knowledge, and the adaptive process to changes arising in the work environment.

It is, therefore, a process of renewal that depends on the teacher's willingness to adapt to the continuous change occurring in the knowledge society. Currently, technological innovation calls upon the teacher to train themselves as an autonomous subject and a leader in teaching, ready for daily changes, so as not to be displaced. An example of this is the disruption of Artificial Intelligence (AI), which must be known and mastered by the teacher to support their own processes and also the learning processes of their students. This situation requires a teacher empowered in their profession who researches their classroom practice and integrates into research groups that contribute to deepening the "how" of reading and writing didactics in multigrade settings.

On the other hand, it should be reported that in the development of this article, the use of generative artificial intelligence was reflectively integrated: [Microsoft Copilot \(2025\)](#), [Gemini, Google \(2025\)](#), and [Microsoft Copilot \(2025\)](#) as support tools for organizing ideas, the preliminary structuring of thematic sections, and the exploration of discursive possibilities. This collaboration did not replace critical exercise or academic authorship but was framed within a logic of co-construction that recognizes technological mediation as a creative and epistemically situated possibility.

Therefore, the use of this tool was articulated with an ethical and reflective attitude, privileging the validation of the proposed content, alignment with the selected theoretical framework, and coherence with the pedagogical and methodological approach of the study. In this sense, AI was used as a complementary resource that enriched the academic writing process, without compromising research rigor or the uniqueness of the authors' "sentipensar" (feeling-thinking).

Results on rural teacher discourse in implementing quality benchmarks: their integration

Teachers in remote territories, when implementing the Language quality benchmarks, focus on developing the necessary competencies to enhance teaching. Therefore, in reading and writing practices, they foster situations with a variety of specific elements; that is, they make coherent adjustments to the content so that the learner thinks about and solves situations in their environment. Thus, the proposed contexts lead the subject to analyze, understand, and use these elements for competency construction.

Regarding the *Estándares básicos de calidad de Lenguaje*, the focus is on developing the necessary competencies to enhance teaching. Therefore, the teacher in reading and writing instruction fosters situations with a variety of specific elements; that is, they make coherent adjustments to the content so that the learner thinks about and solves situations in their environment. This pertains to learning environments that promote the analysis and comprehension of reading and writing to develop competency.

Regarding the category of textual production, the competencies of these processes are focused on the progress of learners' first graphics. Therefore, the teacher recognizes the sound of letters and the purpose this has in constructing the relationship between spoken word and written word. To this end, the teacher studies relevant didactic interventions in competency development, modifies them, and incorporates them into learning. Thus, practices are directed toward systematically enhancing reading and writing so that they can be executed competently by the learner (Kaufman, 2007).

Furthermore, students' writings require the teacher to value prior knowledge (hypotheses) when beginning writing, because by understanding this, a sequence of didactic interventions is outlined aimed at contributing to the approach to conventional writing. In this regard, Ferreiro (2010: 134) considers: "The point is that [the child] writes and knows from their own experience that writing is a useful tool for communicating with others." (translation by the journal). In other words, the rural teacher needs to propose dynamics in which the learner speaks, expresses, and promotes communication competence in correlation with writing. This raises the question: what strategies can the rural teacher implement? In response to the question, didactic interventions can encourage the learner to communicate through writing and elucidate the concepts of a good writer.

To understand the competence developed in textual production, fragments of dialogues and learning guides collectively organized by the teachers with their own training were assumed.

MV2 S: "We send comprehension assignments home, we make phone calls for the child to read, we ask questions about the reading comprehension they are doing."

MV2 S: "We ask them to make videos reading and answering the questions sent to them about the reading comprehension of the text they have been given." (translation by the journal)

In relation to the above, the participants proposed different strategies for textual production. In this regard, Lerner (2001) affirms: "This active role is expressed through the deployment of a series of basic strategies" (p. 19). That is, these are considered with the intention of confronting the learner with their own arguments. Consequently, the teacher (**MV2 S**), in the oral expression competency, acted in collaboration with the family for them to model reading for the learner. Perhaps learners talk about it and write their appreciations.

MJ.3 S: "Let's say we are going to work on the toad. The toad. I make a story about the toad, I draw the toad, I make a toad puppet. So that everything is focused on S. Let's sing the toad song. So that everything points to the purpose of the achievement." (translation by the journal)

Incidentally, in the elaboration of written texts, the teacher (**MJ.3 S**) emphasized the repetitive writing of phonemes; that is, the teacher lacked interest in knowing how the learner was progressing. It could be said that in the competency of communication correlated with writing, proposing conscious reflection on this was missing.

Regarding the textual production process, the learning guide was taken to understand its development. Thus, collective work on the didactic resource was evidenced; there they proposed reinforcing the sound of vowels and learning different phonemes with them. This is how content instruction was presented with a series of activities lacking sequence in the processes. In fact, the actions lacked meaningful construction in competency development. In sum, educating in textual production in the first

years of schooling involves processes with a conscious teaching of reading and writing intervention, with a variety of skills intended for textual production.

YS.4 M: "It is not so easy for him/her; we have had to resort to the syllabic method and traditional methods" [first-grade methods].

YS.4 M: "We have a project called kitchen writing; we work with labels. That is, those packages that children have at home."

YS.4 M: "The child reads the label; we have a label reading process, and it was very interesting. The child likes this because they have at home the market packaging that their father buys." (translation by the journal).

In accordance with the above, the rural teacher in teaching practices in the first years of schooling for reading and writing promotes reflection in approaching the construction of the learner's first graphics. To do this, the teacher promotes spontaneous writing without imposing models on the learner (Ferreiro, 2010). To delve into the topic, in the research, participant **YS.4M**, in textual production, developed the competency of discourse creation with experiential situations (through label reading). Although this is a meaningful act for the learner, emphasis is always placed on reading. In fact, textual production lacked actions to enable reflective construction of the word. The teacher was concerned with teaching a phoneme; that is, the development of writing competency processes is not evident, and the same occurred with the other participants.

The research established that 100% of the teachers with their own training, during the textual production process, show a disarticulation between reading and writing. This is because they have deficiencies in didactic strategies that would allow them to provoke in the learner the development of didactic interventions to achieve conventional writing construction. Regarding teachers with training from the [MEN \(2015\)](#) excellence scholarships, 100% of these teachers carry out processes for the learner to achieve reading comprehension competency, but at the moment of textual construction, only 50% promote didactic interventions to carry out these processes. Furthermore, regarding reading and writing, only 25% of the participants promote analysis in the learner to understand the meaning of constructing the written word.

Likewise, during the investigation, it was found that the teaching of reading and writing is included in the *Lineamientos curriculares de Lengua Castellana* of the [MEN \(1998\)](#). Now, it is inferred that teachers study these guidelines when planning and adapting strategies in congruence with the established postulates for guiding reading and writing. However, it is discovered that some educators, although they have knowledge of the curricular guidelines as well as the theoretical foundation related to this practice, lack the ability to articulate this knowledge with classroom practice. Therefore, the development of reading and writing competencies is carried out merely to fulfill content requirements, without considering its achievement or progress in students. Consequently, the teleology established in the curriculum is not being fulfilled, regarding the development of these two language areas in the first grades of primary education.

The rural teacher's discourse must constitute a practice that considers the existing tensions in the context, both historicity and culture. Thus, regarding the quality benchmarks promulgated by the [Ministerio de Educación de Colombia \(1998\)](#), this discourse cannot be read as mere technical appropriation, but as a pedagogical mediation that reinterprets, re-signifies, and often resists standardized mandates. This implies that the rural teacher must appropriate and creatively transform the indications provided

by the MEN (1998). And by carrying out this transformation, they will articulate pedagogical knowledge, context, and their subjective imprint. Thus, this dimension related to teacher discourse and the quality benchmarks of the National Ministry of Education comes to a close.

Finally, it must be affirmed that the discourse of the teacher who develops their pedagogical act in rural settings must assume the commitment of what Moreno Fernández (1998: 155) calls: "Speech accommodation or adaptation." In that sense, as a theory: "Speech accommodation is concerned with the cognitive processes that occur between the perception of the social context and communicative behavior" (Moreno Fernández, 1998: 155, translation by the journal). It is important to understand that the foundation of this theoretical criterion is the communicative interaction between speaker and listener or interlocutor. This implies that the speaker not only sees their interlocutor but also interprets their perceived identity —age, gender, status, group affiliation— and also the situational framework —formality, hierarchy, intimacy. Therefore, in essence, it refers to how speakers adjust their way of communicating; that is, the adaptation of their own speech depending on whom they are speaking with and the context and social situation in which both find themselves. In this case, the rural setting. This interaction will be nuanced and driven by complex cognitive processes.

Conclusions

The educator in the rural school must plan and propose meaningful and attractive strategies that impact learners and delve into their interests, according to the rural environment in which they live. They must necessarily be guided by the orientations appearing in the quality benchmarks developed by the MEN. In this way, the rural educator can empower themselves in each of the aspects linked to the teaching of reading and writing.

Teacher training is important, as is establishing relevance that connects their training with the discipline, theory, and pedagogical practice. Thus, they should develop didactic interventions in the classroom that can resolve the disencounters that occur regarding the way reading and writing are taught in a disarticulated, decontextualized, and fragmented manner. In this way, this action emphasizes the particular aspects of reading and writing.

Rural teachers are not passive agents in the implementation of educational policies; rather, they become guides of the discourse that their students must develop. Therefore, it must be recognized that the teacher's discourse is an act of epistemic and political justice. In this sense, a differential, dialogical, and situated perspective is urgently needed in the construction of public educational policies, especially in historically marginalized rural contexts.

Policies tend to focus on universal standards which, although necessary, run the risk of homogenizing processes that require precisely the opposite: diversity, flexibility, and meaning. The case of teaching reading and writing in rural areas clearly demonstrates this: learning becomes more meaningful when it starts from the child's experience, their oral language, their context, their questions. It promotes strategies that value prior knowledge and generate writing as a form of communication.

Rural teachers need to reinterpret quality benchmarks in their educational practice. Therefore, the MEN needs to promote practical pedagogical spaces with educators for the reconstruction of regional quality benchmarks that include the student's cultural context and their own learning rhythms. This exercise becomes an experience that builds educational policies contextualized to reality.

Speech accommodation, then, is not simply "changing the way one speaks." It is a dynamic and complex process that involves how we perceive our social environment, how our brain processes that information, and how, consequently, we strategically modify our communication to achieve certain interpersonal objectives, whether building bridges, marking differences, or maintaining the status quo. It is evidence of the incredible flexibility and adaptability of human language in its interaction with society.

Finally, it must be affirmed that the teacher's discourse is much more than the simple transmission of content. Rather, it is configured as a complex communicative act, deeply human—the humanistic dimension cannot be lost—that embodies a plurality of dimensions: cognitive, affective, ethical, and symbolic. In that sense, the teacher's discourse—and even more so that of the rural teacher—is an act in which not only pedagogical knowledge converges, but also formative intentions, emotional bonds, and horizons of meaning that are interwoven in each interaction with their students, thereby granting it understandable sense and significance. It is, rather, a communicative act devised with intentions, affections, and meanings that constructs a space for human encounter.

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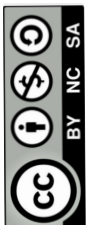
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CPJ	Development of the project idea or concept, conducting research and data collection, writing and editing of the content.
CCAF	Methodological advisor and director of research development. Style correction and content editing.

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Notes on the authors

** Alba Lucía Barajas Lizarazo holds a degree in Early Childhood Education with an emphasis on Art and Play. She is a Specialist in Mathematics Education. She holds a Master's degree in Education from the Universidad Industrial de Santander. She holds a Doctorate in Education from the Universidad Nacional del Rosario (Argentina). She is currently an elementary school teacher at the Institución Aguada de Ceferino in the municipality of Girón (Santander). Email: albalucia0369@yahoo.es

*** Adrián Filiberto Contreras-Colmenares is Professor Emeritus at the Universidad de Los Andes-Táchira. He holds the rank of Titular Professor. Retired. He is a Specialist in Public Management, with a mention in Decentralization of Educational Services. Specialist in Rural Development Planning. Specialist in Administrative Law. Master's degree in Education, mention in Educational Administration. Doctorate in Education, Attorney. PEI Researcher at ULA. He is a member of the Researcher Promotion Program (PPI) No. 6263. He has been an invited professor to Master's and Doctoral programs at various universities. Former Coordinator of Legal Advisory Services for the Directorate of Culture of the State of Táchira. Email: adriancontreras@ula.ve



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