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# CONTRIBUTIONS OF EPISTEMOLOGY TO TEACHER TRAINING IN COLOMBIA: REFLECTIONS ON THE NATURE OF KNOWLEDGE ACQUIRED BY TEACHERS

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## ABSTRACT

*In the Colombian educational context, particularly in teacher education, there is a limited articulation between epistemology and teacher training processes, which hinders the ability to address contemporary educational challenges. Providing an epistemological foundation for teacher education requires rethinking curricula and promoting transformations within the teacher training system in order to contribute to more inclusive, equitable, and high-quality education. The objective of this article is to analyze the contributions of epistemology to the foundations of teacher education in Colombia, identifying the main challenges associated with understanding the nature of knowledge in this field. The study was conducted using an exploratory-reflective approach based on a documentary review of literature related to the epistemology of education and its relationship with teacher education in Colombia. The findings highlight the fundamental role of epistemology in understanding the problems surrounding teacher education and in reflecting on the nature of the knowledge that teachers construct and transmit in their professional practice. The study concludes that integrating epistemology into teacher education is essential for strengthening teacher preparation, fostering a*

*critical understanding of pedagogical knowledge and its relationship with the transformation of educational practice and public policies aimed at improving educational quality.*

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**KEYWORDS:** Teacher Education; Epistemology; Curriculum Reform; Educational Quality; Educational Challenges.

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## 1. INTRODUCTION

Since ancient times, philosophers have sought to understand how knowledge is acquired and what makes it valid. In this context, epistemology is understood as the branch of philosophy that studies knowledge, its foundations, its origin and its criteria of validity. Consequently, it deals with fundamental questions such as: what is knowledge?, how is it acquired?, what is its nature?, what is truth? And what are its validation criteria? These issues are especially relevant in the field of education and, in particular, in teacher training, as teachers must make informed decisions about how to teach, assess, and build knowledge in the classroom.

Epistemology can be defined as a critical and systematic study of knowledge and the conditions that make it possible (Jaramillo, 2003). In the field of teacher training, this field contributes to strengthening the understanding of both specific scientific knowledge and the theories and learning processes that guide the design of educational experiences. In this sense, according to Trejo and Huayta-Franco (2024), epistemology allows teachers to develop more solid criteria to support their pedagogical and evaluative decisions.

In the epistemological field, various currents are recognized that explain the origin and nature of knowledge. Empiricism, for example, holds that knowledge is acquired primarily through experience and observation; Rationalism, on the other hand, affirms that knowledge is based on reason and logic. Likewise, intellectualism seeks to articulate elements of these currents, while pragmatism states that knowledge is validated based on its usefulness and practical efficacy (Echevarría et al., 2023).

Understanding these perspectives is relevant for education, as it allows us to reflect on how knowledge is constructed, taught, and evaluated in educational contexts. In the Colombian case, epistemology can provide theoretical and critical elements that strengthen teacher training, by offering conceptual frameworks that guide the selection of the most relevant pedagogical methods and strategies for teaching and learning processes.

### *Contributions of epistemology to teacher training in Colombia*

In Colombia, the Ministry of National Education has established the Educator Training System as a reference framework to guide teacher training in the country. This system, created in 2013, aims to strengthen the professional capacities of teachers and school administrators, as well as to have a positive

impact on the learning and comprehensive development of students, contributing to the strengthening of their educational trajectories (MEN, 2022; Linero-Racines et al., 2023). However, from an epistemological perspective, this system presents a significant weakness, insofar as it does not clearly explain the nature of the knowledge that teachers must acquire during their training or in the daily exercise of their pedagogical practice.

Padrón (2007) points out that epistemology "constitutes the study of the theory of scientific knowledge or theory of science" (p. 297). Historically, this field has focused on the analysis of the origin, possibility and essence of knowledge, as well as on the criteria that allow establishing its validity and truth. Over time, epistemology has expanded its scope to consolidate itself as an analytical discourse closely linked to scientific research, aimed at understanding paradigmatic models, approaches, and theoretical conceptions that contribute to the development of knowledge (Pieterman-Bos et al., 2024). In the context of this study, these perspectives are relevant to inform the teacher education system in Colombia.

For their part, Barrón Tirado (2015) and Martín (2006) define epistemology as a field that provides foundations of validity and scientific rigor to knowledge. In the field of teacher training, this perspective is articulated with the qualification of the teacher, not only from their pedagogical practices, but also from their research capacity inside and outside the classroom. In this way, epistemology contributes to the analysis of problems, questions and debates related to teacher education. Consequently, the epistemological study allows for the foundation of proposals aimed at strengthening such training through the incorporation of theories and the development of skills that favor significant transformations in the training of Colombian teachers (Trejo & Huayta-Franco, 2024). Along these lines, Zanotto and Gaeta (2018) argue that scientific practice contributes to the construction of new visions of the world thanks to its reflexive nature, which, in the case of teacher training, has an impact on practices related to teaching, learning, and producing knowledge.

In this sense, understanding the contributions of epistemology to the training of the Colombian teacher implies analyzing various theoretical constructs derived from research findings, which are articulated in classical, modern and contemporary approaches. In the Colombian context, it is necessary to train teachers from a comprehensive perspective that articulates their initial training with public

education policies. This means promoting transformative pedagogical practices, based on a critical, reflective, and investigative teaching exercise that resignifies the professional development of the teacher. Consequently, teacher training in Colombia requires a solid epistemological basis that strengthens the value of scientific knowledge and contributes to the improvement of educational quality.

### ***Scientific knowledge within the framework of the Colombian Comprehensive Teacher Training System***

Scientific knowledge, within the framework of the Comprehensive Training System for Colombian Teachers, is conceived as a social, systematic, dynamic and contextualized construction, based on rigorous observation, critical analysis and collective validation. From the theory of institutionality proposed by Schmidt, this knowledge does not reside only in the individual mind, but is institutionalized through formal structures such as universities, teacher training colleges, research centers, and educational policies, which legitimize and transmit socially validated knowledge (Schmidt, 2010; Tatto & Menter, 2019).

Added to this is Von Bertalanffy's systems theory, from which knowledge is understood as part of a complex, open and interdependent system, in which various pedagogical, ethical, political, cultural and social dimensions are integrated and mutually feed back (Von Bertalanffy, 1989). Consequently, scientific knowledge in teacher training cannot be understood in isolation, but in articulation with the multiple territorial and cultural realities of the country, as well as in permanent dialogue with pedagogical knowledge and educational experiences.

In relation to the process of production of scientific knowledge in the field of teacher training, this implies the articulation between theoretical reflection, empirical inquiry, systematization of experiences and social validation. In the light of situated learning theory, this process occurs within communities of practice, in which teachers become active producers of knowledge through interaction, collaborative learning, and the exchange of contextualized knowledge (Wenger, 2001; Siliņa-Jasjukeviča *et al.*, 2025). Similarly, the theory of the teaching profession highlights that this process requires the intentional development of cognitive, ethical, and affective capacities that enable the teacher to transform his or her practice and influence the construction of pedagogical knowledge (Feuerstein, 1990; García *et al.*, 2017). Consequently,

the teacher not only reproduces academic knowledge, but also reconfigures it according to its context, its students and emerging social needs, in a permanent cycle of action, reflection and transformation of practice.

From the perspective of the relationship between scientific theories and observation in the educational field, they act as interpretative frameworks that allow us to understand pedagogical practices based on empirical data and broader conceptual categories. According to systems theory, this relationship is configured within a framework in which each specific observation acquires meaning according to broader organizational levels (Von Bertalanffy, 1989). In this way, teaching practice is no longer understood as an isolated experience and is conceived as part of a systematic and relational dynamic.

Added to this perspective is the contribution of innovation theory, which introduces the strategic component of reinterpreting data and observations as inputs for educational change (Drucker, 1985, 2004). In this sense, theories are not conceived as rigid structures, but as dynamic tools that allow teachers to transform their practice based on the critical analysis of evidence, generating new pedagogical strategies that respond creatively and contextually to educational challenges.

### ***Epistemological contributions from currents of thought: rationalism, empiricism and intellectualism***

Teacher training is a complex process that requires the integration of multiple theoretical and philosophical perspectives to understand the nature of knowledge and its teaching. In this sense, epistemological currents such as rationalism, empiricism, and intellectualism offer relevant conceptual frameworks for analyzing how knowledge is constructed, transmitted, and validated in the educational field.

Rationalism holds that knowledge is based primarily on reason and on the ability of logical thought to understand reality. From this perspective, teacher training emphasizes the importance of theoretical conceptualization, argumentation, and logical analysis as essential elements of the educational process. Consequently, the rationalist approach favors the development of critical and analytical skills in teachers, promoting pedagogical practices based on conceptual coherence, systematic reflection and the theoretical foundation of teaching and learning processes.

Empiricism, on the other hand, states that knowledge originates from sensory experience,

observation, and interaction with reality. In the context of teacher education, this perspective highlights the importance of pedagogical practice, experimentation, and experiential learning. In this way, empiricism contributes to strengthening the development of practical competencies in teachers, by promoting processes of systematic classroom observation, analysis of educational experiences and construction of knowledge from reflective practice.

Intellectualism, on the other hand, proposes an articulation between the experience and the rational activity of the subject, highlighting the importance of deep understanding and critical reflection in the construction of knowledge. From this perspective, teacher training is oriented towards the development of intellectual capacities that allow the teacher to interpret, analyze and problematize educational processes. In this sense, intellectualism promotes a reflective attitude towards pedagogical practice, favoring the critical analysis of knowledge and the permanent search for understanding in the teaching and learning processes.

The integration of these philosophical currents makes it possible to articulate theoretical, practical and reflective dimensions of pedagogical knowledge. A training approach that combines contributions from rationalism, empiricism and intellectualism can contribute to the balanced development of critical, practical and intellectual skills in teachers, thus favoring a broader and more complex understanding of their professional work.

### *Challenges and challenges of the epistemology-teacher training relationship*

Education and teacher training face various contemporary challenges that require a critical and reflective approach. In this context, epistemology emerges as a fundamental reference by providing conceptual and methodological tools to analyze the educational system rigorously (Botha, 2018). This analysis becomes a relevant starting point for identifying areas for improvement in the curriculum and proposing pedagogical approaches capable of responding to the changing needs of society.

From this perspective, epistemology conceives knowledge as a complex, dynamic phenomenon in permanent construction. According to Andrade and Rivera (2024), this vision favors an integrative understanding of education that transcends simplified interpretations of learning. Consequently, epistemology contributes to the formulation of criteria for the analysis, understanding and evaluation of knowledge, allowing the resignification of educational processes and

strengthening more significant evaluation practices in the teaching and learning processes. Likewise, by offering a solid and articulated theoretical framework, it favors coherence between evaluation processes and educational objectives, promoting improvements in the quality and equity of the education system.

In relation to curricular transformation, epistemology allows us to identify the structural roots of various social, economic and cultural problems that affect the education system. In a context marked by the incorporation of new technologies, cultural diversity, and the need for more flexible educational models, education must adapt to social, political, and economic changes to respond to the demands of different population groups (Soto & Rodelo, 2020).

On the other hand, the influence of the State and the community in the formulation of educational policies plays a decisive role in the configuration of the curriculum and educational practices. These dynamics generate tensions that affect both the conception and implementation of educational projects, as well as the construction of a social awareness around the value of education (Martínez, 2018). In this scenario, epistemology contributes to critically analyze these relationships, favoring processes of reflection that guide the transformation of the educational system and teacher training in the face of contemporary challenges.

## **2. METHODOLOGY**

This research is inscribed in a qualitative paradigm of an interpretative nature and is developed through an exploratory-reflective approach, using documentary review as a central technique for the production of knowledge. This approach is adopted because the purpose of the study is not to measure or quantify phenomena, but to understand in depth the conceptual relationships between epistemology and teacher training models in the Colombian context. As Roberto Hernández Sampieri (2018) points out, exploratory studies are relevant when a topic has been little addressed from a specific perspective, since they allow familiarity with the phenomenon, identify key concepts, and establish bases for future research.

In this sense, the documentary review transcends the simple collection of antecedents. According to Fidiás G. Arias (2017), it constitutes a systematic process of searching, selecting, analyzing, and interpreting information from secondary sources. In this study, the documentary corpus was made up of academic articles, educational policies of the

Ministry of National Education of Colombia, documents of the Educator Training System, curricular designs of faculties of education and philosophical texts related to epistemology. This process made it possible to map the discursive and conceptual field on the relationship between epistemology and teacher training, establishing an analytical basis for critical reflection on the phenomenon.

On the other hand, the reflexive nature of the methodology implied a constant and critical dialogue with the sources analyzed, in which the researcher assumed an active role in the construction of meaning. This approach is inspired by the notion of the reflective professional, developed by Tardif and taken up by Núñez (2018), who highlight the importance of reflection as a central component in the understanding and transformation of educational practices. In this study, reflection is used not only as an object of analysis in relation to the teaching practice, but also as a methodological tool to interpret the discourses and perspectives present in the reviewed literature.

The process of documentary analysis was developed in three interrelated phases. First, a heuristic phase was carried out aimed at the search, identification and selection of the relevant documentary corpus. Secondly, an analytical phase was developed, in which a thematic content analysis was applied with the purpose of identifying epistemological currents such as positivism, constructivism and critical perspectives present explicitly or implicitly in the discourses on teacher training. Finally, a hermeneutical or reflective synthesis phase was carried out, in which the findings were interpreted in the light of the objective of the research. This process made it possible to articulate the main tensions, gaps, and epistemological contributions identified in the literature, as well as to outline the challenges faced by teacher training in Colombia from the understanding of the nature of the knowledge that is constructed and taught in educational processes.

### 3. RESULTS

The findings of this study show that the teacher training system in Colombia, although it has experienced significant advances in recent decades, is at an epistemological crossroads. Its current configuration shows tensions between the regulatory framework proposed by educational policies and the reality of training institutions and school contexts. This dissonance is not limited to operational aspects, but is related to conceptions of knowledge that, in

many cases, fail to adequately integrate territorial particularities and pedagogical practices developed in educational contexts. Along these lines, Onofre Galindo et al. (2025) point out that teacher training systems face the challenge of updating themselves to reduce the gap between the pedagogical theory promoted in training programs and the transformative educational practices demanded by the social context, which constitutes, in essence, a challenge of an epistemological nature.

Based on this diagnosis, the results allow us to identify orientations for the strengthening of teacher training. In particular, the need to overcome fragmented approaches that separate initial training, pedagogical practice and educational research is evident. As Bolívar-Osorio (2019) argues, it is necessary to promote a more organic articulation between these components, so that future teachers build their professional knowledge based on critical reflection on their own practice. Likewise, the findings highlight the importance of redefining continuous training, overcoming its conception as an administrative requirement to consolidate it as a permanent process of professional development. This approach implies the recognition of the teacher not only as an executor of educational policies, but as an intellectual and social actor who actively participates in the production of pedagogical knowledge and in the transformation of educational processes.

Finally, the results suggest that strengthening the teacher training system in Colombia requires moving towards more contextualized and inclusive training models. In this sense, the importance of incorporating intercultural, rural, and digital approaches into teacher training curricula is highlighted, in order to respond to the country's social and territorial diversity (Navarro et al., 2025). The construction of a training system with these characteristics would enhance the role of the teacher as a key agent in the processes of educational transformation. However, the success of these transformations will depend on the capacity of the State, training institutions, and educational communities to articulate efforts aimed at consolidating an epistemological vision of teacher training that responds to the contemporary challenges of education.

### 4. CONCLUSIONS

Epistemology maintains a fundamental, dynamic and recurrent relationship with education and with the processes of knowledge construction. In this sense, its incorporation into the educational field

allows us to recognize its role in the formation of critical, reflective and proactive individuals. Thus, the integration of epistemology in education represents a permanent search for transformative educational systems capable of responding effectively to the social and cultural challenges of the present.

Recognizing knowledge as a dynamic process, subject to criticism, change and innovation, places epistemology in a central place for the evolution and continuous improvement of education, pedagogy and other disciplines. Through the critical analysis of human knowledge, epistemology contributes to identifying more pertinent pedagogical approaches and to promoting an educational culture oriented towards the understanding of reality, the questioning of established paradigms and the strengthening of training processes that favor academic development and the formation of critical and participatory citizens.

The importance of epistemology in education also lies in its ability to explore the inherent complexity of

knowledge and educational processes. Recognizing that knowledge is a multifaceted and dynamic phenomenon, epistemology invites educators to consider perspectives associated with theories of complexity, particularly the paradigm of complex thinking, in order to understand more broadly the nature of teaching and learning processes. This perspective allows us to question traditional approaches that have conceived education from hierarchical structures and models of knowledge transmission.

From this perspective, the complexity approach recognizes the interdependence and non-linearity of the multiple factors that influence the educational process, promoting a more holistic approach that takes into account the diversity of cultural, social and cognitive contexts in which education takes place. Likewise, these perspectives invite educators to adopt a more contextualized view of teaching and learning, recognizing the influence of factors such as culture, social environment, and individual experiences in the construction of knowledge.

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