

DIDACTICS AND TEACHER EDUCATION IN A CONTEXT OF CONTESTATION: FOUNDATIONS AND CRITICAL INTERFACES

DIDÁTICA E FORMAÇÃO DOCENTE EM CONTEXTO DE DISPUTA: FUNDAMENTOS E INTERFACES CRÍTICAS

DIDÁCTICA Y FORMACIÓN DOCENTE EN CONTEXTO DE DISPUTA: FUNDAMENTOS E INTERFACES CRÍTICAS

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ABSTRACT

This article presents a literature review of the epistemological status of Didactics and its interfaces with teacher education, drawing on *Didática Crítica no Brasil* (Longarezi; Puentes; Pimenta, 2023) and related scholarship in the field. It seeks to understand how Didactics can resist co-optation by neoliberal and neotechnicist education policies while renewing itself from a critical perspective. The review identified three analytical movements: the affirmation of Didactics as a science of teaching; the tension generated by curriculum standardization; and the proposal for complex and transdisciplinary Didactics, as formulated by Suanno (2015). The findings indicate that innovation cannot be reduced to the adoption of techniques, since it requires intentional pedagogical reorganization that brings together foundations, planning, mediation, and assessment. The article concludes that Critical Didactics, situated in the Brazilian context, calls for reconnecting forms of knowledge and ethical, aesthetic, social, cultural, and political dimensions to sustain practices responsive to diversity in its multiple forms and to the demands of an interdependent world. It argues that undergraduate teacher education programs should incorporate these contributions into curriculum organization and everyday didactic work, strengthening the relationship between theory, practice, and social commitment.

Keywords: Education; complex and transdisciplinary didactics; teacher education; undergraduate teacher education programs.

RESUMO

Este artigo apresenta uma revisão de literatura sobre o estatuto epistemológico da Didática e suas interfaces na formação docente, tomando como referência a obra *Didática Crítica no Brasil* (Longarezi; Puentes; Pimenta, 2023) e produções convergentes do campo. Busca-se compreender como a Didática pode resistir à captura por políticas educacionais de orientação neoliberal e neotecnicista e, ao mesmo tempo, renovar-se em perspectiva crítica. A revisão permitiu identificar três movimentos analíticos: a afirmação da Didática como ciência do ensino; a tensão gerada pela padronização curricular; e a proposição de uma Didática complexa e transdisciplinar, conforme Suanno (2015). Os achados indicam que inovar não se reduz à adoção de técnicas, porquanto exige reorganização pedagógica intencional que articule fundamentos, planejamento, mediação e avaliação. Conclui-se que a Didática crítica, situada no contexto brasileiro, convoca a religar saberes e dimensões éticas, estéticas, sociais, culturais e políticas para sustentar práticas sensíveis às diversidades e às demandas de um mundo interdependente. Defende-se que os cursos de licenciatura incorporem esses aportes na organização curricular e no trabalho didático cotidiano, fortalecendo o vínculo entre teoria, prática e compromisso social.

Palavras-chave: Educação; didática complexa e transdisciplinar; formação docente; licenciatura.

RESUMEN

Este artículo presenta una revisión de literatura sobre el estatuto epistemológico de la Didáctica y sus interfaces en la formación docente, tomando como referencia la obra *Didáctica crítica en Brasil* (Longarezi; Puentes; Pimenta, 2023) y producciones convergentes del campo. Se busca comprender de qué modo la Didáctica puede resistir la captura por políticas educativas de orientación neoliberal y neotecnicista y, al mismo tiempo, renovarse en una perspectiva crítica. La revisión permitió identificar tres movimientos: afirmación de la Didáctica como ciencia de la

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enseñanza, tensión generada por la estandarización curricular y propuesta de una Didáctica compleja y transdisciplinaria, según Suanno (2015). Los hallazgos señalan que innovar no se reduce a incorporar técnicas, sino que exige una reorganización pedagógica intencional que articule fundamentos, planeamiento, mediación y evaluación. Se concluye que la Didáctica crítica, situada en el contexto brasileño, convoca a religar saberes y dimensiones éticas, estéticas, sociales, culturales y políticas para sostener prácticas sensibles a las diversidades y a las demandas de un mundo interdependiente. Se defiende que los cursos de formación docente incorporen estos aportes en la organización curricular y en el trabajo didáctico cotidiano, fortaleciendo el vínculo entre teoría, práctica y compromiso social.

Palabras clave: Educación; didáctica compleja y transdisciplinaria; formación docente; licenciatura.

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INTRODUCTION

In recent decades, we have witnessed how the spread of technicist and neotechnicist education policies has increasingly constrained the role of Didactics, reducing it to strictly utilitarian instructional repertoires. We observe a tendency toward standardization that privileges methods and techniques deemed “efficient” at the expense of critical reflection on educational purposes and the actual conditions in which teaching and learning take place. Against this background, we ask how Critical Didactics brings the epistemological, methodological, and political foundations of teacher education back into focus and reorganizes pedagogical work in undergraduate teacher education programs in dialogue with planning, mediation, and assessment. In other words, our interest lies not only in reaffirming the value of Didactics beyond a set of techniques but also in reclaiming its role as a mediator between theory and practice.

Our purpose is to systematize and interpret the contributions of Critical Didactics to teacher education, drawing on *Didática Crítica no Brasil* (Longarezi; Puentes; Pimenta, 2023) and authors whose work engages with it. We aim to show how Didactics, understood simultaneously as a science of teaching, an academic discipline, a field of inquiry and professional practice, can sustain resistance to neoliberal forms of standardization and renew itself from a complex and transdisciplinary perspective. We begin with the diagnosis that standardized prescriptions produced outside schools through policies and programs are disconnected from situated teaching praxis, which requires reconnecting forms of knowledge and reintroducing the knowing subject at the center of the educational process (Morin, 2007). This mismatch between rigid curricula or teaching *scripts* and the concrete needs of classrooms indicates the need to restore, from a critical perspective, the unity between what teachers think and what they actually do.

Methodologically, we conducted a literature review that was bibliographic, interpretive, and qualitative in nature. As Minayo (2009, p.21) states, qualitative research seeks to understand social phenomena, taking into account that “[...] o ser humano se distingue não só por agir, mas por pensar sobre o que faz e por interpretar suas ações dentro e a partir da realidade vivida e partilhada”. The *corpus* encompasses foundational works of Brazilian Critical Didactics published between 1983 and 2024, with particular emphasis on the edited volume *Didática Crítica no Brasil* (Longarezi; Puentes; Pimenta, 2023) and texts addressing curriculum, teacher education, education policies, and complexity. Text selection followed three criteria: the authors’ position in the Brazilian debate on Didactics and teacher education; direct relevance to the interfaces between Didactics, curriculum, and education policies; and theoretical and epistemological affinity with the perspective of complexity and transdisciplinarity.

Analytical reading and systematic reading notes enabled us to organize the material into three analytical axes that run throughout the article: the foundations and status of Didactics, the contestation generated by standardization policies, and proposals for complex and transdisciplinary Didactics. For these axes, we developed an argumentative synthesis, seeking to identify connections, convergences, and tensions and, on that basis, draw out didactic implications for planning, mediation, and assessment. As this was a literature-based study involving no human participants, ethics committee review was not required.

Three questions guided the analysis: What foundations and interfaces define Didactics in teacher education? How do education policies aimed at standardization affect and, at times, co-opt the field of Didactics? How can Didactics be reconceptualized in teacher education so as to reconnect didactic and pedagogical knowledge with disciplinary knowledge?

The discussion brings together the macro, meso, and micro dimensions of educational policies and practices, situating Didactics in the Brazilian context and connecting broad curricular choices to everyday didactic decisions in the classroom. In doing so, we seek to avoid fragmentation between theory and practice and to affirm Didactics as *praxis* that integrates knowledge, values, and the concrete conditions of teachers’ work.

We organize the discussion into three analytical movements. In the first, we examine the epistemological status of Didactics and its interfaces with teacher education, outlining what this discipline comprises as a field of knowledge and how it engages with Pedagogy and other educational sciences. We then discuss the effects of public policies and educational reforms on the curriculum and teachers’ work, including conceptual and organizational disputes that

alternately affirm the value of Didactics and weaken it. In the third movement, we present how Didactics can be reinterpreted through complexity and transdisciplinarity in undergraduate teacher education programs. Finally, we return to the guiding questions to synthesize the answers we developed, identify the study's limitations, and propose future directions for teacher education.

FOUNDATIONS AND INTERFACES OF DIDACTICS IN TEACHER EDUCATION

The Didactics that concerns us in teacher education transcends a mere set of techniques. It therefore constitutes a space for problematizing teaching, in which questions are raised about the standpoint from which one speaks and the fields with which one establishes dialogue. Didactics, whose object of study is the teaching–learning phenomenon, is situated within Pedagogy, the science that studies educational practices and their purposes. This relationship means that both share a universe of meanings shaped by culture, values, knowledge, and society (Pimenta, 2011, 2023). In this context, Didactics is understood as a dynamic and historically situated science of teaching, continually linked to social, technological, and cultural transformations and called upon to connect theory and practice, to explain “how to teach” but, above all, to question why one teaches, for what purposes and on the basis of which theoretical and methodological conceptions, what to teach, and under what conditions teaching takes place (Longarezi; Pimenta; Puentes, 2023). From this perspective, teaching is not a neutral act but a relationship among historical, cultural, affective, and political subjects. This foundation distances Didactics from mechanistic and reductionist views and brings it closer to an ecoformative understanding of teachers’ work, in which self-formation, heteroformation, and ecoformation mutually implicate and feed back into one another (Moraes, 2021).

From this foundational core, it becomes necessary to examine the multiple determinations that shape didactic work. Didactics takes place within institutions and systems marked by disputes operating at various levels arising from socioeconomic, political, systemic, and organizational environments. In capitalist society, the relationship between the economy, work, and education is a field of ongoing contestation. Yet market rationality tends to impose itself as the organizing reference: value is produced, capital is accumulated, and, on this basis, jobs, professional profiles, and competencies deemed legitimate are defined. Sacristán (2013) shows that knowledge comes to be assessed primarily in terms of its technical and productive utility, a

logic that intensifies in post-industrial society, where information and productivity are taken as the axes of modernization.

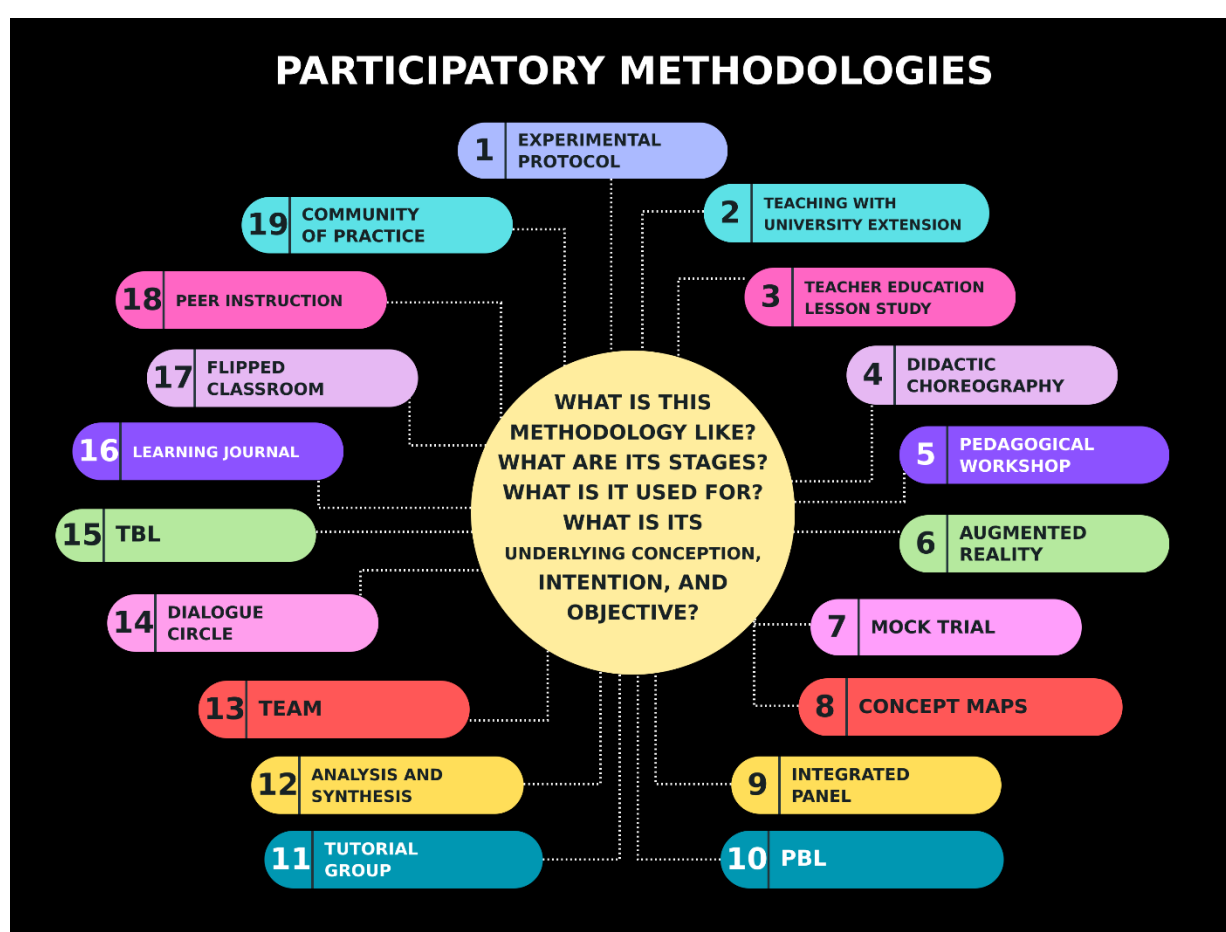
Within this complex context, neoliberal education policies, prescriptive national curricula, standardized external assessments, and the market-driven expansion of higher education seek to align schools with the demands of the globalized market (Suanno, 2016; Marin *et al.*, 2023). They reorganize educational purposes, narrow the curriculum, and often hold schools and teachers responsible for structural inequalities. Multilateral organizations and international agendas reinforce this movement by establishing parameters and indicators that guide reforms and funding. The risk, as Suanno (2015) and Pimenta (2023) warn, is that education shifts away from the democratization of knowledge toward a low-quality quantitative expansion directed at the popular majorities, while teachers educated within weakened systems are blamed for problems that are themselves rooted in systems produced by the expansion of profit-oriented “universidades-empresa” (Pimenta, 2023, p. 20).

In opposition, counter-hegemonic projects continue to advance an understanding of education as a public right, a common good, and a social practice directed toward democracy, social justice, and human emancipation (Longarezi; Pimenta; Puentes, 2023). This perspective does not reject curriculum or assessment; rather, it demands that they be developed through participation, grounded in context, and guided by broader educational purposes. Hence the defense of collective political-pedagogical projects, continuing and situated teacher education, and curricula that accommodate cultural and regional differences. From this standpoint, we wish to emphasize that Didactics is shaped by these competing projects and that planning, mediating, and assessing always entail taking a position. Making these choices visible is a condition for sustaining teacher education consistent with democratic public education.

This tension becomes more evident in undergraduate teacher education programs. Morin (2007) reminds us that thinking about teacher education requires bringing together ontological, epistemological, and methodological dimensions. At the undergraduate level, Didactics is not merely a classroom technique. It entails critical analysis of the assumptions guiding teaching, the ways knowledge is organized, and the institutional conditions in which prospective teachers learn to teach. Nevertheless, many educational processes emphasize “how to do it” while emptying out the “why” and “what for,” making room for the uncritical circulation of discourse on “active learning methodologies.” Adopting a methodology presented as innovative does not, in itself, guarantee an emancipatory education. Everything depends on the conception underpinning it, the student’s place, the teacher’s role, and the context of use.

For this reason, it is more appropriate to reconceptualize them as participatory methodologies (Veiga, 2017) that are emancipatory and critically reflective, so as to make clear that their potential is linked to pedagogical intentionality, teacher mediation, and the interpretation of context. The emphasis thus falls on the participatory and conscious nature of the educational process. Figure 1 schematically illustrates the connections among several methodologies, approaching them through the relationships among their definition, implementation, stages, purposes, conception of learning, pedagogical intention, and context of use.

Figure 1 - CONCEPT MAP OF PARTICIPATORY METHODOLOGIES



Source: prepared by the author (Lopes, 2025) based on Veiga (2017) and Libâneo (2022).

All these methodologies are possibilities that teachers may or may not use or adapt when designing their lessons. What matters is teachers' understanding of the conception and intentionality that underpin their teaching. When the teaching–learning process is grounded in a critical and emancipatory conception, it contributes to dialogue, cooperation in collective study, and the active participation of everyone involved, effectively integrating students' prior knowledge with the intended systematized and contextualized knowledge. Under these

conditions, the learning environment becomes a space for inquiry, dialogue, and the collective construction of knowledge, aligned with the Freirean ideal of education as the practice of freedom (Freire, 2005).

However, if these methodologies are implemented superficially, without the theoretical and practical reflection needed to sustain them, they risk being reduced to a set of technical procedures devoid of broader educational meaning. In some cases, such methodologies are adopted as “ready-made recipes” and, paradoxically, may even reinforce the productivist logic they were intended to overcome. This occurs, for example, when a group activity or an interactive digital technology is adopted simply to make a lesson more appealing or more “efficient,” without clarity about its purpose and meaning. In such cases, innovation is more apparent than substantive and may even reinforce forms of heteronomy, for example, when *design thinking* or gamification is used solely to make a lesson “more fun” or productive according to market criteria, without problematizing content or promoting critical thinking (Libâneo, 2022). The transformative effectiveness of these methodologies likewise depends on underlying structural conditions, including cultural and institutional changes that support innovation, adequate material infrastructure (flexible spaces and accessible technology), and, above all, an environment that values collaboration, mistakes as opportunities for learning, and experimentation.

This is what gives teachers their strategic role. Even in student-centered approaches, teachers continue to play a leading role in pedagogical mediation. They are university-educated professionals (Nóvoa, 2024). They select, organize, and connect forms of knowledge; raise questions; interpret the context; and sustain the ethical climate of the classroom. Far from diminishing teachers’ importance, well-conducted methodologies demand greater preparation and sensitivity from them, not less. They require careful planning and mediation grounded in sound educational theories, enabling students to take responsibility for their own learning critically and self-critically. They also require teachers to prepare students to participate by developing their skills in collaboration, argumentation, listening, and initiative, which are often insufficiently addressed in traditional models.

Critically reflective teachers, as conceptualized by Pimenta and Ghedin (2010), investigate their own practice, observe the effects of their interventions, and consider the objective and subjective elements that influence the teaching–learning process. This reflective process involves deliberate immersion in the world of their own experience and that of their students, encompassing the symbolic exchanges, values, conflicts, and interests present in

everyday classroom life. Reflection thus takes place at the intersection of thought and action, situated within social relations, enabling teachers to continually reformulate their practice (Gómez, 1992).

In this professional capacity, teachers constitute themselves as dynamic cultural, social, and curricular agents, able to make educational, ethical, and pedagogical decisions, develop the curriculum in context, and produce materials and projects in collaboration with other professionals, taking responsibility for what they teach. They are thus education professionals capable of promoting innovative, responsive, and engaged educational practices that address uncertainty and unpredictability with flexibility and intelligence. These qualities are essential to analyzing, intervening in, and resolving complex problems in relation to the historical, social, cultural, and organizational contexts in which teaching practice takes place, with the aim of transforming those contexts (Freire, 2005; Pimenta, 2010; Suanno, 2015).

Teaching is not limited to transmitting content. It includes teaching how to think critically and self-critically, understand and transform schools into spaces for integral human development, and broaden the social function of teaching (Longarezi; Pimenta; Puentes, 2023). At the same time, teaching has an irreplaceable artistic and creative dimension. Schön (1992) describes teachers as professionals who combine science, technique, and art, distinguished by an artistic sensitivity that enables them to navigate indeterminate situations marked by singularities and value conflicts. This sensitivity is expressed in intelligent improvisation, in reading the classroom atmosphere, and in perceiving what remains unsaid, skills that no technical workbook provides.

The education of these innovative teachers needs to provide a broad, integrated repertoire that extends beyond technical mastery to include the philosophical, social, and cultural foundations underpinning educational practices. Innovation, in this sense, means intentionally reorganizing pedagogical action around the relationship between theory and practice and student participation, grounding each choice in reflection on one's own practice and understanding teaching as an ongoing field of inquiry. For this reason, innovative practice should not be equated with simply changing methods; it is a multidimensional and complex phenomenon (Lucarelli, 2009). With a complex repertoire of plural and transdisciplinary forms of knowledge, teachers will be able to plan, implement, and assess coherently and creatively, reconnecting theory and practice to produce didactic innovations that are meaningful to their students. In this movement, competencies and skills come to be conceived more broadly. They cease to be viewed solely in their technical dimension and come to encompass the political, ethical, and aesthetic dimensions

of teaching (Rios, 2010). Pedagogical practice thus becomes more intentional, focusing on human development and sensitivity.

CRITICAL PERSPECTIVES ON DIDACTICS IN RELATION TO EDUCATION POLICIES

The challenges facing education today become more pronounced when we consider how public policies at national and transnational levels increasingly regulate teachers' work and the curriculum. The spread of neoliberal policies generates an ongoing movement of resistance among educators committed to democratic public schooling against classical technicism and neotechnicism, which reappears in the form of standardization, measurement, and control. These models tend to reduce the educational process to indicators of performance, productivity, and quantifiable outcomes, hollowing out the human, ethical, and political dimensions of teaching (Suanno, 2016).

In analyzing the impact of transnational policies on schools and teachers' work, Pacheco (2016) demonstrates how the current educational context is characterized by complex interactions between global directives and local contexts. Supranational organizations such as the Organisation for Economic Co-operation and Development (OECD), the World Bank (WB), and the International Monetary Fund (IMF) now play an active role in shaping global education agendas. These entities impose a view of education that privileges the formation of individuals aligned with market needs, emphasizing skills that respond directly to economic and technological demands.

To achieve these objectives, states are led to adopt new, more managerial forms of governance capable of adapting education systems to this global logic. The result is the transformation of education into a commodity, subjecting it to a neoliberal logic in which the curriculum becomes a transnationally regulated product and undermining its character as a social right and an instrument of emancipation by turning it into a consumer good (Pacheco, 2016). This critical analysis calls into question the effects of this orientation on educational practices and the autonomy of national education systems, challenging them to reflect on the consequences of this commodification and its implications for citizenship education.

When this logic reaches undergraduate teacher education programs, its effects become more apparent. The centrality accorded to efficiency, employability, and competitiveness redirects teacher education toward responding rapidly to labor market needs, reducing the space

for reflection on teaching and the public purpose of schools. Pimenta (2023, p. 18) observes that, within the rationality of educational conglomerates and financial groups operating in the education sector, teachers are viewed as technicians who implement prescribed tasks, with unstable identities, called upon to adopt curricula and materials produced by external bodies. In undergraduate teacher education programs, this is reflected in the reduction of the hours allocated to Didactics or its dilution into purely methodological components, weakening critical debate and distancing prospective teachers from the analysis of policies that affect them.

Against this background, the question guiding this part of the article is: How can we resist and, at the same time, reconceptualize Didactics amid standardizing and market-driven tendencies? One possible path lies in connecting critical thinking with situated pedagogical action. That is, denouncing the co-optation of Didactics is insufficient; practices that escape technocratic control must be created in the everyday contexts of teacher education and schools. These practices include: (a) critical and emancipatory theoretical conceptions and contextualized participatory and collaborative teaching methods that position students as subjects of the process and support autonomy and shared responsibility; (b) curriculum integration responsive to diversity in its multiple forms, valuing students' different worldviews and cultural contexts so as to make schools inclusive spaces for plural cultures and forms of knowledge (Suanno, 2015; 2023); (c) the implementation of emancipatory assessment, that is, assessment practices that, instead of merely measuring performance, encourage students' personal and social development, self-reflection, and continuous growth (Lopes, 2019); and (d) the critical use of educational technologies, exploring their potential to expand teaching and learning possibilities while remaining focused on strengthening reflective and creative competencies and avoiding submission to the ready-made "recipes" offered by *big tech* companies in education.

Exploring Didactics from a critical perspective also involves recognizing that many of the approaches advocated, such as interdisciplinarity, contextualization, project-based pedagogy, and inquiry-based teaching, have been subjects of reflection in education for decades. There is a historical body of reflection and didactic proposals offering alternatives to technicism that needs to be revisited and updated. Over more than 30 years, various critical didactic approaches have become intertwined, always in dialogue with significant political and social transformations. In this sense, navigating the "mar" of the educational act through the waves of Didactics, to use the metaphor proposed by Pimenta (2023), means understanding the historical development of the field. In each new conjuncture, Critical Didactics rises in opposition to technicist approaches and begins to incorporate new and emerging questions.

We briefly revisit this historical and conceptual movement. The “primeira onda” (the 1970s and 1980s), spanning the transition from Instrumental Didactics to Fundamental Didactics, questioned the epistemological status of Didactics, the nature of its object, and its contribution to pedagogical practice in public schools. Vera Candau (1983), among others (Libâneo, 1985), problematized the then-dominant technicism and brought the social and political issues influencing teaching into the field of Didactics. The critical “segunda onda” (1980–2000) can be associated with the reconceptualization of Didactics, incorporating the theoretical foundations of historical-critical pedagogy and reflections on teachers’ social practice (Pimenta, 2011, 2014; Candau, 2001; Libâneo, 2001). During this period, the idea of the reflective teacher and the understanding of Didactics as reconnecting academic knowledge with knowledge derived from practice gained strength. The reconceptualization of Didactics as a field of study, in response to its declining place in undergraduate teacher education programs, was emphasized, highlighting the knowledge required for teaching, teaching practicum as a central and integrating axis of teacher education, and the recognition of the value of teachers’ work and working conditions. The “terceira onda” (2001–2023), in turn, saw a notable flourishing of post-critical and postmodern perspectives on Didactics in resistance to the advance of neoliberal neotechnicism. The contributions brought together by Longarezi, Pimenta, and Puentes (2023) demonstrate this broadening of Critical Didactics, encompassing Intercultural Didactics (Candau, 2023), Reaffirmed Dialectical-Marxist Didactics (Oliveira, 2023), Developmental Didactics (Libâneo, 2023), Multidimensional Critical-Emancipatory Didactics (Pimenta, 2023b), Sensitive Didactics (D’Ávila, 2023), Historical-Critical Didactics (Faria; Saviani, 2023), Critical-Social Didactics (Libâneo, 1985, 2023), and Complex and Transdisciplinary Didactics (Suanno, 2015, 2023; Moraes, 2021). These are different theoretical matrices, but they converge in rejecting the understanding of Didactics as a mere technique and in advocating a Didactics capable of developing proposals connected to projects of emancipatory education.

The purpose of presenting this overview is not to encourage a new dichotomy but to show a living field of Critical Didactics that can strengthen teacher education in the face of standardization policies. *Didática Crítica no Brasil* (Longarezi, Puentes; Pimenta, 2023) is exemplary in this respect because it does not merely denounce technicist hollowing out; it reconstructs Didactics as a political-pedagogical field oriented toward human development and situated in Brazilian reality. By bringing these approaches together, it returns teachers to the center of the educational project and directs schools toward recognizing differences, confronting inequalities, and affirming dignity and emancipation as public purposes of education.

COMPLEX AND TRANSDISCIPLINARY DIDACTICS IN TEACHER EDUCATION

Conceiving of Didactics as essentially complex and transdisciplinary presupposes moving beyond the cycle of fragmentation and prescription and repositioning knowledge as a living fabric. Transdisciplinarity, as formulated by Morin (2007) and Nicolescu (1999), is not a theoretical embellishment but a way of knowing that seeks to reconnect what curricula and policies have separated. It is an emerging paradigm that seeks to overcome the compartmentalization of knowledge and establish an integrated view of reality capable of teaching content in connection with ways of feeling, thinking, acting, and living together. From this perspective, pedagogical work is guided by the principle of reconnecting forms of knowledge rather than by linear accumulation, enabling educational phenomena to be understood in their complex and systemic configuration (Suanno, 2022b).

This movement does not eliminate disciplinary knowledge but repositions it. It acknowledges the importance of specialization while rejecting unidimensional, reductionist, and dualist readings of the educational act, which are highly prevalent in neoliberal policies that rank competencies and standardize performance. By incorporating disciplinarity and interdisciplinarity without denying either, transdisciplinarity broadens teachers' field of vision and offers tools for addressing problems that cannot be contained within a single field of knowledge. This creates space for pedagogical practices that accommodate and connect diverse forms of knowledge, even changing subjects' levels of perception and consciousness, a necessary condition for understanding and transforming a world marked by interdependencies (Morin, 2007; Suanno, 2015).

Transdisciplinary thinking can thus be understood as an exercise in integration and synthesis in which sensitive reason and complex *praxis* go hand in hand. More than a method, it functions as a principle-strategy that reorganizes both knowledge and the pursuit of knowledge. Transdisciplinarity is a path toward changes in lifestyles, policies, and pedagogical practices aimed at the transformation of humanity (Suanno, 2022a). As Suanno (2015) notes, this approach combines reason, emotion, and a transformative attitude, and a Didactics inspired by it needs to be both sensitive and grounded in scientific rigor. Japiassu (2016, p. 3) reinforces this direction by arguing that a transdisciplinary perspective involves contextualizing and globalizing, examining and assessing a problem from several angles in a multidimensional way, and

constructing a transcultural and transhistorical view that enables an understanding of the world in its complexity and of human beings in their contradictions.

Indeed, we can understand that complex and transdisciplinary Didactics, drawing on the perspective set out by Japiassu (2016), promotes the connected and integrated development of teaching, research, and university extension in the construction of knowledge. This is a new critically reflective form of knowledge, collectively produced through dialectics and dialogics, through the contradictions of being, feeling, acting, and existing as human beings in their multiple facets and interpretations, toward a complex understanding of contemporary issues. It is therefore necessary, within the educational act, to know how to think critically and reflectively, to dream and break through the walls of ignorance and the fear of trying something new, and to question and seek answers concerning what already exists and what still needs to be deconstructed in order to transform reality. That is, it entails continually seeking innovative experiences for a better life within society as a collective, transcending love of oneself and self-love toward the harmony of living well in its fullness.

According to Candau (1983) and Moraes (2021), it is important to conceive of an educational approach that values the complexity and interrelationships among the different elements involved in the educational process, excluding none of them, in order to overcome reductionism. The focus shifts from control to relationality, seeking to build more diverse educational ecosystems that bring together times, languages, and spaces and enable school, scientific, cultural, and community knowledge to circulate. It is this kind of environment that supports an inclusive, dynamic, and socially grounded education.

Within this movement, the thesis by Suanno (2015, p. 264) constitutes a milestone by identifying the elements needed for complex and transdisciplinary Didactics in teacher education. The author points to the need to connect multireferentiality, multidimensionality, and autopoiesis³ in establishing connections that broaden understanding and produce pertinent knowledge. She also shows that innovation as *praxis* realigns the purpose of education toward an emancipatory, resilient, and transformative intention aimed at creating paradigmatic ruptures. Innovation comes to be understood as a break with hegemonic models of thinking and organizing

³ The word autopoiesis derives from the Greek terms *autos*, meaning self, and *poiesis*, meaning to produce. Autopoiesis, a term coined by Francisco Varela and Humberto Maturana (1995), describes the capacity of living beings to continually self-organize and produce themselves. In essence, autopoiesis highlights the dynamic and self-sustaining nature of living organisms, emphasizing their capacity for self-regulation and for maintaining themselves in a constant state of flux and renewal (Maturana, 1999, p. 93).

teaching and as an opening to processes of metamorphosis in thought, policies, and social practices, affecting subjects, institutions, and collectivities.

Drawing on these principles and on dialogue with the authors discussed throughout the article, we identify several elements that bring Didactics closer to the horizon of complexity and transdisciplinarity. One is to place complex thinking at the center of teacher education so that prospective teachers learn to connect distinct dimensions of knowledge and address problems that do not fit within linear frameworks. Another is to create spaces for speaking and listening that cross fields and languages, bringing science into dialogue with art and with cultural, ancestral, and plural forms of knowledge. This is where resources such as meta-themes, meta-viewpoints⁴, and meta-concepts become meaningful because they help weave together apparently dispersed experiences. Likewise, didactic mediation needs to unite theory, practice, and lived experience, calling subjects to self-reference and shared responsibility for the educational journey. None of this can be sustained without emotionally healthy, dialogic, and enjoyable learning environments that attend to affective and ethical dimensions, since complex thinking is impossible when life is treated as incidental. Teacher education needs to recognize movements of self-formation, heteroformation, and ecoformation, acknowledging that people learn in many spaces and can autonomously organize their ways of learning. Finally, consciousness and social responsibility are central ethical cores of education, valuing the plurality of ideas and the dialogic management of conflicts and contradictions, indispensable elements for sustaining the dynamics of complexity and lifelong learning.

In light of all these elements, embracing complex and transdisciplinary Didactics means organizing the educational journey into cycles of study, observation, intervention, and reflection, reconnecting pedagogical, disciplinary, and contextual knowledge. Consequently, the learning process is reconceptualized: it ceases to be transmission or passive reception and becomes a process of personal and autopoietic construction (Maturana; Varela, 1995; Maturana, 1999). From this perspective, students cease to be spectators and become authors of their own journeys, self-eco-organizing within their learning processes. Learning takes place by connecting self-knowledge with knowledge of the world in a process that is simultaneously individual and collective, subjective and objective. Knowledge is constructed through students' dialogue with

⁴ The term meta-viewpoints is used here to designate reflective positions that, inspired by Morin (2007) and Nicolescu (1999), enable forms of knowledge of different kinds to be compared and connected without reducing them, producing a second-level perspective on disciplinary viewpoints themselves. This requires a perspective capable of reconnecting what is separated, confronting complementarities and antagonisms, and considering the context, the whole, and the parts simultaneously. A meta-viewpoint is a space of mediation that does not eliminate differences but creates a zone in which they can enter into dialogue.

objects of knowledge, mediated by the teacher, and is influenced both by external references (multireferentiality) and by each learner's internal subjective processes. Education comes to be seen as an opportunity to promote students' dialogue with themselves, with others, and with the world, in a movement that attends to self-referentiality through multireferentiality (Moraes, 2021; Suanno, 2023).

Teacher education guided by this complex and transdisciplinary Didactics invites prospective teachers to consider the fundamental nature of educational practice and its relationship with reality; to reflect on how teachers and students interact in educational contexts; to recognize the complexity of the human relationships involved and the multiple dimensions (cognitive, affective, cultural, political) of educational practice; to use transdisciplinary approaches to construct knowledge by connecting theory and practice; to value formative, participatory, and emancipatory assessment; to explore the use of educational technologies critically; to broaden learning possibilities by encouraging students' autonomy and responsibility; and to reconnect knowledge of the social dynamics present in the teaching-learning process and in teacher education (Suanno, 2015; Morin, 2007).

This perspective also has a political consequence: pedagogical practices that encourage critical thinking, cooperation, respect for diversity, and ecological awareness contribute to active citizenship and planetary consciousness, as proposed by Morin (2003). These multiple forms of consciousness make it possible to address global challenges without losing sight of local reality.

Recognizing the processual nature of this construction, we acknowledge that consolidating critical, complex, and transdisciplinary Didactics within teacher education curricula requires continuity in research and institutional efforts. There is an open field for studies that follow how these proposals reach undergraduate teacher education programs and the obstacles they encounter. Yet what can already be affirmed is that this horizon enhances teachers' capacity to interpret and intervene and helps them resist co-optation by policies that seek to reduce them to implementers.

FINAL CONSIDERATIONS

Throughout this article, we have sought to show that changing teaching is not the same as changing methods. The change that matters for teacher education arises from another source,

located in the purposes of education and in the conceptions of knowledge and the subject that guide pedagogical work. When these foundations shift, techniques can acquire new meaning; when they remain untouched, innovation becomes an ornament. We question the place of Didactics precisely because it is where these choices become visible.

We affirm that Didactics, when understood as a science of teaching, an academic discipline, a field of inquiry, and a field of professional practice, plays a structuring role in teacher education. It should not be treated as a subject devoted to techniques or as a lesson manual in undergraduate teacher education programs, but as an organizing component that connects foundations, practices, and the teaching practicum. This place is justified because Didactics is the space where educational purpose, conceptions of knowledge, and actual teaching conditions are brought together. This brings it closer to educational projects committed to democracy, social justice, and public schooling and distances it from merely instrumental uses. In teacher education, this means recognizing that teachers need to connect pedagogical knowledge, disciplinary knowledge, and ethical, aesthetic, social, cultural, and political dimensions to interpret the context and decide what and how to teach.

The sources analyzed show that standardization policies inspired by neoliberal and neotechnicist agendas tend to narrow the field of Didactics by prescribing competencies, aligning curricula with indicators, and holding teachers responsible for the effects of structural inequalities, shifting the focus from mediation to performance. In this situation, Didactics becomes a mere application of protocols. Even so, the recent debate in *Didática Crítica no Brasil* points to openings for resistance through collectively developed political-pedagogical projects, contextually grounded curricular proposals, recognition of the value of teacher autonomy, and participatory methodologies grounded in a critical perspective that maintain students as emancipatory subjects rather than users of techniques. When this happens, Didactics once again mediates between policies and the classroom, making visible the positions taken in the field and preventing teachers' work from being reduced to meeting targets. It is possible to counter technicist and market-driven logic through a democratic and humanist view of education.

The third question guided our synthesis of proposals. Reconceptualizing Didactics in teacher education involves adopting the horizon of complexity and transdisciplinarity, as formulated by Suanno (2015, 2023), Morin (2007) and the authors Longarezi, Pimenta and Puentes (2023). This means reconnecting scientific, pedagogical, and experiential knowledge, recognizing the multidimensionality of the educational act, and intentionally reorganizing planning, mediation, and assessment to support participation, reflection, and emancipation.

Innovation on these grounds is neither the collection of methods nor adherence to a trend; it is the realignment of pedagogical action with the project of human development embraced by the undergraduate teacher education program. This is the path toward restoring unity between teachers' thinking and doing and repositioning teachers as the knowing subjects of their own practice.

The debate on active learning methodologies helps make this visible and reinforces the point we have defended throughout this article. No method is neutral. Libâneo (2023) shows that the same strategies for student "activation" may be co-opted by an instrumental rationality aligned with neoliberal reforms that demand flexible and self-regulated subjects, or may be appropriated by a sociocritical rationality that connects participation with problematization and the public purpose of schools. What defines their meaning is not the technique itself but the political-pedagogical horizon, institutional conditions, and teacher mediation. Incorporating this perspective into the debate on Critical Didactics means affirming that innovation is not a matter of replacing one lesson sequence with another, but of embedding participatory practices in a pedagogical project that reconnects theory and practice, preserves teachers' place as subjects who interpret the context and select what is educationally pertinent, and keeps visible the question of whose interests classroom activities serve.

From a more practical standpoint, the study indicates that undergraduate teacher education programs still need to incorporate the contributions of Critical Didactics explicitly into curriculum organization, teaching practicum, and continuing education activities. This requires institutionalized collective times and spaces for analyzing policies, interpreting the actual conditions of teaching, and creating emancipatory practices so that these do not depend exclusively on individual initiatives. Further empirical studies can explore how these proposals reach classrooms and what institutional support is needed to prevent them from dissolving into generic prescriptions.

Moving in this direction, Critical Didactics remains both a theoretical horizon and a practical task for preventing teacher education from being co-opted by market logic and for reaffirming its commitment to public education, Brazilian reality, and democracy. It calls on those involved in teacher education to reconnect forms of knowledge and human dimensions in order to broaden understanding, sensitivity, and consciousness concerning life, the world, and the issues under study.

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