

Universal Design for Learning and Co-teaching in teacher education: a theoretical-analytical essay on inclusive practices¹

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ABSTRACT

This article aims to analyze, from a theoretical and analytical perspective, how Universal Design for Learning (UDL) and Co-teaching can be articulated in teacher education, in order to strengthen inclusive pedagogical practices in Basic Education. Methodologically, the study is configured as a theoretical-analytical essay of a qualitative nature, based on the interpretative analysis of national and international academic productions that discuss teacher education, inclusive education, UDL and collaborative teaching. The analysis was developed from the construction of thematic pillars, allowing to identify conceptual convergences and complementarities between the investigated approaches. The results indicate that the articulation between UDL and Co-teaching enhances curricular flexibility, collaborative planning and equitable access to the curriculum, contributing to the construction of learning environments that are more responsive to diversity and to the strengthening of a democratic, ethical and inclusive school culture, supported by teacher co-responsibility and the valuing of differences.

KEYWORDS: Teacher education. Universal Design for Learning. Co-teaching.

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Desenho Universal para Aprendizagem e Coensino na formação de professores: um ensaio teórico-analítico sobre práticas inclusivas

RESUMO

O presente artigo tem como objetivo analisar, em perspectiva teórico-analítica, como o Desenho Universal para Aprendizagem (DUA) e o Coensino podem ser articulados na formação de professores, de modo a fortalecer práticas pedagógicas inclusivas na Educação Básica. Metodologicamente, o estudo configura-se como um ensaio teórico-analítico de natureza qualitativa, fundamentado na análise interpretativa de produções acadêmicas nacionais e internacionais que discutem formação docente, educação inclusiva, DUA e ensino colaborativo. A análise desenvolveu-se a partir da construção de eixos temáticos, permitindo identificar convergências conceituais e complementaridades entre as abordagens investigadas. Os resultados indicam que a articulação entre DUA e Coensino potencializa a flexibilização curricular, o planejamento colaborativo e o acesso equitativo ao currículo, contribuindo para a construção de ambientes de aprendizagem mais responsivos à diversidade e para o fortalecimento de uma cultura escolar democrática, ética e inclusiva, sustentada pela corresponsabilidade docente e pela valorização das diferenças.

PALABRAS CLAVE: Formação de Professores. Desenho Universal para Aprendizagem. Coensino.

Diseño Universal para el Aprendizaje y Coenseñanza en la formación del profesorado: un ensayo teórico-analítico sobre prácticas inclusivas

RESUMEN

El presente artículo tiene como objetivo analizar, desde una perspectiva teórico-analítica, cómo el Diseño Universal para el Aprendizaje (DUA) y la Coenseñanza pueden articularse en la formación del profesorado, con el fin de fortalecer las prácticas pedagógicas inclusivas en la Educación Básica. Metodológicamente, el estudio se configura como un ensayo teórico-analítico de carácter cualitativo, fundamentado en el análisis interpretativo de producciones académicas nacionales e internacionales que abordan la formación docente, la educación inclusiva, el DUA y la

enseñanza colaborativa. El análisis se desarrolló a partir de la construcción de ejes temáticos, lo que permitió identificar convergencias conceptuales y complementariedades entre los enfoques investigados. Los resultados indican que la articulación entre el DUA y la Coenseñanza potencia la flexibilización curricular, la planificación colaborativa y el acceso equitativo al currículo, contribuyendo a la construcción de entornos de aprendizaje más sensibles a la diversidad y al fortalecimiento de una cultura escolar democrática, ética e inclusiva, sustentada en la corresponsabilidad docente y en la valoración de las diferencias.

PALABRAS CLAVE: Formación del profesorado. Diseño Universal para el Aprendizaje. Coenseñanza.

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Introduction

The consolidation of the right to education for all students, especially those who constitute the eligible public for Special Education, has mobilized debates and research in the educational field around the construction of inclusive pedagogical practices. In this scenario, the role of teachers takes center stage, requiring training processes that enable teachers to face, in a critical and purposeful way, the challenges imposed by the diversity present in Basic Education classrooms. However, despite the normative and conceptual advances related to school inclusion, weaknesses persist in teacher education, especially when it comes to the articulation between inclusive principles and pedagogical practices effectively accessible in school daily life.

In this context, it is necessary to invest in training approaches that promote curricular flexibility, intentional planning and collaboration among teachers as structuring principles of pedagogical work. Two approaches have stood out in the field of inclusive education for their transformative potential: Universal Design for Learning (UDL) and Co-Teaching. The UDL proposes a pedagogical planning that considers, from its conception, the

variability of learners, guiding the provision of multiple means of engagement, representation and action and expression, in order to eliminate barriers to learning. Co-teaching, in turn, is based on co-responsibility between teachers of basic and special education, promoting collaborative practices that expand the possibilities of attending to diversity in the context of the regular classroom.

Although both approaches present theoretical recognition and evidence of contribution to the promotion of school inclusion, there is a theoretical gap in the literature regarding the articulated analysis between UDL and Co-Teaching in the context of teacher education. Given this gap, it is relevant to invest in analyzes that seek to understand the conceptual, methodological and formative convergences between the UDL and Co-Teaching, considering its implications for the qualification of inclusive pedagogical practices.

In this regard, this article aims to analyze, from a theoretical and analytical perspective, how UDL and Co-Teaching can be articulated in teacher education, in order to strengthen inclusive pedagogical practices in Basic Education. Methodologically, the study is configured as a theoretical-analytical essay of a qualitative nature, based on the interpretative analysis of national and international academic productions that discuss teacher education, inclusive education, UDL and collaborative teaching.

The scientific justification of this essay thus lies in the need to move beyond fragmented analyzes, offering an integrated reading that highlights the formative potential of the articulation between UDL and Co-Teaching. By systematizing convergences and complementarities between these approaches, the study seeks to contribute to the theoretical deepening of inclusive education and subsidize future empirical investigations, training proposals and educational policies aimed at building a democratic, accessible and socially just school.

Methodology

This article is characterized as a theoretical-analytical essay of a qualitative nature, which is justified by its interpretative and reflective power, widely recognized in the field of Education as a legitimate methodological procedure for the problematization of concepts, the construction of analytical syntheses and the proposition of new theoretical articulations (Severino, 2016; Meneghetti, 2011).

Unlike empirical studies based on direct data collection, the theoretical essay allows the researcher to operate analytically on consolidated academic Productions, promoting conceptual displacements and critical interpretations that broaden the understanding of educational phenomena. In this sense, the present study is configured as an interpretative and argumentative analysis, guided by the problematization of the interfaces between UDL, Co-Teaching and teacher education, in the light of the principles of inclusive education.

The analytical *corpus* was constituted by works, scientific articles and academic productions from Brazil and abroad, selected from a literature review conducted using databases such as SciELO, Portal de Periódicos CAPES and Google Scholar. The selection of sources followed criteria of theoretical relevance, recognition in the field of Inclusive Education, recurrence in productions on sad and collaborative/co-teaching, as well as coherence with the objectives of the study.

The analytical process was developed in a progressive and reflective manner, structured in thematic themes constructed *a posteriori*, based on in-depth reading and critical dialogue between the selected works. These themes included: (i) teacher education for Inclusive Education; (ii) principles and foundations of UDL; (iii) collaborative teaching and Co-Teaching as inclusive pedagogical strategies; and (iv) articulation between UDL and Co-Teaching in the qualification of teaching practice. The analysis consisted in the

identification of conceptual convergences, theoretical tensions and complementarities between the approaches, enabling the construction of an interpretative synthesis on their formative potentialities.

The interpretation of theoretical data was guided by a qualitative interpretative approach, in which the meanings attributed to inclusive pedagogical practices were understood as social, historical and contextual constructions (Flick, 2009). This analytical movement favored the problematization of the limits and possibilities of the investigated approaches, as well as the elaboration of theoretical propositions that dialogue with the contemporary challenges of teacher education.

It should be noted that, as it is a theoretical-analytical essay, the study presents as a limit the absence of direct empirical research, not intending statistical generalizations. However, its contribution lies in its conceptual depth, the critical articulation between theoretical frameworks and the proposal of analytical approaches that can subsidize future empirical research, educational interventions and applied studies in the field of inclusive education.

Teacher education for inclusive education

Teacher education is essential for the development of inclusive pedagogical practices, since it is through it that teachers build competencies to meet diversity in the classroom. Nevertheless, the literature still points to significant gaps in teacher education regarding inclusion.

Libâneo (2018) highlights that continuing education should go beyond the simple transmission of content, promoting the development of skills that allow teachers to adapt to the needs of students. Therefore, inclusion becomes an opportunity for collective enrichment of the educational process, benefiting all involved.

For Lima *et al.* (2024), this formation should favor collective reflection and adjustments in pedagogical practices, so that a relationship between

theory and school reality is established. The collaborative education process thus becomes a space to discuss real classroom problems and plan inclusive pedagogical actions.

Pacheco (2014) reinforces that an inclusive school culture depends on training processes that value cooperation, dialogue and co-responsibility among teachers. Thus, learning communities become privileged spaces for the development of inclusive strategies based on critical reflection on school daily life.

According to Santos and Vasconcelos (2025), the creation of training spaces based on an inclusive perspective favors reflective and autonomous processes, overcoming models centered only on learning to do. Maciel and Rocha (2025) complement that inclusive education must be continuous, contextualized and sustained by critical reflection, prioritizing diversity and equity in an intersectional perspective capable of transforming educational practices and promoting a truly liberating education.

Gonçalves and Cirino (2024) argue that in-service professional development is essential for fostering inclusive practices, as it allows teachers to critically reflect on their pedagogical action while they are working in the classroom. According to the authors, this formation favors the collective construction of knowledge and the resignification of teaching practices from the lived reality, bringing the theory closer to the concrete demands of school daily life.

According to Fonseca (2021), in-service professional development should be understood as a legitimate space for reflection and reconstruction of teaching practices, taking place at moments organized and guaranteed by education administrative bodies. These periods are not restricted to technical updating, but represent opportunities for study, dialogue and exchange of experiences among teachers, enabling them to critically analyze their performance and establish relationships between pedagogical practice and the social, political and cultural realities that influence it.

In this perspective, the continuing professional development acts as an instrument of professional strengthening by enabling teachers to recognize the challenges and opportunities in their practice, rethink their teaching strategies and develop new ways of understanding and meeting the students' needs. At the same time, it promotes interaction among teachers, stimulating the collective construction of knowledge and the consolidation of a culture of collaboration within the school.

As highlighted by Fonseca (2021), investing in continuing professional development is not only an institutional requirement, but an essential condition for improving teaching and for the human and professional development of educators, making them more aware of their social role and more prepared to contribute to a critical, inclusive and transformative learning process.

However, the UDL and Co-Teaching emerge as strategies that enrich the educational process and strengthen accessible and collaborative pedagogical practices.

UDL as a basis for inclusive pedagogical practices

UDL constitutes an innovative and strategic approach aimed at promoting educational inclusion, through the elimination of barriers to teaching and learning from the very beginning of the pedagogical planning. Based on advances in Neuroscience and Cognitive Psychology, UDL proposes that the diversity of students has to be considered as a starting point for teaching rather than as a challenge to be overcome after the implementation of pedagogical practices.

According to Zerbato and Mendes (2021), UDL is organized in three fundamental pillars: offering multiple means of engagement, favoring students' motivation and involvement; providing multiple means of representation, ensuring different ways of presenting information; and enabling multiple means of action and expression, allowing students to

demonstrate what they have learned through various forms. These principles provide parameters for teaching that is more inclusive, flexible and responsive to learners' needs. Thus, it becomes evident the purpose of UDL to promote inclusion starting with the pedagogical planning, anticipating barriers and valuing the variability of students.

According to Sebastián-Heredero, Prais and Vitaliano (2022), UDL “allows rethinking pedagogical processes with a view to equity and accessibility”, through curricular flexibility and diversification of didactic strategies. The authors emphasize that this proposal is anchored in the principles of inclusive education, especially when it comes to guaranteeing every students' right to access, participation and quality learning in basic education.

According to Nunes and Madureira (2015), UDL is a pedagogical proposal that helps teachers plan classes capable of meeting the diversity present in the classroom. This approach guides the teacher to identify and eliminate barriers that hinder the learning process, offering students different ways to engage with, understand and express knowledge. Meyer, Rose and Gordon (2014) add that, UDL guides the teacher to plan flexible strategies, capable of meeting the diversity of styles, rhythms and learning needs present in the classroom, promoting inclusive teaching.

Also, Zerbato and Mendes (2018) highlight the importance of breaking with homogenizing practices that still predominate in schools, adopting UDL as a tool to transform teaching practice and overcome school exclusion. This paradigm shift implies recognizing that the curriculum, as traditionally structured, constitutes one of the main barriers to inclusion and, therefore, must be reconfigured in an accessible way from the outset.

Therefore, UDL stimulates creativity and teaching innovation, since its application requires the use of different resources and methodologies to engage students, represent content and enable various forms of expression of learning. This methodological diversity benefits not only students with disabilities, but all those involved in the educational process, strengthening equity and effective participation.

In this context, Sebastián-Heredero, Prais and Vitaliano (2022) point out that UDL should not be understood as a prescriptive model, but as a framework of principles that guides educators in the search for more just, equitable and sensitive pedagogical solutions to the students' real needs. It is, therefore, an ethical, political and pedagogical approach that contributes to the consolidation of a democratic and inclusive school.

The reflections proposed by Sebastián-Heredero, Prais and Vitaliano (2022) dialogue with authors such as Zerbato and Mendes (2018), Nunes and Madureira (2015) and Meyer, Rose and Gordon (2014), as they all recognize the need to reconfigure the curriculum and pedagogical practices to contemplate, in an intentional and planned way, the multiple ways of learning.

Given this, the teacher is encouraged to diversify teaching strategies, resources, materials and forms of assessment, ensuring that students can access content in different ways, express their knowledge in different ways and remain motivated to learn. This approach enables the creation of more flexible and responsive learning environments, breaking with homogeneous practices that have historically excluded students with disabilities and other vulnerable groups.

Collaborative teaching as a strategy for school inclusion

According to Capellini, Zanata and Pereira (2012), collaborative teaching is based on fundamental principles such as commitment, mutual respect, flexibility and the constant exchange of knowledge among professionals. This proposal breaks with the traditional hierarchical logic of the school, in which the knowledge of one teacher prevails over that of another, and establishes an environment in which all educators are recognized as partners in the teaching and learning process.

By promoting dialogue and co-responsibility among teachers, collaborative teaching creates conditions for a more dynamic, creative and sensitive pedagogical work to the diversity of the class. This ongoing

interaction broadens teachers' understanding of the act of teaching and favors the construction of more inclusive and equitable practices. Although everyone involved benefits from the sharing of knowledge, it is the student who gains the most from this approach, by experiencing a more meaningful, accessible and humanized learning process.

For Wood (1998), collaborative teaching represents a strategy that values teamwork among education professionals, based on dialogue, knowledge sharing and co-responsibility. This practice recognizes that collaboration between teachers with different backgrounds and experiences enhances the educational process by allowing the constant exchange of perspectives and the enrichment of pedagogical planning.

In the school context, collaborative teaching offers teachers support in the face of the challenges of promoting inclusion and meaningful learning for all students. By acting cooperatively, educators reflect on their roles, gain a better understanding of the class's demands and jointly build strategies that meet the diversity of learning styles and rhythms. This dynamic strengthens professional identity and the feeling of belonging, making the school environment more integrated and Democratic (Wood, 1998).

According to Mendes, Vilaronga and Zerbato (2014), collaborative teaching is configured as a pedagogical approach focused on combining efforts, knowledge and teaching practices, with the aim of ensuring access, participation and learning for all students. It is a reorganization of pedagogical practices that aims to meet diversity, breaking with isolated and compartmentalized performance.

As highlighted by Capellini, Zanata and Pereira (2012), collaborative teaching is an essential strategy for the promotion of inclusive practices, especially when it involves the partnership between the regular classroom teacher and the Special Education teacher. In this perspective, the planning, execution and evaluation of education are carried out jointly, considering the cognitive, behavioral and social dimensions of students.

The complementarity of knowledge and skills among teachers makes lesson planning more comprehensive and teaching more responsive to students' real needs. Besides promoting learning, this partnership offers mutual support to teachers, fostering collective reflection, helping them tackle daily challenges, and encouraging the search for creative and accessible educational solutions.

According to Capellini (2004), although educational policies and documents recognize collaborative teaching as a path to inclusion, its implementation still faces resistance. Many schools maintain a culture that values individual teaching work, which limits practices based on cooperation and disregards the transformative potential of pedagogical co-responsibility.

The construction of collaborative school cultures is therefore fundamental for the effectiveness of inclusion. Collaborative teaching breaks with hierarchical and fragmented models, favoring an organization in which teachers, administrators and other professionals share experiences, knowledge and decisions, transforming educational planning into a space for exchange and collective construction.

This collaborative posture strengthens teamwork and creates an environment of continuous support, in which challenges are faced collectively. This cultural change increases the quality of education and promotes a more equitable development of students, reaffirming the school as a space for cooperation and inclusion.

Wood (1998) points out that the success of collaborative work depends on the quality of interaction between teachers and clarity about the roles played by each. The collaboration requires a reconfiguration of the way teachers understand their work, their objectives and the articulation between their actions.

In this sense, collaboration is not limited to the sum of efforts, but represents a cultural transformation in the school, in which work ceases to be individualized and becomes interdependent. This dynamic strengthens

teachers' professional development and broadens their ability to respond to students' needs (Wood, 1998).

However, the collaboration between teachers is not established immediately. Gately and Gately (2001) describe stages of development of this practice, ranging from superficial communication to a full collaborative stage, marked by trust and co-responsibility in teaching. The study by Vilaronga, Mendes and Zerbato (2016) highlights this gradual process in the performance of a teaching duo.

Among the benefits observed, it is worth noting that collaborative teaching favored not only special education students, but the entire class, through the adoption of diverse methodologies and accessible resources. Strategies initially designed for a student began to benefit the collective, approaching the assumptions of UDL, albeit implicitly (Alves; Ribeiro; Simões, 2013).

Despite the advances, the literature points out challenges to the implementation of collaborative teaching, such as the lack of time for joint planning, the absence of a consolidated collaborative culture and the lack of adapted resources. Pedagogical difficulties are also highlighted, such as curricular adaptation without fragmentation and the clear redefinition of teaching roles (Wood, 1998).

For Capellini and Zerbato (2019), collaborative teaching is a fundamental strategy for inclusive practices, as it demands shared planning, division of responsibilities and constant negotiation. This practice provides support to the public student of Special Education and pedagogical benefits for the entire class.

The authors emphasize the complementarity roles of teachers: while the teacher of the regular class contributes with subject-specific knowledge, the teacher of Special Education contributes with accessible strategies and adapted resources. This articulation broadens learning opportunities and favors the participation of all students (Capellini; Zerbato, 2019).

In addition, collaborative teaching must be understood as a cultural change and an ethical and political commitment to inclusion, recognizing diversity as a structuring principle of the school (Capellini; Zerbato, 2019).

Mendes, Vilaronga and Zerbato (2014) point out that there is no single collaborative teaching model, but different possible arrangements, such as teaching in stations, parallel, alternating, complementary support or team teaching. The choice must consider the needs of students and institutional conditions, ensuring flexibility to practice.

Finally, collaborative teaching presents itself as a powerful pedagogical practice for the consolidation of the inclusive school, by valuing the singularities of students and expanding the possibilities of teaching and learning. At the same time, studies show the need for continuing education, time for joint planning and institutional support for collaboration to consolidate as a lasting practice.

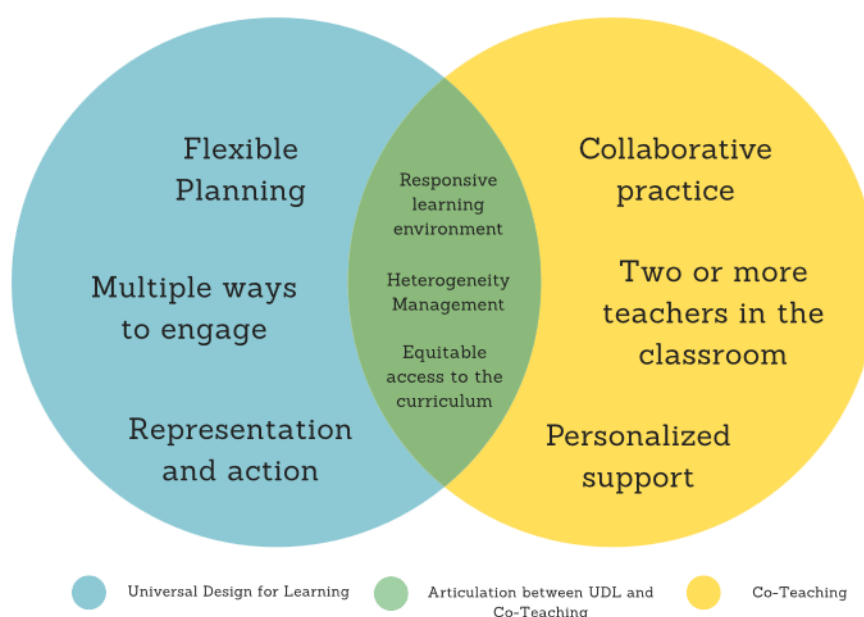
Before moving forward, it is essential to distinguish collaborative teaching and Co-Teaching. Collaborative teaching refers to the organization of pedagogical approaches based on partnership among teachers of basic and special education. Co-teaching, in turn, is a specific modality of this approach, characterized by the simultaneous and co-responsible performance of two teachers in the same classroom space (Mendes; Vilaronga; Zerbato, 2014).

In this study, Co-Teaching is adopted as the central pillar of analysis, because it represents not only a methodological strategy, but an ethical and political commitment to inclusion. By promoting co-responsibility, dialogue and collective reflection, Co-Teaching contributes to overcoming barriers in learning, strengthens mutual support between teachers and favors the construction of a truly inclusive, cooperative and equitable school environment.

Articulation of UDL and Co-Teaching in teacher education

The articulation between UDL and Co-Teaching constitutes an innovative way for inclusive teacher education. Both converge in the recognition of diversity, the elimination of barriers and the valorization of flexible, accessible and collaborative practices. This integration supports a training model based on inclusive planning and teacher co-responsibility, favoring more equitable pedagogical experiences to the needs of all students, in Figure 1.

Figure 1: Combining UDL and Co-Teach



Source: prepared by the authors.

Thereby, when the principles of UDL, based on flexible planning and the use of multiple means of engagement, representation and action, are articulated with the dynamics of Co-Teaching, based on collaborative practice, the presence of two or more teachers in the classroom and personalized support, three central results emerge: the creation of responsive learning environments, the management of heterogeneity and equitable access to the curriculum.

The *responsive learning environments* are configured as spaces that continuously adjust to the evidence of the students' learning, anticipating its variability and ensuring alternatives of access and expression. In this process, UDL provides the basis for multiple ways of teaching and learning, while Co-Teaching enables practical execution in pairs, with co-planning of alternative routes, constant monitoring the engagement and personalized interventions during class.

The *heterogeneity management* results from the combination of the structured differentiation proposed by the UDL and the cooperative organization models of Co-Teaching, allowing differences to be treated as pedagogical resources and not as obstacles. Therefore, flexible groupings, curricular differentiation strategies and formative co-evaluations become recurrent practices in daily school life.

The *equitable access to curriculum* is ensured by the integration between the offer of multiple representations, means of engagement and forms of expression of UDL and the personalized supports of Co-Teaching, which guarantee the participation of all students in the basic curriculum, without the need for exclusions or separations.

This intersection is realized through specific mechanisms, such as co-planning guided by the principles of UDL, Co-Teaching with clearly defined roles, formative co-evaluation based on learning data and short improvement cycles, which allow continuous adjustments in the pedagogical process. In summary, the intersection between UDL and Co-Teaching operationalizes the recognition of diversity and the elimination of barriers, based on cooperative pedagogical relationships, dialogue between forms of knowledge and collaborative action. The result is the construction of more responsive school environments, capable of managing heterogeneity and ensuring equitable access to the curriculum, thus consolidating more democratic and inclusive pedagogical practices.

Santos and Vasconcelos (2025) demonstrate that UDL constitutes a fundamental repertoire for inclusive pedagogical planning, since it guides

the construction of goals, methods, materials and evaluations based on the diversity of students. According to the authors, when their theoretical and methodological assumptions are contemplated during the teacher education course, they contribute to potentiate new forms of involvement and expansion of alternatives, extend the scope of pedagogical practice, foster the problematization of didactic experiences and collaborate to strengthen a culture of the collective.

Co-Teaching allows to operationalize UDL through collaborative experiences during teacher education. An action research study involving elementary school teachers found that training programs based on UDL and collaboration between regular and special education teachers resulted in practices that expanded the participation and learning of students with specific needs (Zerbato; Mendes, 2021).

The articulation between UDL and Co-Teaching represents, in this context, an opportunity to build a new teaching culture, more sensitive to the needs of students and more open to collaboration between professionals. Therefore, investing in training that unites these approaches is investing in a more equitable school model, in which all students have the opportunity to learn and actively participate in school life.

The alignment between UDL and Co-Teaching concretizes the principles established by the Brazilian Inclusion Law (Brazil, 2015), which advocates the offer of an accessible, participatory and quality education for all students, reaffirming the right to learning as a non-negotiable value. Thus, to understand the articulation between these two strategies as a strategic path to inclusion is to recognize that the construction of an inclusive school requires the interweaving of innovative pedagogical practices and collaborative models of teaching performance, capable of transforming not only the methods, but also the school culture.

Next, we analyze the specific contributions of UDL and Co-Teaching, as well as the combined effects of these approaches on pedagogical practice, represented in Figure 2.

Figure 2: Combined contributions and effects in pedagogical practice.

ASPECT	UDL Contribution	Co-Teaching Contribution	Combined Effect
Planning	Anticipating barriers and offering multiple learning formats.	Collaborative planning, taking into account complementary experiences and perspectives.	The creation of a more inclusive and realistic plan that aligns with the diversity of the class.
Implementation	Greater flexibility in methodologies and resources.	The ability to apply different strategies simultaneously.	More opportunities to serve a diverse range of students at the same time.
Individual support	Diversity of access and expression.	An additional teacher to address specific needs during class.	Responsive support without disrupting the class.
Assessment	Multiple formats to demonstrate learning.	Shared observation and ongoing feedback.	A fairer and more comprehensive evaluation, reducing biases.

Source: prepared by the authors.

Therefore, it is possible to observe how each strategy acts individually and in an integrated manner, enhancing the flexibility of activities to meet different educational needs, learning and teaching collaboration. The framework is structured in four fundamental aspects of teaching work: planning, implementation, individualized support and evaluation, demonstrating how each strategy contributes in isolation and how its articulation enhances inclusive and equitable practices.

At *planning*, UDL contributes by anticipating barriers to learning and proposing multiple forms of access to knowledge from the outset, ensuring that the curriculum is designed in a way that is accessible to different student profiles. Co-Teaching, in turn, introduces collaborative planning, integrating experiences, knowledge and complementary perspectives of more than one teacher. The combined effect of these two strategies results in the creation of teaching plans that are more inclusive, realistic and adjusted to the diversity of the class, overcoming the fragmentation between theory and practice.

During the *implementation*, UDL favors the flexibility of methodologies and resources, allowing continuous adjustments that meet the variability of learning. Co-Teaching, on the other hand, broadens this

potential by enabling the application of different strategies simultaneously, since two teachers can conduct different but integrated activities. When articulated, these contributions expand the opportunities to serve different profiles of students at the same time, without overloading the teacher and ensuring greater pedagogical responsiveness.

When it comes to the *individualized support*, UDL ensures diversity of access and expression, creating conditions for students to choose different paths to learn and demonstrate what they know. Co-Teaching complements this perspective by providing the presence of an additional teacher, able to offer specific assistance and support in real time, without interrupting the collective flow of the class. Together, these approaches promote a responsive, continuous and adjusted support to the singularities of each student, balancing individual attention with the general progress of the class.

Finally, in the *assessment*, UDL proposes multiple formats through which students can demonstrate their learning, avoiding restricting the evaluation process to single and exclusionary methods. Co-Teaching, in turn, introduces shared observation and continuous *feedback*, expanding the quality and diversity of views on student performance. The result of this combination is a fairer, broader, and more equitable assessment that reduces biases and recognizes the plurality of ways to learn and express knowledge.

However, while UDL structures an accessible and flexible curriculum from the planning stage, Co-Teaching ensures its practical viability through teaching collaboration. When integrated, both promote more inclusive, equitable and responsive learning environments, consolidating themselves as powerful ways to address the challenges of heterogeneity in basic education classrooms.

Conclusion

The analysis developed throughout this theoretical-analytical essay showed that the articulation between the UDL and Co-Teaching is a consistent

and promising way to strengthen teacher education committed to inclusive education. By operating on consolidated theoretical frameworks, the study allowed us to understand how these approaches, when integrated, expand the possibilities of accessible pedagogical planning, teaching collaboration and heterogeneity management in the context of Basic Education.

The results of the analysis indicate that the UDL offers a powerful conceptual matrix for inclusive curriculum planning, by anticipating barriers to learning and proposing multiple means of engagement, representation and action and expression. Co-Teaching, in turn, enables the operationalization of these principles in school daily life, by promoting co-responsibility among teachers, co-planning and collaborative action in the classroom. The integration of these approaches allows aligning pedagogical intentionality and practical feasibility, overcoming the fragmentation between theory and action that historically marks teacher education.

Assuming the nature of a theoretical-analytical essay, this study did not intend to present empirical generalizations, but to build an interpretative synthesis capable of evidencing conceptual convergences, tensions and complementarities between UDL and Co-Teaching. In this sense, the main contribution lies in the theoretical advance provided by the integrated reading of these approaches, still little explored in the literature on teacher training for inclusive education.

The reflections presented reinforce the need for training processes to systematically incorporate UDL principles articulated to collaborative teaching practices, such as Co-Teaching. Such incorporation demands not only curricular adjustments, but also changes in the institutional culture of schools and universities, valuing collective work, dialogue between knowledge and pedagogical co-responsibility as the foundations of teaching practice.

As limits of the study, its exclusively theoretical nature stands out, which points to the need for future empirical investigations that analyze the articulated implementation of the UDL and Co-Teaching in specific

educational contexts, such as teacher education programs, continuing education programs and professional development practices in service. Research of this nature could deepen the understanding of the impacts of this articulation on teaching practice and student learning.

It is concluded that the articulation between UDL and Co-Teaching represents a strategic way to consolidate pedagogical practices that are more inclusive, equitable and responsive to diversity. By evidencing this convergence, this essay contributes to the academic debate and offers theoretical subsidies for the strengthening of policies, programs and training practices committed to the construction of a democratic and socially just school.

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