

Universal Design Learning (UDL): Socio-interactionist approach uniting to include

Desenho Universal para a Aprendizagem (DUA): Abordagem sociointeracionista unindo para incluir

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Summary

Providing quality education for all students, regardless of their differences and needs, is a challenge that requires the adoption of flexible and effective pedagogical approaches. The objective of this research was to know the scientific productions published in the last five years, about the relationship between Universal Design for Learning (UDL), learning processes and experience of implementing this inclusive approach in educational environments. This being a pedagogical strategy that seeks to meet the diverse needs of students, regardless of their abilities, difficulties or individual characteristics. The method of this study was based on a systematic review conducted on two platforms: SciELO and Capes Journal Portal. "Universal Design for Learning" was used as a descriptor. Abstracts, articles, dissertations and theses in the last 5 years were included. Resulting in the presentation of 3 scientific productions validated by the adopted criteria. The results indicate that UDL can be an effective tool to promote the inclusion and academic success of all students, however we still need to deepen such studies, for the adoption of this methodology mainly in Brazil.

Keywords: Universal Design Learning. Inclusion. Psychopedagogy. Socio-Interactionism.

Resumo

Proporcionar uma educação de qualidade para todos os estudantes, independentemente de suas diferenças e necessidades, é um desafio que exige a adoção de abordagens pedagógicas flexíveis e eficazes. Esta pesquisa tem como objetivo uma revisão das publicações científicas dos últimos cinco anos que relacionam o Desenho Universal para a Aprendizagem (DUA) com os processos de aprendizagem e experiências de implementação dessa abordagem inclusiva em ambientes educacionais, sendo esta uma estratégia pedagógica que busca atender às necessidades diversas dos estudantes, independentemente de suas habilidades, dificuldades ou características individuais. O método deste estudo foi baseado em uma revisão sistemática realizada em duas plataformas: Scientific Electronic Library Online (SciELO) e Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). Como descritor, utilizou-se "Desenho Universal para a Aprendizagem". Foram incluídos resumos, artigos, dissertações e teses publicadas nos últimos 5 anos, resultando na seleção de 3 produções científicas validadas, as quais se encaixam nas métricas definidas pela pesquisa efetuada. Os resultados indicam que o DUA pode ser uma ferramenta eficaz para promover a inclusão e o sucesso acadêmico de todos os estudantes; contudo, é necessário um aprofundamento maior de tais estudos para que essa metodologia seja adotada, especialmente no contexto brasileiro.

Unitermos: Desenho Universal para a Aprendizagem. Inclusão. Psicopedagogia. Sociointeracionismo.

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Introduction

Including is not just offering individualized activities. Thinking about inclusive education implies going beyond a single plan, in order to promote learning opportunities that respect the subject's different abilities. We believe that it is possible to provide experiences that result in real learning, through the use of the guidelines and principles of Universal Design for Learning. According to Mendes (2017), professors at Harvard University, led by David Rose, created, based on Universal Design (in which a group of architects, in the 1970s, founded the idea that the design of environments and products can be designed to allow use by as many people as possible), the UDL approach. This occurred because these teachers were challenged by the challenge of teaching increasingly heterogeneous classes and in an environment characterized by high learning expectations.

According to the Center for Applied Special Technology (2011), DUA assumes some guiding principles, such as: enabling multiple presentations of content, offering forms of action and expression of learning by the student and promoting participation, interest and engagement in carrying out tasks. pedagogical activities. Educational inclusion has been one of the main objectives of educational policies. We find in chapter IV, art. 27 of Law no. 13,146 (2015, n.p.), Brazilian Law for the Inclusion of Persons with Disabilities (Statute of Persons with Disabilities), which:

Education is the right of people with disabilities, ensuring an inclusive educational system at all levels of learning throughout their lives, in order to achieve the maximum possible development of their physical, sensory, intellectual and social talents and abilities, according to their characteristics, interests and learning needs.

Providing quality education for all students, regardless of their differences and needs, is a challenge that requires the adoption of active and flexible methodologies, which allow access to different learning styles. In this context, Universal Design for Learning (UDL) emerges as a promising strategy to

promote inclusion and ensure that all students have equity in learning opportunities. From an inclusive perspective, the learning process and development of each student is unique. Likewise, this process is dynamic, non-linear, requiring inclusive and continuous pedagogical planning, as pointed out by Mendes (2017).

Therefore, the objective of this study is to carry out a systematic review of the literature, exploring recent scientific productions related to the research topic, offering a comprehensive view of the connection between UDL and learning processes in Basic Education. In this way, by adopting a socio-interactionist approach, UDL presents itself as a strategy capable of facilitating learning for all students, personalizing it according to their individual educational needs.

Method

The methodological path of this systematic review study began with a search in two digital libraries: the journal portal of the Coordination for the Improvement of Higher Education Personnel and Scientific Electronic Library Online, using the descriptor "Universal Design for Learning".

As inclusion criteria, the following were adopted: abstracts, reviews, articles, dissertations and theses published in the last 5 years (2018-2023), in the Portuguese language. In order to find the articles, the title was read, followed by the summary and complete work. The selected studies underwent a critical reading to confirm their eligibility for inclusion in the study. Another inclusion criterion was the inclusive practice aimed at teaching children and adolescents in Basic Education.

On the Capes Periodicals Portal, 120 productions were obtained, applying the "período" filter (from 2018 to 2023), 105 productions; with the filter "idioma - Português", 15 productions were obtained in total. On the SciELO platform, without filter, 10 productions were obtained. Applying the "período" filter (from 2018 to 2022), 8 productions; with the filter "idioma - Português", 7 productions were obtained in total, totaling 22 scientific productions on the topic with the adopted criteria.

After eliminating duplication between the two platforms, 18 productions were found, with 4 productions found on the SciELO Platform being on the Capes Periodicals Portal, and one production being duplicated within the Capes platform itself, totaling 17 productions (3 productions on SciELO and 14 on the Capes Periodicals Portal).

For the analysis, productions that have as their theme the use of UDL in Basic Education, in Portuguese, were selected, validating 7 productions. After reading the summary, 2 productions were excluded: one because it was a literature review in English and the other in Spanish. One of the publications listed on the Capes Journal Portal was not available for access.

After reading the full text, we excluded one more publication because it was a subject focused on Higher Education. Once the analyzes and application of the adopted restrictions were completed, 3 productions were selected, which will be discussed below, as shown in Chart 1 and Figure 1.

Results

The three productions related to the theme of the research proposal will be presented, which met the established criteria. Sebastián-Heredero (2020), in

his article *Diretrizes para o Desenho Universal para a Aprendizagem (DUA)* presents a translation of the book developed, whose objective is to disseminate the Universal Design for Learning Guidelines, seeking to develop ways to facilitate students with disability access to the general curriculum.

Zerbato and Mendes (2021), in the article *Desenho Universal para a Aprendizagem na formação de professores: da investigação às práticas inclusivas*, aim to investigate a teacher training program based on UDL, aiming to eliminate the need to carry out individual activities for students with disabilities.

According to the authors, the results showed convergent and divergent elements among the findings of this investigation and theoretical studies about the topic. It was concluded that training strategies based on the assumptions of UDL and collaboration proved to be enhancing tools in the teaching actions development consistent with diversity, as well as in the initial and continuing training of professionals.

Cenci and Bastos (2022) propose in their theoretical essay a synthesis between individualized planning and collective planning, organized, respectively, in proposals such as Planejamento Educacional Individualizado (PEI) and Universal Design for Learning.

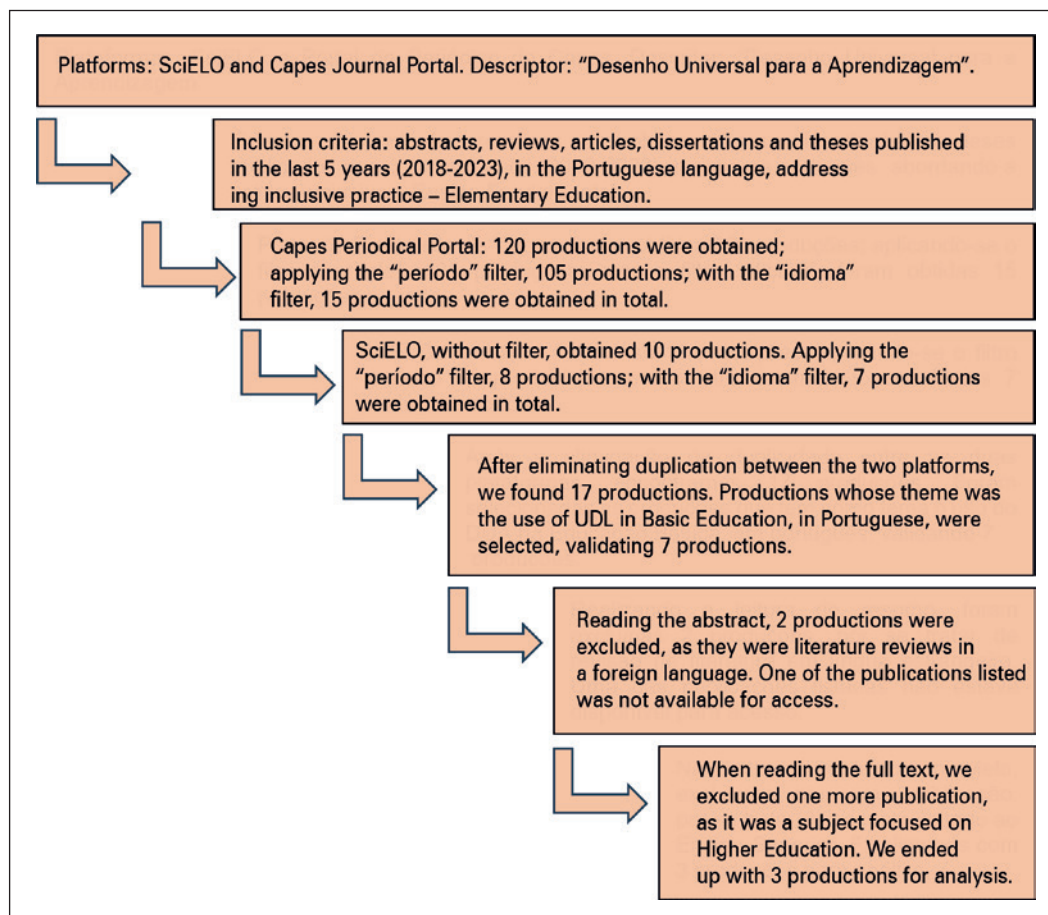
Chart 1

List of analyzed articles

Author	Title	Purpose of work	Year of publication
Cenci e Bastos	<i>Escola para todos e cada um: proposta de síntese entre planejamento coletivo e planejamento individualizado</i>	Propose a synthesis between individualized planning and collective planning, organized, respectively, in proposals such as Planejamento Educacional Individualizado (PEI) and Universal Design for Learning.	2022
Sebastián-Heredero	<i>Diretrizes para o Desenho Universal para a Aprendizagem (DUA)</i>	Translation and revision.	2020
Zerbato e Mendes	<i>O desenho universal para a aprendizagem na formação de professores: da investigação às práticas inclusivas</i>	Investigate whether a teacher training program based on this theme would result in practices that achieve greater participation and learning among the target student of Special Education in the regular classroom.	2021

Figure 1

Article selection flowchart



According to the authors, instead of polarizing the different teaching planning designs, the potential of a collaborative planning proposal that brings together both the collective (DUA) and the individual (PEI) to build a synthesis that overcomes limitations is understood, preserving the essence of each of these methodological approaches.

Discussion

Sebastián-Heredero (2020), in his article *Diretrizes para o Desenho Universal para a Aprendizagem (DUA)*, presents and disseminates the Universal Design for Learning Guidelines, considered essential tools for its implementation, a structure to improve and optimize teaching and learning for all people.

Still according to this author, the conceptual basis of UDL is based on neuroscience, emphasizing the Vygotskian concept of Zone of Proximal Development (ZPD), using scaffolding, which is the process by the child is helped while he has not acquired skills to perform a specific task alone. These scaffolds can be removed gradually, as the child is able to carry out these activities alone.

Center for Applied Special Technology (2018) proposes that UDL activities be designed to access all people, excluding the need to prepare specific activities for each individual, through 3 guiding principles of accessibility, namely: I) enable multiple ways of *representing* content; II) offer multiple forms of action and *expression* of learning by the student and; III) promote participation, interest and

engagement in carrying out pedagogical activities. The guiding principles of the UDL can be better defined below.

Principle I – enable multiple ways of presenting content: we have different ways of accessing information, some people have more visual, auditory or even tactile skills. Even people considered typical access information in different ways. Therefore, the UDL proposes that information can be offered in different models, so that everyone has access to it. Example: present the word “flower”, the image of a flower and show a flower.

Principle II – offer multiple forms of action and expression of learning by the student: just as we do not receive information in the same way, we do not express learning in a standard way. The UDL recommends that multiple ways of expressing learning be validated. Example: use of painting, singing, speaking, writing.

Principle III – promote participation, interest and engagement in carrying out pedagogical activities: being effectively inserted in a learning process demands understanding and interest. There is no way to be interested in learning something that doesn't motivate us, that doesn't make sense. Affect and emotions are closely linked to this principle, as they are also motivators of interest in learning. Promoting spaces for exchange and feedback about the activities, as well as learning trails, are possibilities for engagement.

According to Alicia Fernández (1991, p. 47), “to learn two characters are necessary, the *ensinate* and the *aprendente* and a bond that is established between them”. In Psychopedagogy, the *aprendente/ensinate* concept concerns singular subjective/objective positions, in relation to knowledge, acting simultaneously in all bonds and in each member of the bonds: whether student-teacher, parent-child or husband-wife and others, therefore going beyond the school context (Fernández, 2001).

In this way, being attentive to what the student brings to us means paying attention to the possibilities highlighted by this subject. Vieira (2002) states that we must listen to the subject, their relations,

their desires, in which psychic instances are translated into and with language, in a dynamic way. This way, we will be able to understand their thought, language and learning processes.

The social psychologist Vigotski (2000) carried out some studies about the relation between thought and language and proposed that the study of this should be done through its common unit (the product of analysis, which, unlike the elements, preserves all the basic properties of the whole, and cannot be divided without losing them).

He found, in the meaning of the word, the unity belonging to both thought and language. It is in the meaning of the word that thought and language come together and form linguistic thought, thus dominating and guiding thought through egocentric speech, becoming the main way of thinking from inner speech.

It is through the adults' speech (and the community in general) that the child begins to develop their own speech. The adult, in addition to stimulating the child's communication, stimulates their intellectual development, helping them in what they cannot yet achieve alone. Vigotski et al. (1991) state that the beginning of cognitive development is interpsychic (arising from the relation between the psyche of the adult and the child).

We consider that development evolves as follows: the primary function of speech, both in children and adults, is communication, social contact. The child's most primitive speech is essentially social. At first, it is global and multifunctional: later, its functions become differentiated. At a certain age, a child's social speech is divided very clearly into egocentric speech and communicative speech (both forms, communicative and egocentric, are social, although their functions are different).

Egocentric speech emerges when the child transfers social and cooperative forms of behavior to the sphere of inner and personal psychic functions (Vygotsky, 2000).

Children are bombarded by linguistic stimulation from the beginning of their existence and that

doesn't mean they start speaking as soon as they are born. This event leads us to think that language is realized through successive stages, according to the constant updating of certain increasingly mature organic potentials.

The children, aged between two and six, talk to themselves while playing. This speech is called egocentric speech, and its emergence marks the beginning of the cognitive function of language at the intrapsychic level. Thought and language now become interdependent. Language starts to organize and guide the child's thinking.

The emergence of verbal thought and language as a system of signs is an important moment in the development of the human species, the same occurring with the child who passes from the pre-verbal phase of thought development and the pre-intellectual phase of language development.

The concept of "practical intelligence" is developed, in which the child is capable of solving everyday problems by acting in the environment without the mediation of language. Vigotski (2000) works with two basic functions of language, considering that the main function is that of social exchange: it is to communicate with others that man creates and uses language systems. The second function concerns generalizing thought, as language, as an instrument of thought, originates the real.

Language, in addition to having a communicative function, also serves as an organizer and planner. The acquisition of language causes a pattern of cognitive development in the child, as all cognition becomes determined by language, which is influenced and shaped by socioeconomic and cultural characteristics.

Therefore, when the Universal Design for Learning guidelines are observed, the need to make the appropriation of language accessible, it can be written or spoken, becomes clear. As UDL guideline 2 explains, a symbol can help the understanding of content, or make it difficult, if the student does not understand its meaning. In this sense, it is important to present the material in different ways.

For Vigotski (1989), the meanings of words constantly change throughout child development.

The author differentiates "meaning" from "sense", the first being socially shared, while the second is particular to each individual, created from their history, arising from dialogue, depending on the contextual situation and the interlocutors. This is considered the most important aspect in verbal communication, speaking and understanding it.

The concept that the word assumes, both in inner speech, as in outer speech, refers to a categorization, a generalization and not to a single object. Even though the meaning changes throughout child development, this does not indicate that the level of generalization and abstraction changes. It is from the world views provided by the adult that the child develops conceptual thinking.

The beginning of categorization in children is the perception of similarities. The notion of similarity already implies a certain degree of abstraction, as the child will need to separate the characteristics of objects, compare what they have in common and recognize them as similar.

Vigotski (1989) pointed out three stages of categorization during child development: the first is disorganized aggregation, in which the child groups objects randomly, without looking for similarities. The second stage is the organization by complexes, grouping in a concrete and factual way, not abstract and logical.

At the end of this phase, the child's speech is similar to that of the adult, but the meaning given to the words is different. It is in the complex phase that the child begins to develop abstraction, by grouping objects with maximum similarity. This form is followed by grouping based on a precursor of true concepts, called a "potential concept".

In order to reach the true concept, the child needs to have developed the capacity for abstraction, the ability to isolate the attributes of the object beyond the concrete experience and the capacity for synthesis. In this framework, concepts have a measure of generality.

In the complex phase, the child does not perceive this general relation. Only at the most advanced level of thought is the individual capable of perceiving the general relations among concepts, forming

their conceptual system. In this way, the person is able to develop new concepts, independent of the concrete situation.

Learning a certain content will only boost and direct the development of mental functions that have common elements to the content learned. The learning creates a Zone of Proximal Development. The ZPD is the difference between the level of potential development, which is determined through the child's ability to solve problems under the guidance of an adult or in collaboration with more capable people, and the level of actual development, in which the child's mental functions development is established as a result of certain development cycles that have already been completed (Vygotsky, 1989).

Vygotski (2000) also separated two types of concepts: the scientific concept, which is learned formally, normally at school, and the spontaneous concept, acquired in everyday life. For him, when the child develops the scientific concept, he also modifies the spontaneous concept. Vygotski (2022) reaffirms the condition for the constitution of higher psychological processes through social mediation, that is, resulting from interaction with peers.

According to Zerbato and Mendes (2021) and Cenci and Bastos (2022), in their articles on Universal Design for Learning in teacher training, the schooling of children with disabilities was carried out in isolation, that is, with specific objectives and several of the students in the regular classroom. It was a curriculum focused on disabilities rather than abilities.

Zerbato and Mendes (2021) also highlight that the non-existence of a disability is not a factor that guarantees academic success, since even students considered typical present difficulties in the schooling process, while proposing activities within the principles of the UDL has the potential for greater success.

It is believed that the concept of UDL dialogues with Vygotski (2022) when referring to "Vygotskian defectology", which is a perspective based on his theories, centered on understanding and addressing the learning and development difficulties of individuals with disabilities.

According to Cenci and Bastos (2022, p. 3): the term Defectology and others used by Vygotsky in his time, today sound pejorative, and this text does not intend to endorse a discourse of prejudice. However, it is important to note that words that do not have an equivalent translation (such as Defectology) and direct references to Vygotsky's writings will maintain terms used a century ago - for example: abnormal, normal and abnormal child, defect, muteness, retardation/ mental delay.

Vygotsky (2022) highlights the importance of the social and cultural environment in cognitive development and suggests that adequate support can help overcome limitations and promote the development of people with disabilities.

It's important to highlight what Cenci and Bastos (2022, p. 4) propose in their theoretical essay, a synthesis between individualized planning and collective planning, organized, respectively, in proposals such as Individualized Educational Planning and Universal Design for Education. Learning:

It should be noted that the juxtaposition of regular class work and special education is not enough; it is necessary to build collaborative work that directs the work of the different actors that make up the school around the same objective: the learning process and the construction of scientific concepts by students with disabilities.

If we talk about theories or approaches related to learning and development difficulties in individuals with disabilities, we can consider using terms such as "defectology", "developmental psychology", "inclusive education", "education psychology" or "educational intervention" (Vygotsky, 2022).

In the view of Cenci and Bastos (2022, p. 9): Human development occurs through the appropriation of signs and tools in social activity. It is therefore necessary to have appropriate mediations for everyone, as signs and tools are often formatted for a specific type of activity per person's standard, and those who diverge will not have access to the social and cultural substrate that would allow them full participation in society.

It is necessary to create special cultural instruments, adapted to the psychological structure of this child, or else to master general cultural forms with the help of special pedagogical procedures, because the primordial and decisive condition for cultural development (use of psychological instruments) is preserved in these children (Vygotsky, 2022).

Based on Vygotsky's theory, Cenci and Bastos (2022) corroborate the importance of systematization and intentionality of pedagogical practice, considering and respecting collaborative work from the perspective of inclusive education. This inclusive approach proposes a revolution in pedagogical practice, bringing accessible tools.

According to the principles of Universal Design for Learning, as seen previously, three forms of accessibility are considered to meet the needs of all students: representation, expression and engagement.

By adopting these principles and guidelines, UDL seeks to make education more inclusive and meet the diversity of student needs in a flexible, accessible and equity way, promoting fair opportunities for equal access and retention in education for all students.

Considerations

The Universal Design of Learning proves to be an effective approach to promoting educational inclusion, providing a more accessible learning environment for all students.

The findings of this study reinforce the need to mediate teaching based on interpersonal relationships and the use of language as a tool for meaning in the learning process, since language also performs organizing and planning functions.

The experiences reported in this article highlight the benefits of UDL, but also recognize the challenges faced in its implementation. Therefore, it is essential that educational institutions continue to invest in teacher training and resources adaptation to ensure that UDL is widely adopted and contributes to truly inclusive education.

The few productions identified indicate that this is still a little explored topic and it concerns researchers and educators the task of understanding the different methodological approaches. Therefore, the dissemination of this practice can be a significant step towards a fairer and more equitable society, in which each individual has the opportunity to develop their potential.

In conclusion, the implementation of Universal Design for Learning represents a crucial step towards promoting inclusive education, ensuring that all students have access to meaningful and effective learning, regardless of their individual abilities or characteristics. It is proposed to continue studies in order to implement the principles and guidelines of the UDL in educational institutions, with the intention of operating, in fact, on the principles of inclusive education for all.

By adopting UDL, educational institutions can create enriching learning environments where diversity is valued and equity is prioritized. The flexibility provided by UDL strategies allows educators to meet the unique needs of each student, offering adequate support for the full development of their skills and potential.

Furthermore, DUA also benefits educators, allowing them to approach content in a more comprehensive and innovative way, stimulating creativity in lesson planning. In an increasingly inclusive world, UDL stands out as an effective and fundamental approach to ensuring that no one is abandoned in the pursuit of their knowledge and personal growth.

References

- Brasil. Lei n. 13.146, de 6 de julho de 2015. (2015). *Institui a Lei Brasileira de Inclusão da Pessoa com Deficiência (Estatuto da Pessoa com Deficiência)*. Presidência da República. https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/113146.htm
- Cenci, A., & Bastos, A. R. B. (2022). Escola para todos e cada um: proposta de síntese entre planejamento coletivo e planejamento individualizado. *Roteiro*, 47, e27402. <https://doi.org/10.18593/r.v47.27402>
- Center for Applied Special Technology. (2011). *Universal Design for Learning guidelines version 2.0*. Cast.

- Center for Applied Special Technology. (2018). *Universal Design for Learning Guidelines version 2.2*. Cast. <http://udlguidelines.cast.org>
- Fernández, A. (1991). *A inteligência aprisionada: abordagem psicopedagógica clínica da criança e sua família*. Artes Médicas.
- Fernández, A. (2001). *O saber em jogo: a psicopedagogia propiciando autorias de pensamentos*. Artmed.
- Mendes, R. H. (2017). *O que é desenho universal para aprendizagem?* Diversa. <https://diversa.org.br/artigos/o-que-e-desenho-universal-para-aprendizagem/>
- Sebastián-Heredero, E. (2020). Diretrizes para o Desenho Universal para a aprendizagem (DUA). *Revista Brasileira de Educação Especial*, 26(4), 733-768. <https://doi.org/10.1590/1980-54702020v26e0155>
- Vieira, E. M. (2002). O papel da fonoaudiologia na constituição do sujeito. *Clínica de Atendimento Psicológico, Boletim*, 21(16), 36-38.
- Vygotsky, L. S. (2000). *A construção do pensamento e da linguagem*. Martins Fontes.
- Vygotsky, L. S. (2022). *Fundamentos de defectologia*. Edunioeste.
- Vygotsky, L. S., Luria, A. R., & Leontiev, A. N. (1991). *Linguagem, desenvolvimento e aprendizagem* (3ª ed.). Ícone.
- Vygotsky, L. S. (1989). *Pensamento e linguagem*. Martins Fontes.
- Zerbato, A. P., & Mendes, E. G. (2021). O Desenho Universal para a Aprendizagem na formação de professores: da investigação às práticas inclusivas. *Educação e Pesquisa*, 47, e233730. <https://doi.org/10.1590/S1678-4634202147233730>



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