COMPLEX EDUCATIONAL DESIGN AND TRANSDISCIPLINARY ATTITUDE: REFLECTIONS UPON A RELEVANT FABRIC

DESIGN EDUCACIONAL COMPLEXO E ATITUDE TRANSDISCIPLINAR: REFLEXÕES SOBRE UMA TESSITURA PERTINENTE

DISEÑO EDUCATIVO COMPLEJO Y ACTITUD TRANSDISCIPLINAR: REFLEXIONES SOBRE UNA TESITURA RELEVANTE

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ABSTRACT: The offer of online and hybrid language courses has been clearly intensified, especially in the post-pandemic period, when institutions, teachers and students realized the relevance of these environments for building and developing linguistic knowledge. These courses have been grounded on different theoretical basis and, not unusual, exclusively on empirical practice, fruit of a speculative experience which, without consistent foundations, end up overvaluing the technological resources they use as a strategy for attracting and keeping students. Given this scenario, the aim of this article is to discuss the complex educational design as a basis for creating courses which, by potentially promoting greater interpersonal interaction and the adoption of a transdisciplinary attitude, reducing the asymmetry of roles among participants, and encouraging shared negotiation of content and activities, as well as articulating knowledge of various kinds, may open significant space for the complex transdisciplinary construction of knowledge.

KEYWORDS: Online/hybrid language courses. Complex Educational Design. Complexity. Transdisciplinary attitude. Transdisciplinarity.

RESUMO: *A oferta de cursos de idiomas, on-line e híbridos, tem se intensificado de forma marcante, especialmente no período pós-pandêmico, quando instituições, professores e alunos constataram a importância desses contextos para a construção e desenvolvimento de saberes linguísticos. Esses cursos têm se pautado em diferentes vieses teóricos e, não raro, exclusivamente na prática empírica, fruto de uma experiência especulativa que, sem fundamentos consistentes, acaba por supervalorizar os recursos tecnológicos de que lançam mão como estratégia de captação e manutenção de alunos. Diante desse cenário, este artigo tem por objetivo discutir o design educacional complexo como fundamento para a criação de cursos que, ao promover maior interação interpessoal e a adoção de uma atitude transdisciplinar, diminuam a assimetria de papéis entre os participantes. Além disso, busca-se incentivar a negociação compartilhada de conteúdos e atividades, articulando saberes de diversas naturezas e proporcionando um espaço significativo para a construção complexa e transdisciplinar de conhecimentos.*

PALAVRAS-CHAVE: *Cursos on-line/híbridos. Design Educacional Complexo. Complexidade. Atitude transdisciplinar. Transdisciplinaridade.*

RESUMEN: *La oferta de cursos de idiomas en línea e híbridos se ha intensificado notablemente, sobre todo en el período pospandémico, cuando instituciones, profesores y alumnos se percataron del potencial de estos entornos para la construcción y el desarrollo del conocimiento lingüístico. Estos cursos se han basado en diferentes sesgos teóricos y, en no pocas ocasiones, exclusivamente en la práctica empírica, fruto de una experiencia especulativa que, sin fundamentos consistentes, acaban sobrevalorando los recursos tecnológicos que utilizan como estrategia de captación y fidelización de alumnos. Ante este escenario, el objetivo de este artículo es discutir el diseño educativo complejo como base para la creación de cursos que, al promover potencialmente una mayor interacción interpersonal y la adopción de uma actitud transdisciplinar, reducir la asimetría de roles entre los participantes y fomentar la negociación compartida de contenidos y actividades, así como articular saberes de diversa índole, abren un espacio significativo para la compleja construcción transdisciplinar del conocimiento.*

PALABRAS CLAVE: *Cursos en línea/híbridos. Diseño educativo complejo. Complejidad. Actitude transdisciplinaria. Transdisciplinariedad.*

Introduction

In the realm of Brazilian Applied Linguistics, the integration of technological resources into language teaching and learning has spanned over 30 years. Initiated with Freire's dissertation (1992), this fruitful and intriguing investigative approach has guided teaching and research through paths denoted by expressive acronyms (e.g., CALL, CMC, and EaD[2], These paths have pioneered and continue to expand the synchronous and/or asynchronous use of digital resources for established and new purposes.

Since then, the offering of language courses has been progressively intensifying and becoming more sophisticated, revealing a growing preference for online courses delivered remotely via videoconference platforms or virtual learning environments, as well as hybrid courses that combine the specificities of both in-person and virtual formats. This trend was particularly notable during the global pandemic, which lasted for approximately two years, and has become a feasible and relevant alternative in the post-pandemic period. During this time, institutions, managers, teachers, students, and their families recognized the potential of instrumental combinations and digital environments for constructing and developing linguistic content.

In light of this scenario, this article aims to provide a detailed proposal for structuring the development and offering of courses. Its objective is to discuss *complex educational design* (Freire, 2013, 2018; Freire; Sá, 2020), associating it with the development of a *transdisciplinary attitude* (Nicolescu, 1999; Moraes, 2008). By potentially encouraging interpersonal interaction, reducing participant asymmetry, and generating shared role negotiation, these basic pillars can significantly contribute to the complex and transdisciplinary construction of new knowledge. To achieve this goal, the proposed design is detailed in its structure and functioning, in conjunction with the development of a transdisciplinary attitude experienced as content is presented and negotiated by the involved agents, who thereby become intricately engaged in this fabric through activities and the shared construction of knowledge.

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[2] These acronyms designate, respectively, *computer-assisted language learning* (CALL), *computer-mediated communication* (CMC) and *distance education* (EaD).

CED: a *complex educational design*

Complex educational design (Freire, 2013, 2018; Freire & Sá, 2020) constitutes a substantial proposal for the development of courses and educational activities (in-person, hybrid, and/or online) based on the principle of integrating knowledge and breaking the fragmentation and linearity notable in the still-prevailing mechanistic or Newtonian-Cartesian paradigm (Guimarães, 2020). Intentionally termed *educational*, CED

> addresses being, knowing, and especially knowing-how-to-do, dealing with content that is reflected, reflexive, articulated, and negotiated by students and teachers, aiming to meet the needs and expectations of both—highlighting its predominantly customized nature. Conceived as educational, CED aims to form the whole human being for the local and global reality in which they live, rather than for a specific discipline or area of expertise (Freire; Sá, 2020, p. 93, emphasis added, our translation).

Grounded in complex epistemology, rooted in the conception that Edgar Morin articulates throughout his work, CED has proven to be a valuable ally in overcoming the dominant, disjunctive, and unidimensional educational paradigm, which preserves disciplinary boundaries and prioritizes knowledge of the parts over the whole. Contrary to this perception of reality, complex thinking contributes to Complex Educational Design (CED) with its proposal of connection and articulation between parts and the whole, which are linked and mutually reinforcing, constituting an open and unfinished system. Therefore, CED finds its identity in the epistemology that constitutes and sustains it, transferring to the three constructs that compose it—*preparation, execution*, and *reflection*—a hologrammatic seal that provides interconnection and interdependence while simultaneously promoting recursive and dialogical paths that reveal its systemic nature.

Initially conceived as support for the design and development of online English courses (Freire, 2013), but valuing its complex and transdisciplinary DNA, CED has been efficiently employed in other areas, modalities, and environments, demonstrating the potential to "form the whole human being in the local and global reality in which they are situated, more than [*forming specifically*] for a discipline or area of expertise" (Freire; Sá, 2020, p. 93, our translation). Its constructs are interconnected and operate in a correlated manner, seeking to address the foreseeable elements of a course design while recognizing that unpredictability and uncertainty may lie in the peripheral zones of any educational activity and that, therefore, the

potential impact of the "ecology of action"[3](Morin, 2000, p. 86-87, our translation) cannot be overlooked.

The starting point is preparation when creating a course based on the CED proposal. This phase includes all the detailing and initial decision-making up to the drafting of a first outline that contains not only the predictable, mandatory, and supplementary elements (i.e., objectives, content, activities, resources, and materials, for example) but also an awareness of potential deviations from the plan due to the emergence of unforeseen events and uncertainties that may suggest the adoption of alternative routes. *Preparation* thus outlines the basic structure of the course, its "backbone" (Freire, 2013, p. 179; Freire; Sá, 2020, p. 94, our translation), which is organized by the following elements[4]:

- *Initial identification:* Identification and mapping of the needs, expectations, desires, interests, preferences, learning and teaching styles, prior experiences, and prior knowledge of students and teachers;
- Contextual information: Observation of institutional rules and norms, course duration, specific local/global characteristics, requirements that may affect the teaching-learning process, available physical resources, and technological supports;
- *Timeline:* Definition of the initial timeline, considering fixed and negotiable deadlines, possible interruptions, and extensions;
- *Environment:* Selection of the in-person and/or virtual learning environment to be adopted, as well as the platforms and other technological interfaces—fixed or mobile—to be used;
- *Articulations:* Identification of possible intradisciplinary associations, as well as interdisciplinary and/or transdisciplinary articulations;
- *Objectives and content:* Definition of general and specific objectives, selection of themes/topics that will provide students with interesting, appropriate, or adaptable learning situations for the introduction and development of specific content and/or necessary topics;
- *Structure:* Preparation of the initial course outline and possible sequencing of its content, including the starting point, intermediate alternative paths, and the endpoint, anticipation of likely connections, reconnections, disruptions, and potential situations of order and disorder, as well as feasible ways to resolve or circumvent them;
- *Teaching materials:* Preparation of mandatory and supplementary materials, including tutorials and sources for consultation and reference; and
- *Starting point:* Development of the possible progression of the first learning situation.

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[3] According to Morin (2000, p. 86-87, our translation), "As soon as an individual undertakes an action, whatever it may be, it begins to escape its intentions, [...] it enters a universe of interactions and is finally the environment that takes possession of it, in a sense that may contradict the initial intention." The concept of ecology of action takes into account the complexity that any action entails, i.e., randomness, chance, initiative, and transformation.
[4] The details presented here were reworked by the author, based on a review of the description published in Freire and Sá (2020, p. 93-94).

The next phase of the CED, *Execution*, marks the opening of the course to students and the beginning of interaction between them and the teacher, incorporating the environment, content, activities, resources, materials, and dynamics. This phase is intimately connected to the previous one, allowing the teacher to navigate between both, highlighting that *Preparation* anticipates *Execution*, while *Execution* constantly refers back to Preparation. In general terms, the Execution phase comprises the elements[5] listed below:

- *Implementation:* Introduction of the course in the chosen environment (in-person and/or virtual);
- *Presentation:* Explanation of the environment, interfaces, resources, objectives, dynamics, routines, and evaluation processes (negotiating what is possible);
- *Negotiation:* Discussion about schedules, deadlines, work procedures, and other relevant aspects of each educational context;
- *Development:* Presentation of the first learning situation (according to the pre-drafted outline) and negotiation (implicit or explicit) of its progression, as well as the development and sequencing of subsequent situations;
- *Observations:* Notation of reactions (from students and the teacher) regarding the content, materials, resources, activities, dynamics, comments, inferences, connections, clues, and evidence of (re)construction of knowledge, as well as complaints, difficulties, absences, silence(s), and possible disruptions that occurred;
- *Reflection:* On the learning situations, chosen sequence, and its (in)adequacy; consideration of what is (or isn't) being accomplished and its contribution to the teaching-learning process;
- *Monitoring the development:* Continuous verification of the course, from the perspective of both process and product, to (re)negotiate, replan, redesign (situations, activities), and/or make necessary decisions regarding the sequencing of content, selection of learning situations, and adaptation of resources, tasks, activities, materials, and tutorials.

The next construct that integrates the CED is *Reflection*, which culminates in a critical appreciation of the process in a simultaneous retrospective and prospective movement. Reviewing the previous phases, it is possible to understand that reflective procedures should permeate the entire course from *Preparation* through *Execution* but intensify in the final stage of consideration and evaluation. Specifically, the elements that compose this phase are:

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[5] The details presented here were also reworked by the author, based on a review of the description published in Freire and Sá (2020, p. 94-95).

- *Formative assessment:* Conducted by the teacher throughout the course, either independently or in accordance with institutional requirements and norms (if applicable);
- *Self-assessment:* Carried out by both the student and the teacher during the course, and potentially during intermediate and final stages, depending on the specific context;
- *Critical reflection:* Undertaken by the teacher, encompassing:
    - starting point, development, and endpoint of the cours;
    - nodes and intersections along the way;
    - moments of order, disorder, interaction, and organization;
    - connections and reconnections of knowledge; and
    - knowledge effectively constructed;
- *Transformations:* Recognition of all perceived and/or suggested changes (learning, values, behaviors, etc); and
- *Future perspectives:* Considerations on aspects to be maintained, eliminated, introduced, developed, and transformed.

The constructs that integrate the Complex Educational Design (CED) operate in an interconnected manner, developing a harmonious intrasystem interactive path that intertwines them and allows for continuous transit between them, ensuring the possibility of review, expansion, reduction, and constant transformations. Metaphorically, the constructs are interlinked gears that connect and reconnect in such a way that the movement of one triggers mobility in the others.

From the perspective of the epistemology that originated it, it is essential to highlight that the constructs composing the Complex Educational Design (CED) intermittently intertwine, associating parts and the whole in a spiral of interactions, negotiations, relationships, and constructions that unfold systemically and interdependently. This allows the content developed in various learning situations to act in a recursive and self-sustaining manner, potentially abolishing disjunctions and reductive conclusive syntheses. The *scenarios*[6] generated by the CED, fostering protagonism and partnership between the subjects (students and teacher) in the understanding of the learning object and the ensuing constructions, become conducive to the weaving of diverse knowledge, highlighting its capacity to accommodate and encourage a transdisciplinary attitude, as discussed in the following section.

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[6] The term *scenarios* is used here in accordance with Moraes (2008, p. 142-143) when citing Torre and Gonzalez (2007, p. 3, our translation), and corresponds to "conversational, dynamic and fluid spaces. It is a place of experimentation, dialogue, creation, and discovery, imbued with complexity, revealing the dynamic fabric of life that takes place there. It is, according to these authors, a new didactic and methodological language more in line with an ecosystemic, complex, and transdisciplinary vision in relation to knowledge and learning."

DEC: A Receptive Scenario for a Transdisciplinary Attitude

The proposal of the Complex Educational Design (DEC), as previously outlined, is configured from the determination to create a learning scenario where diverse forms of knowledge intertwine and, in a complex manner, woven together (Morin, 2005), generate the construction of new understandings, reaffirming its transdisciplinary nature. The engagement and interdependence between complexity and transdisciplinarity become evident, as Moraes (2008, p. 125, emphasis in the original, our translation) explains,

> Epistemologically, complexity is one of the constitutive components of the generative matrix of transdisciplinarity. Its dynamics are non-linear, recursive, and therefore of a complex nature. Transdisciplinary thinking, like all complex thinking, is always unfinished, transitory, in constant becoming. Methodologically, transdisciplinary thinking implies unifying, dynamic approaches that are simultaneously broader and deeper, based on *rigor*, *openness*, and *tolerance*, according to Nicolescu (2000). A methodology that highlights the interactions of the whole with the parts, the inseparability existing between subject/object, body/mind, educator/learner, in all the fabrics that govern events, phenomena, actions, and interactions.

The above considerations underscore the existence of an indissoluble connection between transdisciplinarity and complexity, where the former is the epistemological principle of the latter, which in turn corresponds to one of the axioms[7] of the former. Thus, a course design that follows the path of complexity readily reveals a transdisciplinary character emerging from the connections between its contents and their references; from the emergent recursive, dialogical, hologrammatic, and systemic relationships; and the interaction between subject and object conducted in a zone of non-resistance (Nicolescu, 2012) to connections and (re)linkages. This entire articulation contributes to breaking away from an exclusively disciplinary context, which is limiting and restrictive, ensuring that the knowledge constructed is not confined to one field, imprisoned in an "epistemological cage" (D'Ambrosio, 2016), but rather reaches territories where it is embraced in its multidimensionality and multireferentiality.

Transdisciplinarity has been understood as a "transversal dialogue between disciplines, to that which transcends the boundaries of specialized knowledge" (Freire, 2022, p. 183, our translation). However, Nicolescu (2000) deepens this vision, asserting that it emerges

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[7] The axioms of transdisciplinarity (Nicolescu, 2012) emphasize three natures: the first, *ontological* in nature, refers to the existence of different levels of reality of the object to which different levels of perception of the subject correspond; the second, of a *logical* nature, highlights the *included third party* as an element that enables the passage from one level of reality/perception to another; and the third, of *epistemological* nature, highlights the complex structure of the levels of reality/perception, as each one is what it is because they all exist simultaneously.

simultaneously between disciplines, through different disciplines, and beyond all disciplines. This perspective emphasizes the significance of what the traditional paradigm ignored in the interstitial spaces, fostering boundary-breaking relationships that promote the expansion of knowledge that transcends the scope of a specific discipline when constructed. The issue, in this case, is not merely to "put together" diverse knowledge, but, as Nicolescu (2019) emphasizes, to "find bridges between different disciplines, people, cultures, and religions." From this standpoint, transdisciplinarity presents itself as an ontological, epistemological, and methodological conception, and, therefore, does not correspond to a new discipline, but to a *philosophy*, a way of understanding the emergences of inter/intrasubjective interactions with the object, representing, as Moraes (2008) argues, an epistemological attitude of the subject towards knowledge.

As an epistemological principle, transdisciplinarity implies the shedding of the human spirit when experiencing a process that involves a logic different from the traditional, linear, dual, and fragmented one. It thus implies an attitude of acceptance and receptivity, generating a broader understanding of reality and the world; or, in more specific terms, an attitude of *rigor*, *openness*, and *tolerance* (Freitas; Morin; Nicolescu, 1994), conceived under the designation of a *transdisciplinary attitude*.

Resuming the constructs that characterize this type of attitude from the *Charter of Transdisciplinarity* (1994), *rigor* emerges from an argument capable of encompassing and relating relevant data and information, ensuring consistency and avoiding possible deviations and digressions; *openness*, in turn, refers to the acceptance of the unknown, the unexpected, the unpredictable; and *tolerance* relates to the recognition of the right to ideas and opinions contrary to our own. Based on the triptych formed by this triad, a transdisciplinary attitude surpasses a transversal posture that permeates various disciplines, constituting conduct guided by epistemological and methodological precision that selects, organizes, and evaluates content, structuring a solid framework, averse to unilateral visions, segmentation, "error," and "illusions" (Morin, 2000).

Therefore, a liberating attitude of detachment, freeing the mind and spirit, that welcomes the unprecedented and the unexpected, becomes necessary. Alongside these attitudes, the attitude of leniency is added, enabling the identification and consideration of concepts, judgments, and understandings that, at first glance, may seem contradictory and contrary to individual convictions.

The transdisciplinary attitude thus defined finds in the DEC proposal a conducive scenario for its adoption and realization, not only due to the complex and transdisciplinary foundations that characterize it, but also because it encompasses: the inclusion of *rigor* materialized in the choice/presentation of topics and the flexibility of their organization and sequence, making them always interrelated and mutually reinforcing; the *openness* that emerges from the interaction among participants and between them and the topics, materials, and resources, as well as the acceptance of the new and continuous negotiation of meanings and procedures; and the *tolerance* evidenced by the determination to create and maintain spaces that accommodate any emergent issues felt during the course, particularly those contrary to personal convictions.

From this perspective, the Complex Educational Design (DEC) proves to be a pertinent support for the planning and execution of courses in any context and setting. Due to its complex and transdisciplinary nature, the DEC has the potential to prioritize the construction of relevant, situated, and interconnected knowledge (Morin, 2000), being "simultaneously analytical and synthetic, of the parts reconnected to the whole and the whole reconnected to the parts" (Morin, 2007, p.87, our translation). Moreover, the DEC enhances the protagonism of students and the teacher, who, in this context, become partners and co-authors in the teaching-learning process, relating to the object of study in a manner distinct from that advocated by the traditional paradigm.

DEC and Transdisciplinary Attitude: A Pertinent Weaving

Reflecting on the central objective of this article, it is relevant to argue that the use of DEC, coupled with the adoption of a transdisciplinary attitude, provides a foundation for the design, management, administration, and evaluation of face-to-face, hybrid, and/or online courses. This theoretical coupling proves coherent with the implementation of educational proposals that, regardless of the subject matter, resources utilized, and settings in which they are embedded, foster interpersonal interaction, generating role asymmetry and motivating the negotiation of meanings and processes. By interconnecting content and activities in a systemic, hologrammatic, recursive, and dialogical manner, these proposals, through a complex and transdisciplinary approach, facilitate the (re)construction and feedback of knowledge.

This articulation can be materialized by offering *learning situations* that, suggest themes and/or problems, exposing participants to educational experiences that lead them to break away

from a traditional linear logic, a fixed and anticipated programmatic order, leading them, through various languages[8], to engage in social practices that mobilize, connect, and build networks of knowledge, webs generating inconclusive knowledge, always under construction. Thus, a scenario conducive to what Moraes and Torre (2004) term integrated *learning emerges*[9], potent in weaving the experiences that flow during or outside of the course, creating a complex weave, a comprehensive and inclusive learning network that, by articulating theory and practice, occupies the spaces in between, constructing pathways between disciplines, through different disciplines, and beyond all disciplines.

In this sense, the interconnection detailed here contradicts the linearity and fragmentation typical of a traditional view of teaching and learning, centralizing *relationships* (between subjects, content, materials, resources, and contexts) as the fundamental axis of educational action. The weaving between DEC and a transdisciplinary attitude brings advantages of various kinds, regardless of the course focus; however, they seem to gain more intensity in language courses, since language (the course object and mediator of interrelations) brings social practices to life when used for genuine communication by students and teachers who may play different social roles in the ongoing interactions.

Concluding the argumentation developed here, it is possible to highlight that the weaving between DEC and a transdisciplinary attitude can bring significant advantages in terms of: partnership between students and the teacher during the course, but which is established, before that, in the definition of objectives, needs, and expectations of both; *flexibility* generated by the possibility of revising and reformulating content, activities, dynamics, materials, resources, and contexts, characterizing a path *that is being*, contrary to a pre-established and unalterable one; emerging *circularity* in the relationship between content that (re)connects and feeds back into each other, in a continuously recursive circuit; *acceptance and empowerment*, marked by opening spaces for the free expression and manifestation of ideas, opinions, doubts, uncertainties, insecurities, criticisms, and suggestions, mediated by languages; and *living* concrete learning experiences and multidimensional and multireferential construction of knowledge, enhancing understanding of interdependent themes and content, and the

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[8] Defining language as a complex and dynamic system used for conceiving and conveying ideas, thoughts, feelings, and information of all kinds, the various *languages* referred to here can be verbal (i.e., mother tongue and foreign), imagery, sound, and symbolic, in general.

[9] *Integrated learning* is understood as "the product of interactive, recursive, dialogical, self-eco-organizing and complex processes, through which feelings, emotions, sensations, intuitions, imagination and reasoning work in a reticular and articulated way" (Moraes, 2008, p. 132, our translation).

protagonism of participants who engage with the object of study in an epistemologically and methodologically distinct manner from the traditional, promoting the rupture of a still dominant paradigm.

REFERENCES

D'AMBROSIO, U. A metáfora das gaiolas epistemológicas e uma proposta educacional. **Revista do Programa de Pós-Graduação em Educação Matemática da UFMS**, Campo Grande, v. 9, n. 20, p. 222-234, 2016.
.

FREIRE, M. M. **Interação e simulação computadorizada:** uma proposta em CALL. Orientadora: Heloísa Collins, 1992. 176 f. Dissertação (Mestrado em Linguística Aplicada ao Ensino de Línguas) - Pontifícia Universidade Católica de São Paulo, São Paulo, 1992.

FREIRE, M. M. Complex educational design: A course design model based on complexity. **Campus-Wide Information Systems**, [*S. l.*], v. 30, n. 3, p.174-185, 2013. DOI 10.1108/10650741311330357.

FREIRE, M. M. Design educacional complexo: uma proposta de design em ação. Trabalho apresentado na Mesa Redonda "Design Educacional e Cenários Educacionais Complexos" *In:* CONGRESSO INTERNACIONAL ABED DE EDUCAÇÃO A DISTÂNCIA, 24., 2018. **Anais** [...]. Florianópolis, SC: [*s. n.*], 2018.

FREIRE, M. M.; SÁ, Cristiane Freire. Design Educacional Complexo: uma proposta para o desenho de cursos complexos. *In:* LEFFA, V. J.; FIALHO, V. R.; BEVILÁQUA, A. F.; COSTA, A. R. (org.). **Tecnologias e ensino de línguas**: uma década de pesquisa em Linguística Aplicada. Santa Cruz do Sul: EDUNISC, 2020.

FREIRE, M.M. Transdisciplinaridade e narrativas transmídia: uma articulação viável para propósitos formativos. **Letras**, [*S. l.*], v. 32, n. 1, p. 180-197, 2022.

FREITAS, L. de; MORIN, E.; NICOLESCU, B. **Carta da Transdisciplinaridade**. Convento de Arrábida, 1994. Available at: http://cetrans.com.br/assets/docs/CARTA-DA-TRANSDISCIPLINARIDADE1.pdf. Accessed in: 15 Sept. 2023.

GUIMARÃES, C. A. F. **Paulo Freire e Edgar Morin sobre saberes paradigmas e educação**: um diálogo epistemológico. Curitiba: Appris, 2020.

MORAES, M. C. **Ecologia dos saberes**: complexidade, transdisciplinaridade e educação – novos fundamentos para iluminar novas práticas educacionais. São Paulo: Antakarana/WHH – Willis Harman House, 2008.

MORAES, M. C.; TORRE, S. de la. **Sentipensar**: fundamentos e estratégias para reencantar a educação. Petrópolis, RJ: Vozes, 2004.

MORIN, E. **Os sete saberes necessários à educação do *futuro***. Tradução: Catarina Eleonora F. da Silva e Jeanne Sawaya; revisão técnica de Edgard de Assis Carvalho. São Paulo: Cortez; Brasília, DF: UNESCO, 2000.

MORIN, E. **Introdução ao pensamento complexo**. Tradução: Eliane Lisboa. Porto Alegre: Sulina, 2005.

MORIN, E. **Educação e complexidade**: os sete saberes e outros ensaios. Maria Conceição Almeida e Edgard de Assis Carvalho (org.). São Paulo: Cortez, 2007.

NICOLESCU, B. **O manifesto da transdisciplinaridade**. São Paulo: TRIOM, 1999.

NICOLESCU, B. Um Novo Tipo de Conhecimento: Transdisciplinaridade. *In*: SOMMERMAN, A.; MELLO, M. F.; BARROS, V. M. (org.). **Educação e Transdisciplinaridade**. Brasília, DF: Unesco. 2000.

NICOLESCU, B. Transdisciplinarity: the hidden third, between de subject and the object. **HSS**, [*S. l.*], v. 1, n. 1, p. 13-28, 2012. DOI: 10.2478/v10317-012-0002-5.

NICOLESCU, B. **La transdisciplinaridad**. Entrevista feita pelo Instituto Nacional de Antropologia e História, e transmitida pela Rádio INAH, 2019. Available at https://youtu.be/0BOAJFjZ95w?si=Y-kGyKM9jpqOK18L. Acesso: 15 Sept. 2023.

TORRE, S. de la; GONZALEZ, M. **Escenarios**: uma estratégia ecoformadora. Barcelona: Mímeo, 2007.

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