



Transmethods, complexity and inter and transdisciplinary research

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Abstract. Problem: Traditional education and research methods are often rooted in a rigid, linear approach focused on technical applications to test hypotheses and predict outcomes. **Objective:** To provide a new perspective that challenges traditional methodologies by helping to foster innovative strategies that allow for a richer and more complex understanding of the phenomena studied. **Method:** A multidimensional, critical and reflexive study was conducted with a transdisciplinary approach. **Results:** Transmethods offer a path towards truly transformative education and research compared to traditional methods. **Conclusion:** Scientific innovation requires challenging established structures and promoting interdisciplinary collaboration, where transmethods open up new possibilities for knowledge.

Keywords: Complexity, research, interdisciplinarity, transdisciplinarity, transmethods, transmethodologies.

Los Transmétodos, la complejidad y la investigación inter y transdisciplinaria

Resumen. Problema: Los métodos de educación e investigación tradicionales, suelen estar arraigados en un enfoque rígido y lineal, enfocado en aplicaciones técnicas para probar hipótesis y predecir resultados. **Objetivo:** Brindar una nueva perspectiva que desafíe las metodologías tradicionales ayudando a fomentar estrategias innovadoras que permiten una comprensión más rica y compleja de los fenómenos estudiados. **Método:** Se realizó un estudio multidimensional, crítico y reflexivo con un enfoque transdisciplinario. **Resultados:** Los Transmétodos ofrecen un camino hacia una educación e investigación verdaderamente transformadoras en comparación con los métodos tradicionales. **Conclusión:** La innovación científica requiere desafiar estructuras establecidas y promover colaboración interdisciplinaria, donde los transmétodos abren nuevas posibilidades para el conocimiento.

Palabras clave: Complejidad, investigación, interdisciplinaria, transdisciplinaria, transmétodos, transmetodologías.

Os Transmétodos, a complexidade e a pesquisa inter e transdisciplinar

Resumo. Problema: Os métodos tradicionais de educação e pesquisa muitas vezes estão enraizados em uma abordagem rígida e linear, focada em aplicações técnicas para testar hipóteses e prever resultados. **Objetivo:** Fornecer uma nova perspectiva que desafie as metodologias tradicionais, promovendo estratégias inovadoras que permitam uma compreensão mais rica e complexa dos fenômenos estudados. **Método:** Foi realizado um estudo multidimensional, crítico e reflexivo com uma abordagem transdisciplinar. **Resultados:** Os Transmétodos oferecem um caminho para uma educação e pesquisa verdadeiramente transformadoras em comparação com os métodos tradicionais. **Conclusão:** A inovação científica requer desafiar estruturas estabelecidas e promover a colaboração interdisciplinar, onde os transmétodos abrem novas possibilidades para o conhecimento.

Palavras-chave: Complexidade, pesquisa, interdisciplinaridade, transdisciplinaridade, transmétodos, transmetodologias.





Introduction

The reticulated integration between knowledge, research experiences, methods, methodologies and paradigms produces the emergence of novel research perspectives, also called transmethods and transmethodologies. Both, as *complex emergents*, are epistemically supported on the paradigm of complexity and the idea of anti-method of Morin (1977), which identifies and overcomes the explanatory gaps of the dominant explanatory paradigm or paradigm of simplicity (Cartesian, positivist), which broadens the integrative reflection on the objects of investigated studies; objects that in the plane of relational research bear the name of relational fields of knowledge (Andrade & Rivera, 2019).

From a complex perspective, Morin (1973, 1977) believes that the complexity of the phenomena investigated is manifested as an intricate fabric of interactions and intertwined relationships, and they emphasize the impossibility of reducing reality to linear and simplistic explanations, highlighting the need to embrace the uncertainty and fluctuation of such phenomena. Thus, complexity or *complexus* is the result of the dynamic interaction between multiple dimensions and levels of organization, a scenario where the phenomena investigated are revealed as intertwined systems of interdependent elements whose understanding requires an integrative, relational and multidimensional approach.

From this source, transmethods are revealed as novel methodological alternatives for researchers seeking to understand phenomena from a reticulated-rhizomatic perspective that goes beyond the conventional, thus transforming research and scientific *work* in a diverse way. Thus, they account for a relative break with traditional research approaches that quantify or describe reality excessively, thereby contradicting explanatory linearity and methodological reductionism, that is, the limitation of any understanding articulated through excessively simplified and sequential descriptions.

Therefore, they strive to understand and not only explain causally and fractionally the complexity *per se* of phenomena, promoting inter and transdisciplinarity and dialogue between different knowledge. In addition, they encourage creativity and critical reflection, questioning disciplinary assumptions and hierarchies to propose explanatory and comprehensive transformative alternatives. To achieve this, they resort to various aspects, the analysis of relations, inter and transdisciplinarity, dialogic, dialogue between knowledge, contextualization of information and research processes, among other aspects.

In this field, interdisciplinarity accounts for the association between various fields of knowledge, amalgamating their strengths to address complex challenges, hence, in order to achieve them, the disciplines exchange the objects of study and methods, but their limitation is in not going beyond them, a task that is strongly noted in transdisciplinarity. Julie Thompson Klein (1990) has expanded the understanding of interdisciplinary research by pointing out the importance of a holistic perspective for addressing problems that encompass the social, environmental and technological, among others.

Thus, by linking knowledge and methodologies from different fields or areas of knowledge, researchers can generate creative, innovative and resourceful solutions, thereby stimulating creativity and collaborative work. Likewise, interdisciplinary research encourages the emergence of new fields, enriching the scientific panorama and driving collective progress. However, it is transdisciplinarity that goes further and focuses on what emerges dialogically from these frameworks (Nicolescu, 1996, 2009).

Klein (2014) notes that Piaget contributed to the definition of transdisciplinarity at an international seminar on interdisciplinarity sponsored by the Organisation for Economic Co-operation and Development (OECD) in 1970. Piaget believed that the development of general structures and fundamental patterns of thought would lead to a general theory of systems or structures. He saw transdisciplinarity as a higher stage in the epistemology of interdisciplinary relations, based on reciprocal assimilations capable of producing a broader and more comprehensive *general science*.

However, the transdisciplinarity developed as a methodology and method by Nicolescu and the idea of complexus and dialogical commitment from a Morinian complexity perspective (*metadisciplinarity*), constitute the reticulated base that gives shape and emerging meaning to transmethods. It should be noted that over time, various thinkers have advocated more integrative and complex approaches, such as Basarab Nicolescu (1996), Eric Jantsch (1979) and Jean Piaget (1973). However, it was in the 1990s, a transmethodological perspective emerged at the School of Communications and Arts of the University of São Paulo, led by Eliseo Verón (1967), Armand Mattelard (1972) and Jesús Martín-





Barbero (1987) . This interdisciplinary and critical approach made it possible to explore communication from multiple perspectives, integrating diverse theories and methodologies (Andrade, 2023a) .

Similarly, they represent an evolution of transdisciplinarity, promoting collaboration between disciplines and the construction of knowledge from complexity and critical-dialogical thinking (Maldonado, 2019) . In addition, various authors have proposed innovative methodologies that challenge established paradigms and promote a deeper understanding of social reality. An example of this is that the rethinking of research methodologies by Martín-Baró, Fals Borda, Zemelman, Derrida and others highlights the need to adopt reflexive and transformative approaches to address social and cultural changes in a contextualized way. Together, these methodological developments contribute to the provocation of rethinking research approaches, design and methods and generating new forms of knowledge from them.

Transmethods

Transmethods represent an evolution in educational and research practices by disobeying the restrictions of traditional paradigms rooted in Cartesian, positivist, structuralist-functionalist and empiricist thought (Andrade, 2023c) . They are distinguished by their ability to open new horizons in the generation of knowledge, transcending the limitations imposed by conventional methodological approaches. These approaches are characterized by their openness to inter and transdisciplinary dialogue, the integration of diverse methods and the exploration of complexity in the understanding of educational and research phenomena.

Incidentally, Transmethods are revealed as spaces for transformative learning and creation, which go beyond the rigid structures of traditional educational environments (Andrade, 2023b) . They seek to generate a profound change in the way we conceive and approach education and research, promoting the emergence of new knowledge and contextually relevant understandings. Through their open and collaborative approach, they question methodological linearity and polarization, promoting the construction of collectively constructed and contextually significant learning processes.

A fundamental aspect is its capacity to situate knowledge in diverse contexts and foster its associative connection towards new understandings. These approaches facilitate the exchange of ideas, positions and perspectives, as well as the deconstruction of concepts rooted in traditional thinking (Andrade, 2023f) . Since they promote the emergence of new cognitive and anthropoethical visions, they also contribute to the construction of more inclusive and transformative social actions and research approaches.

Furthermore, they disobey the linear hegemony in education and research by promoting a critical and reflective awareness of the multidimensionality of the phenomena studied. Their integrative and collaborative approach allows addressing social and educational problems from a broader and more contextualized perspective, overcoming the limitations imposed by conventional disciplinary frameworks. In this sense, discursive and *practical ethics* play a fundamental role in promoting a learning environment free of ideological coercion and based on integrative relationships that recognize the diversity and complexity of the human being (Andrade, 2023e) .

Finally, they generate innovative educational and research proposals that integrate open, creative, collaborative and transformative learning spaces. They also encourage the association of knowledge, the emergence of innovative ideas and the exploration of uncertainty as a source of learning (Andrade, 2022) . It should be noted that these approaches allow educators and researchers to address contemporary challenges from a more integrative and dynamic perspective, promoting the construction of pertinent and relevant knowledge for a world in constant transformation.

Objectives of transmethods

Transmethods emerge from inter and transdisciplinary dialogue with clear objectives and a transformative propensity that seeks to transcend established educational and research paradigms.





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Their innovative and dynamic approach promotes new paths for the understanding and generation of knowledge. Through inter and transdisciplinarity, they seek to create meaningful, transformative and collaborative learning spaces, where the diversity of perspectives enriches the process (Andrade, 2023d, 2023e, 2023f) .

One of the distinctive features of Transmethods is their ability to deconstruct the linearity and polarization present in traditional methods, paving the way for the emergence of new ideas and approaches. By overcoming the methodological and epistemic limitations inherent to banking and linear models, these approaches become powerful tools for exploring the complexity and uncertainty inherent in reality.

That said, Transmethods represent a radical break from traditional education and research methods, which are often rooted in a linear, experimental, predictive, and banking approach. In contrast to the rigidity and linearity of these conventional approaches, Transmethods challenge the notion of a linear and predictable progression of knowledge. Rather than following a pre-established path, they embrace uncertainty and complexity as inherent parts of the educational and research process.

In contrast, while traditional methods tend to focus on the application of experimental techniques to test hypotheses and predict outcomes, Transmethods take a more holistic and dialogic approach. They recognize that reality is inherently complex and that educational and research phenomena cannot be reduced to controlled variables and predictable outcomes. Instead, Transmethods encourage the exploration of multiple perspectives and the integration of diverse knowledge to address complexity more fully.

They also challenge the banking model of education and research, in which knowledge is viewed as a deposit that is transferred from an expert to a passive learner or student. Instead of this unidirectional and authoritarian approach, Transmethods promote a collaborative and participatory process of learning and knowledge construction. They recognize that knowledge is a dynamic and collective process that is built through dialogue, reflection and joint action.

Likewise, the exploration of uncertainty and complexity becomes a central element of Transmethods, which embrace these characteristics as a source of research and knowledge creation. Through a creative and transformative approach, they seek to build pedagogical and investigative processes that adapt to the context and multidimensionality of human experience.

In this sense, they promote creativity as a driving force for change and research transformation. By critically debating the relevance of traditional knowledge generation structures from different positions and explanatory-epistemic perspectives, they allow the emergence of new ideas, processes and knowledge that can have a significant impact in fields such as the understanding of social and natural dynamics, the educational and research fields, among others.

Methodology

Transmethods, in their methodology, advocate the promotion of inter and transdisciplinary dialogue, transcending the limits of individual knowledge and fostering an enriching exchange that goes beyond the disciplinary and methodological boundaries established. This openness to dialogue between various disciplines and methodological perspectives allows for a more extensive and relational understanding of the phenomena studied.

A fundamental characteristic is its capacity to interconnect methods, methodologies and knowledge derived from diverse disciplines, integrating different explanatory approaches and experiences, hence, from an integrative perspective, it promotes a broader and more enriching understanding of the investigative processes, moving from mere explanation to an articulated and novel understanding.

Consequently, they adopt an intercontextual approach that recognizes the multidimensionality of reality and promotes the permanent connection between different elements. This openness to the diversity of





contexts and perspectives allows for a richer and more complex understanding of the phenomena studied, thus enriching the research process.

Furthermore, Transmethods highlight the importance of collaboration, overcoming dichotomies and polarities between different actors and perspectives. They recognize the diversity of contributions and values, fostering an inclusive and enriching dialogue that transcends traditional barriers between laypeople and experts, scientists and non-scientists.

In their integrative and methodological approach, Transmethods challenge *monodisciplines* and restrictive research methodologies that focus exclusively on calculation, prediction and experimentation. Instead, they promote innovative and *interconnected research strategies* that are expressed through dynamic and emergent relationships between the various elements of the research process.

They also explore the relationship between order and chaos, as well as between certainty and uncertainty, recognizing organization as a self-eco-organizing principle. This complex and multidimensional perspective of reality reveals the intrinsically interconnected nature of the phenomena studied, as well as the emergence of new forms of understanding and transformation in the research process.

Their use has opened up new possibilities in various fields, such as research, education and understanding the multidimensionality and complexity of phenomena, among others. For example, in the field of education, they extend the possibilities of overcoming models based on causality, memorization and repetition, favoring more open and flexible models that allow the emergence of new interpretative positions.

It should be noted that this approach also challenges the linear hegemony of traditional educational processes, recognizing the fluctuating, irreversible and reorganizational nature of identities, systems of thought, disciplines and knowledge. Therefore, when speaking of method and methodology, it is necessary to add to both elements the prefix trans " *transmethod and transmethodology* " which grants identity and comprehensive complementarity to the educational and research process.

In other words, *transmethods* and *transmethodologies* are bets, emerging perspectives or deconstructive approaches that arise from complexity and transdisciplinarity, so through them both the usefulness and the comprehensive openness of the rigid structures of traditional paradigms are examined (Vilella-Cervantes & Andrade-Salazar, 2023) , and from them the elements that, when generating explanatory discourse, give a reflective look at the phenomena are rescued, but they go further by proposing other comprehensive routes about what is explained.

It is worth mentioning that, *roughly speaking* , the *method* refers to the path or process used to achieve the desired results in any area of study or human activity. On the other hand, the *methodology* implies the set of principles, practices, tools and theoretical approaches that guide the application of the method in a specific context. That is, while the method is the structure and the process, the methodology is the conceptual and practical framework that gives shape and direction to that process.

Now, transmethods and transmethodologies go beyond conventional approaches by questioning the linearity and simplistic explanation of traditional paradigms (Andrade, 2023c) . The change is that these emerging approaches recognize the inherent complexity of the systems and phenomena they study, as well as the interconnection between different areas or fields of knowledge.

As already mentioned, a *transmethod* addresses, for example, topics such as research, education, and social phenomena such as violence, resistance, social movements or coexistence, to name a few topics, but it does so from a non-linear perspective, integrating multiple disciplines, perspectives, drifts, tendencies, perspectives and forms of knowledge. This implies transcending disciplinary boundaries to address complex problems from an integrative perspective.

In addition, *transmethodology* refers to the process of dialogically reconnecting or linking these diverse perspectives, discourses, narratives, knowledge and experiences into a coherent, comprehensive and meaningful framework. Instead of imposing a rigid structure, transmethodologies allow for flexibility and adaptation to the complexity of the object of study or situation addressed.





In this sense, transmethods and transmethodologies are recurrent, recursive and reorganizational approaches that integrate complexity and transdisciplinarity, recognizing the interconnection and diversity in various processes, such as research, education and coexistence processes. By debating the explanatory suitability and *praxis* of traditional paradigms, they promote a *religará understanding* of emerging phenomena, challenges and problems (Andrade, 2019) .

That said, transmethods promote the collective construction of knowledge, and at the same time encourage collaboration and exchange between diverse research experiences, knowledge, objects of study, research problems, explanatory approaches and perspectives, which is fundamental in research. They also allow the integration of diverse methods and methodologies derived from different fields and disciplines, thus enriching the research process and making it inter and transdisciplinary.

It is also worth mentioning that complexity is the reticulated, integrative and transformational basis of transmethods, which offers an opportunity to redefine research practices, moving away from rigid structures and predefined formulas. Therefore, instead of following “ *repetitive recipes* ” in research designs, they open the door to a wide range of transmethodological possibilities, thus allowing a multidimensional understanding of research designs and, ultimately, of the results obtained.

What transmethods challenge

Transmethods challenge the linear logic of traditional paradigms such as Cartesianism (hypothetico-deductive), positivism and structuralism mainly because these approaches tend to adopt a reductionist and linear view of reality. Below are some reasons why transmethods challenge these paradigms:

1. **Multidimensionality and Complexity** : They recognize the inherent complexity of the phenomena studied and seek to address it from a more integrative and relational perspective. In contrast, Cartesianism, positivism and structuralism often simplify reality through linear models and rigid structures, which can limit understanding of the complexity of the world.
2. **Critical and reflexive perspective** : they encourage a critical and reflexive stance towards knowledge, questioning the underlying assumptions and power structures in the production of knowledge. On the other hand, traditional paradigms tend to accept established premises and maintain a more static and objective view of reality.
3. **Transdisciplinary approach** : promotes the integration of multiple disciplines and perspectives in research and learning. This contrasts with the disciplinary and fragmented approach of Cartesianism, positivism and structuralism, which tend to divide knowledge into isolated and watertight compartments.
4. **Emphasis on creativity and collaboration** : They value creativity, collaboration and openness to new ideas and perspectives, allowing for the exploration of unconventional approaches and the generation of innovative knowledge. In contrast, traditional paradigms often favour conformity to established norms and can limit the exploration of new possibilities.

Below is the following table comparing transmethods and traditional methodologies:

Table 1 Comparison between Transmethods and Traditional Research Methods

Aspect	Transmethods	Traditional Methods (Cartesianism and Positivism)
Perspective of reality	They recognize the complexity and multidimensionality of phenomena, promoting an integrative and relational perspective.	They adopt a reductionist and linear vision of reality, simplifying it through Cartesian and positivist models.
Approach	They foster a critical and reflective stance, questioning underlying assumptions and power structures in the production of knowledge.	They tend to accept established premises and maintain a more static, measurable, predictable and objective vision of reality.





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(Los Transmétodos, la complejidad y la investigación inter y transdisciplinaria)

Integration	They promote the integration of multiple disciplines and perspectives in research and learning.	They tend to divide knowledge into watertight and isolated compartments, favouring a disciplinary and fragmented approach.
Creativity	They value creativity, collaboration and openness to new ideas and perspectives.	They can limit the exploration of new possibilities by favoring conformity to established norms.
Flexibility	They take a more flexible and open approach, allowing for the exploration of unconventional approaches.	They tend to follow a pre-established and rigid method, limiting flexibility in research and learning.
Research design	They use flexible and adaptive designs that adjust to the complexity of the phenomena studied, allowing the emergence of new perspectives and approaches.	They usually follow rigid and predefined experimental designs, focused on hypothesis verification and the collection of quantitative data.

Disadvantages or limitations of transmethods

Although Transmethods offer numerous advantages, they may also face some limitations, including:

1. **Institutional resistance** : Traditional educational and research structures may be reluctant to adopt innovative approaches such as Transmethods, making their implementation on a large scale difficult.
2. **Lack of resources** : Effective implementation of Transmethods may require additional resources, such as time, funding and training, which may not be readily available in all educational and research contexts.
3. **Complexity**: The multidimensional and complex nature of Transmethods can be challenging for some educators and researchers, especially those who are accustomed to more linear and traditional approaches.
4. **Individual resistance**: Some professionals may resist change and be reluctant to abandon established practices in favour of more innovative and collaborative approaches.
5. **Evaluation and measurement**: Evaluating the results of Transmethods can be difficult due to the lack of standard metrics to measure success in terms of learning and knowledge production.
6. **Logistical difficulties**: Coordinating and managing educational and research projects that employ Transmethods can be complicated due to the need to integrate multiple disciplines, methods and perspectives.

Despite the inherent difficulties, Transmethods offer a path to truly transformative education and research. Institutional resistance and lack of resources can hinder their adoption, while complexity can disorient more traditional researchers. However, overcoming these challenges can lead to surprising and enriching results, which transcend the limitations of conventional methods. It is necessary to break away from rigid structures and open up the way to the creativity and flexibility offered by Transmethods, since through them the potential of inter- and transdisciplinarity in innovation and knowledge generation can be explored more broadly.

Transmethodical research

Transmethodical research emerges as a powerful commitment from the paradigm of complexity and transdisciplinarity, questioning established limits-conventions and embracing a more integrative, inter and transdisciplinary perspective. By bringing together the concepts of *transmethod* and *transmethodology* , it seeks to transcend disciplinary barriers and explore the complexity of the phenomena studied. Therefore, it is not limited to the mere accumulation of knowledge, but seeks to dialogically transform-integrate obsolete research and educational paradigms and systems.





The paradigm of complexity and transdisciplinarity guide the path of transmethodical research, which can be referred to as integrative or complexifying research (Andrade, 2019; Andrade & Rivera, 2019; Rivera & Andrade, 2019), offering a flexible and dynamic conceptual framework that allows addressing multifaceted problems from multiple perspectives.

The objectives of transmethodical research go beyond the mere production of knowledge; they seek to redefine the way in which phenomena are understood and addressed. In itself, it implies adopting a dialogic and transformative approach, to question established certainties in a dialogic key and promote openness towards new ways of thinking and generating interwoven knowledge. In addition, it proposes to confront insular problems from a multicentric approach, denoting *research problems* as *problematic polycentrisms*, and the *objects of study* as *relational fields of knowledge*, recognizing the interconnection and interdependence that characterize reality.

One of the main characteristics of transmethodical research is its evolution from the hegemonic method to a more inclusive, integrative, interlinked, dialogic and collaborative approach. Therefore, instead of imposing a single method as an inexcusable norm, it embraces methodological diversity and recognizes the validity of multiple approaches in the generation of knowledge. This paradigm shift not only has theoretical implications, but also practical ones, since it implies a profound reform of research systems and processes.

In this sense, transmethodical research advocates a creative transformation of the way in which research is taught and learned, and proposes abandoning narrow disciplinary approaches in favour of increasingly integrative and relational research. *Ergo*, it encourages the integration of multiple perspectives, methods, disciplines, epistemes and knowledge, in order to face, through inter and transdisciplinary cooperation, the comprehensive, complex and multifaceted challenges of the phenomena investigated.

As mentioned with transmethods, although transmethodical research has numerous strengths, it also faces significant challenges: institutional resistance can hinder its widespread implementation, while scarce resources can restrict its reach and effectiveness. Furthermore, the intrinsic complexity of this trend can be an obstacle for those more accustomed to linear and conventional approaches.

Despite these obstacles, transmethodical research represents a crucial step towards a broader, more integrative and complex understanding of phenomena, which it achieves by rethinking established norms and promoting inter- and transdisciplinary collaboration and dialogue, hence its transformative potential, which is a call to action to embrace complexity and diversity, and to work collaboratively.

Types of transmethods

As already stated, Transmethods seek to overcome the narrowness of explanation, the dependence on methods, the uniparadigmatic approach and the positivist and linear rigidity that often characterize the scientific approach when it is linked to scientism and linear and procedural methodology.

1. **Relational map** : This involves creating a visual map that represents the elements related to the research problem. Following the rhizome metaphor, this map does not follow a hierarchical structure, but rather allows the connections between the different elements to be explored in a multidimensional way. It is continuously developed as the research progresses, providing a more complete idea of the problem and broadening the understanding of the context in which it is located.
2. **Narratives / Reflective-relational diary** : involves the researcher reflecting on his/her own practices throughout the research process. The actions, methods and approaches used are examined, constantly questioning interpretations and perspectives. The researcher engages in dialogue with his/her own ideas, welcoming new perspectives and continually reconstructing the interpretive forms of his/her discourses.
3. **Dialogic questions**: These are questions that go beyond a simple answer, seeking to generate questions that transcend the linear hierarchy, responding in a complex way to changes in the contexts and findings of the research. It consists of formulating questions that go beyond the





traditional question and answer format. These questions are not limited to a strict hierarchy and can arise at any time during the research process, thus reconfiguring the direction of the research. Dialogic questions accommodate a variety of variables, categories and dimensions, thus broadening the understanding of the problem and its multidimensional context.

4. **Critical-decolonial thinking** : This approach involves critically examining the theoretical and methodological frameworks used in research to detect and question colonial, Eurocentric and Western influences. It seeks to challenge established paradigms and propose alternatives that consider emerging socio-historical contexts, thus promoting a more inclusive and diverse understanding of the phenomena investigated.
5. **Inter and transdisciplinary understanding**: This method seeks to transcend the boundaries of individual disciplines, integrating different approaches and perspectives to understand the phenomena investigated in a more complete and complex way. A dialogue between different fields of knowledge is promoted, recognizing the interdependence and complementarity of the different disciplines in the construction of knowledge.
6. **Relational deconstruction**: involves understanding the relationships between ideas beyond hierarchies and explanatory essences. The complexity and irreducibility of the phenomena investigated is recognized, challenging established assumptions and beliefs. The aim is to deconstruct linear thinking and promote new forms of interpretation and understanding that recognize the multiplicity of perspectives and the uncertainty inherent in research.
7. **Rhizomatic research methodology** : Inspired by the ideas of Deleuze, Guattari (1980) , Nicosescu (1996) and Morin (1977) , it proposes a way of understanding research processes as networks of complex relationships. It promotes a dialogical and relational understanding of the phenomena studied, recognizing the interconnection between different elements and the emerging self-organization in the research process.

Conclusions

In the complex and intertwined web of transmethods and transmethodologies, a subversive and deconstructive revolution is brewing that challenges the conventional structures of research and education. There, it is possible to consider that, by weaving relationships between paradigms and epistemic perspectives, a recursive loop is fostered where knowledge interacts and constantly feeds back, generating new meanings and emerging understandings. This dialogical and transdisciplinary emergence invites the rethinking of research methods and methodologies, promoting the integration of reflexive and interpretive approaches.

It is, therefore, a connection between fields of knowledge that drives reform in education and research, challenging explanatory linearity and opening the way to new divergent and dystopian possibilities. Thus, transmethods emerge as powerful tools to face the complex and rhizomatic challenge of contemporary research, expanding our analytical-explanatory perspectives towards broader and more enriching reflexive-interpretative horizons.

It is worth mentioning that transmethods and transmethodologies emerge as powerful tools in the search for more integrative, complex and transdisciplinary research. These approaches challenge the rigidity and linearity of conventional methods, opening the way to new forms of understanding and analysis of the phenomena investigated.

Thus, each type of transmethod, from the relational map to the rhizomatic research methodology, offers a unique and valuable perspective to address the complexity inherent in research problems. Therefore, adopting a dialogic, reflexive and critical approach allows researchers to explore the connections between different elements, question their own practices and challenge established paradigms.

Therefore , it is essential to recognize the importance of promoting the use of transmethods in current research, since, as progress is made in the deconstruction of paradigms, methods and methodologies, it is crucial to encourage the adoption of emerging approaches, that is, increasingly integrative, dialogic,





recursive, recurrent, relational and reorganizational. The above not only broadens the analytical-explanatory perspectives, making them more comprehensive, but also promotes a more inclusive and diverse understanding of the phenomena investigated.

Ultimately, the commitment to generate more transmethods as research advances is essential to drive innovation and progress in the scientific field, which requires abandoning explanatory comfort zones and challenging established structures to promote inter and transdisciplinary collaboration, a scenario in which transmethods open new possibilities for human knowledge and bring researchers closer to a broader, more connected and integrative understanding.

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Declaration of informed consent

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