

Creative and inclusive pedagogical practices in undergraduate medical education*¹

Raquel de Lima Santos²

Orcid: 0000-0002-0510-9334

Maria Dolores Fortes Alves³

Orcid: 0000-0002-2292-8518

Abstract

Medical programs, due to their historical context, have traditionally offered an eminently biomedical and organicist education, focused exclusively on diseases. However, Brazilian medical education has been transforming in response to emerging social demands. Currently, in addition to technical competence, physicians are expected to be ethical, reflective, and humanistic professionals. This article aims to investigate how active learning methodologies used in an undergraduate medical program in Northeastern Brazil enable the development of creative and inclusive pedagogical practices. To conduct this investigation, a case study method was applied (Yin, 2015), using data collection instruments such as document review, semi-structured interviews, and questionnaires. Data analysis was conducted through content analysis. The results indicate that the program has a creative faculty and that the active methodologies employed constitute powerful learning spaces, fostering the recognition of each student's uniqueness within shared experiences. This aspect is fundamental when considering the importance of future physicians acknowledging the subjective dimension in their future patients and in themselves as a guiding element of the clinical encounter. The data also reveal the challenges faced by faculty members in adopting and adapting active methodologies for certain subjects. Therefore, it is essential that educators have access to discussions addressing didactics in uncertain contexts, enabling them to observe, analyze, and understand learning processes.

Keywords

Creativity – Inclusion – Medical Education – Active Methodology.

*English version by Eduardo Luiz Pereira Melo da Silva. The authors take full responsibility for the translation of the text, including titles of books/articles and the quotations originally published in Portuguese.

1- Data availability: The complete dataset supporting the results of this study has been made available in the RIUFAL (UFAL Institutional Repository) and can be accessed at <http://www.repositorio.ufal.br/jspui/handle/123456789/16289>.

2- Universidade Federal de Alagoas, *campus* Arapiraca. Arapiraca, Alagoas, Brazil. Contact: raquel.lima@arapiraca.ufal.br

3- Universidade Federal de Alagoas, Centro de Educação (CEDU/UFAL). Maceió, Alagoas, Brazil. Contact: mdfortes@gmail.com



<https://doi.org/10.1590/S1678-4634202551282689en>

This content is licensed under a Creative Commons attribution-type BY 4.0.



Introduction

Medical programs, due to their historical context, are characterized by a culture that is biological, resulting in an eminently biomedical and organicist education focused exclusively on diseases. This approach disregards the subjective dimension that forms the essential foundation of our cultural evolution and humanization process, determining the meaning and quality of our existence and influencing the entire health-disease process.

Society has shaped us under the predominance of Cartesianism (Descartes, 1596–1650+). This concept came to form the entire social and educational system and has influenced the way people think in recent years. For many years, university structures and norms have relied on Cartesian principles (dualism, fragmentation, simplification, decontextualization, reduction, objectivism). The Cartesian way of thinking directs individuals' attention exclusively to what is objective and rational, disregarding the richness of life and everyday experience: intuition, emotion, sensitivity, feeling, and corporeality (Santos, 2008).

The predominance of disciplinarity has deepened specific knowledge and enabled the development of sciences and the technological advances we benefit from today. However, reflecting on the course of humanity governed by disciplinary sciences, we can identify their fragmenting and dehumanizing aspect, in which the myopia of disciplinary thinking fails to perceive the parts in their relationships (Morin, 2005). Similarly, Santos (2008) warns that human history is laden with such myopias.

In the field of education, certain frameworks introduce epistemological changes in the way subjects and their learning processes are understood. In this study, we engage in a dialogue based on the Theory of Complex Thought (Morin, 2005) and Trans disciplinarity (Nicolescu, 2008).

Considering these two frameworks means understanding that education goes beyond cognitive processes, serving as a tool for comprehending others in their unique condition in the face of human complexity. Viewing educational processes through the lenses of complexity theory and transdisciplinary activates an educational mechanism capable of elevating a system buried under the tragic effects of the reproduction of exclusion. Thus, within pedagogical practices, these frameworks represent an epistemological shift, suggesting reconceptualization in the way learning processes are understood (Santos, 2005).

According to Edgar Morin (1999), the construction of knowledge occurs through retroactive and recursive movements. The author states that the cognitive process is a complex one, as the subject perceives the object through interactions with other objects and events. Considering complexity, it can be inferred that there is no single way of learning. Trans disciplinarity transcends the epistemological boundaries of each disciplinary science and builds new knowledge through the sciences—knowledge that is integrated in service of humanity, reestablishing relationships of interdependence (Santos, 2005). Thus, trans disciplinarity does not rest on a proposal of unified knowledge, which would be quite illusory, but rather “on the search for connections within cognitive plurality, in order to build bridges that foster a broader, more global, and more open mode of knowledge” (Paul, 2013, p. 73).



Over time, Brazilian medical education has been transforming in response to emerging social demands. Currently, in addition to technical competence, physicians are expected to be ethical, reflective, and humanistic professionals. The integration of physicians into Family Health Programs connected to the Unified Health System (SUS) and, increasingly, into multidisciplinary teams requires that professionals be engaged with the social realities surrounding them, reinforcing the need for a professional with a distinctive education and the potential to effectively address this context (Machado; Wuo; Heinzle, 2018).

Thus, curricula structured around disciplines and centered on hospital-based, pathology-focused approaches have gradually given way to the development of less rigid curricula that promote greater autonomy and student protagonism in the learning process. The training of physicians to meet this new reality has been progressively implemented in undergraduate programs through curricular adjustments and the adoption of new teaching methodologies (Machado; Wuo; Heinzle, 2018).

In this context, educators are compelled to rethink their models, as traditional teaching and learning methods fail to meet educational needs such as more meaningful and contextualized learning, the development of effective methodologies for building professional and personal competencies, and a transdisciplinary vision of knowledge (Dias; Volpato, 2017).

In light of the above, this study aimed to investigate how active learning methodologies used in an undergraduate medical program in Northeastern Brazil enable the development of creative and inclusive pedagogical practices. To conduct this investigation, the case study method was employed (Yin, 2015).

Methodology

This article is an excerpt from a doctoral research project submitted to and approved by the Research Ethics Committee for Studies Involving Human Subjects, accredited by the CEP/CONEP System; CAAE: 44651821.1.0000.5013. Accordingly, all research participants provided their consent through the Informed Consent Form (ICF), ensuring the confidentiality of their identities by replacing their names with numbers, for example: Participant 1 to 12.

Research approach

To achieve the research objective, a case study with a qualitative approach was conducted. From this perspective, qualitative research is based primarily on an inductive logic and process (exploring and describing, and then generating theoretical perspectives), moving from the particular to the general. It is assumed that reality is defined through the interpretations that research participants make of their own experiences. Therefore, multiple realities converge: that of the researcher, those of the participants, and the one produced through the interaction among all involved. Moreover, these realities evolve throughout the study and continue to serve as sources of data (Sampieri; Collado; Lucio, 2013).



The case study, as a methodological strategy, is considered incredibly useful when the goal is to analyze a broad and complex phenomenon, especially when the phenomenon cannot be examined outside the context in which it naturally occurs (Bonoma, 1985). According to Lüdke and André (1986), the case study becomes relevant when the aim is to investigate something unique that holds intrinsic value.

Research participants

The research sample is diverse, as this approach is used when the objective is to present different perspectives, represent the complexity of the studied phenomenon, or document diversity in order to identify similarities and differences, patterns, and particularities (Sampieri; Collado; Lucio, 2013).

The research participants were faculty members and students from the medical program at the Federal University of Alagoas, Arapiraca campus. A total of 12 participants took part in the study, including five faculty members and seven students. In accordance with research ethics guidelines to protect participants' identities, they were labeled as Participant 1 through Participant 12, with Participants 1 to 5 representing faculty members and Participants 6 to 12 representing students.

Case contextualization

The research was conducted in the medical program at UFAL, Arapiraca campus. This program was chosen because its curriculum incorporates the use of active learning methodologies across all areas of the students' learning processes.

The implementation of the program in the interior of the state of Alagoas, based on MEC/SESU Ordinance No. 109 of June 5, 2012, was conducted in a participatory and procedural manner. It also considered the guidelines of the Institutional Development Plan and the recommendations resulting from discussions between the Ministries of Education and Health regarding the need for physicians in Brazil, particularly in regions far from major urban centers. Accordingly, the initially identified needs highlighted the importance of developing a medical program that considered the interiorization of medical education in Alagoas, as well as creating a pedagogical proposal effectively articulated and integrated with the SUS and the needs of the population. This approach aims to provide students with learning practices in which they can be the central element of the process (UFAL, 2018).

For the development of the Political-Pedagogical Project (PPC) of the program, the guidelines established by UFAL's Dean of Undergraduate Studies were used as references, along with the directives set forth by the Ministry of Education's Plan for the Expansion of Medical School Places in Federal Higher Education Institutions, as well as recommendations and studies published in the national and international literature regarding the stages of curriculum development in Medical Education (UFAL, 2018).



Currently, the program operates under two PPCs: the first from 2018 and a more recent one approved in 2023.

Data collection

The research data were collected through a document review, semi-structured individual interviews, and closed-ended questionnaires. According to Lüdke and André (1986), the use of documents can be a valuable technique for approaching qualitative data, either by complementing information obtained through other methods or by revealing new aspects of a topic or problem. This review allows for the analysis of how the faculty has considered the program's curricular structure in light of the new demands established by the National Curriculum Guidelines for Undergraduate Medical Programs (DCNs) (Brasil, 2014), as well as the examination of how pedagogical practices are presented in the documents.

The semi-structured interview is based on a guide of topics or questions, allowing the interviewer the freedom to ask additional questions in order to clarify concepts or obtain more information on the desired themes. Thus, not all questions are predetermined (Sampieri; Collado; Lucio, 2013).

The VADECRIE questionnaire (Suanno, 2013), developed based on the instrument for valuing the creative development of educational institutions (Torre, 2012), aims to contribute to the collection of evidence regarding creative schools. It was created by Professor Dr. João Henrique Suanno for use and validation in his doctoral thesis. In the present study, the questionnaire was uploaded to Google Forms and sent by email to participants after the interviews were conducted. Additionally, a minor adjustment was made to the questionnaire: the word "school" was replaced with "program."

The questionnaire contains ten categories, each with ten indicators. This article presents the results and discussion of two of these categories, namely: Category 2 – Creative Faculty and Category 8 – Creative Teaching Methodologies and Strategies.

Data analysis

The analysis of the collected data was conducted using the transcribed interviews, the documents, and the results from the VADECRIE questionnaire (Suanno, 2013). The document review served as support, alongside the interviews, to integrate the VADECRIE questionnaire data through data triangulation.

The evaluative indicators in the questionnaires are rated numerically on a scale from one to ten. Accordingly, the scores were mapped to the qualitative concepts A, B, C, and D, as shown in Chart 1 below:



Chart 1 - Qualitative and numerical assessment on a scale from 1 to 10 based on the presence or absence of the valued indicator

Presence of the characteristic or indicator	Qualitative Assessment (concepts)	Numerical Assessment (scores)
Never or almost never	D	1-2
Sometimes / Occasionally	C	3-4-5
Often / Occasions where evidence of the indicator exists	B	6-7-8
Continuously. Unmistakable evidence of the occurrence of the indicator or characteristics	A	9-10

Source: Suanno, 2013.

Discussion and analysis

Creative faculty

Regarding faculty, the VADECRIE instrument (Suanno, 2013) aims to assess whether they: a) possess a creative spirit, with an open, flexible, collaborative, and entrepreneurial attitude; b) consider education in terms of life competencies and value a collaborative climate with the administration; c) employ creative strategies; d) show interest in and participate in continuing education programs; and e) ensure that the educational institution learns from its mistakes (Torre, 2012).

To support the discussion in this category, Torre (2005) highlights several key characteristics of creative teaching. The author considers that creative teaching is flexible and adaptive in nature; planning is essential as a starting point but being flexible means adapting what was previously planned to the context and the learners. Indirect methodologies, where students actively participate in constructing their own knowledge through learning situations, are fundamental. Teaching seeks to maximize each student's cognitive capacities and skills, such as observing, imagining, and relating. It is also imaginative and motivating, fostering surprise and interest, stimulating the combination of ideas and materials, and enhancing the teacher-student relationship. Thus, "student engagement in their own learning is most often induced by a relationship of mutual trust, understanding, and a positive climate" (Torre, 2005, p. 161). In creative teaching, both the process and the outcome are valuable, without neglecting the objectives.

Below, Table 1 presents the individual responses of the participants for each indicator in the category. Table 2 provides a summary of the total number of responses for each concept, and Graph 1 shows a percentage-based summary of the responses by concept.



Table 1 – Frequency of Scores and Concepts in the Creative Faculty Category

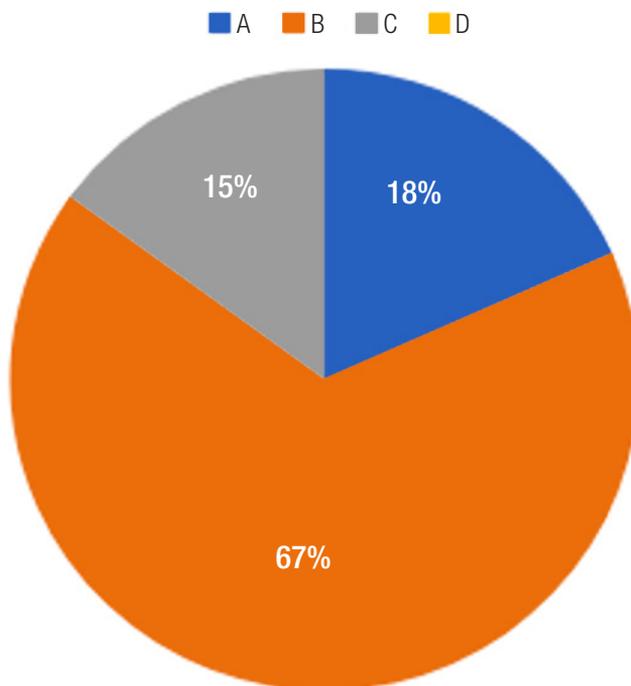
Questions / Indicators	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8	Participant 9	Participant 10	Participant 11	Participant 12
Do the teachers go BEYOND the prescribed curriculum?	8 B	8 B	8 B	7 B	9 A	9 A	7 B	7 B	7 B	9 A	9 A	7 B
Are the course and teachers attentive to students' feelings?	7 B	10 A	8 B	7 B	9 A	9 A	4 C	6 B	6 B	8 B	6 B	5 C
Is emotion used as a communication resource within the course?	7 B	7 B	9 A	7 B	9 A	8 B	4 C	4 C	5 C	7 B	4 C	6 B
Does the course develop students' awareness, fostering meaning in reality and life?	8 B	8 B	8 B	6 B	9 A	8 B	8 B	4 C	7 B	8 B	8 B	5 C
Do teachers have the ability to bring innovation into daily lessons?	7 B	8 B	8 B	6 B	9 A	9 A	7 B	4 C	5 C	7 B	7 B	9 A
Do teachers make students feel that time passes quickly in class?	7 B	8 B	8 B	7 B	8 B	7 B	9 A	5 C	6 B	7 B	5 C	6 B
Is the teaching-learning process connected to life and real-world problems?	7 B	8 B	8 B	8 B	9 A	8 B	9 A	7 B	8 B	8 B	9 A	5 C
Do teachers create attractive, original, and divergent situations for the class?	7 B	8 B	8 B	7 B	9 A	8 B	7 B	4 C	6 B	8 B	6 B	5 C
Do teachers address both thinking and feeling with students?	7 B	8 B	8 B	7 B	8 B	7 B	4 C	6 B	7 B	7 B	6 B	3 C
Is there a mediation and development of values such as respect, listening, empathy, and other human values?	8 B	9 A	8 B	8 B	9 A	8 B	7 B	7 B	6 B	9 A	10 A	5 C

Source: Research data.

Table 2 – Quantitative Summary of Concepts in the Creative Faculty Category

Quantitative	Concept
22	A
80	B
18	C
0	D

Source: Research data.

Graph 1 – Percentage Summary of Concepts in the Creative Faculty Category

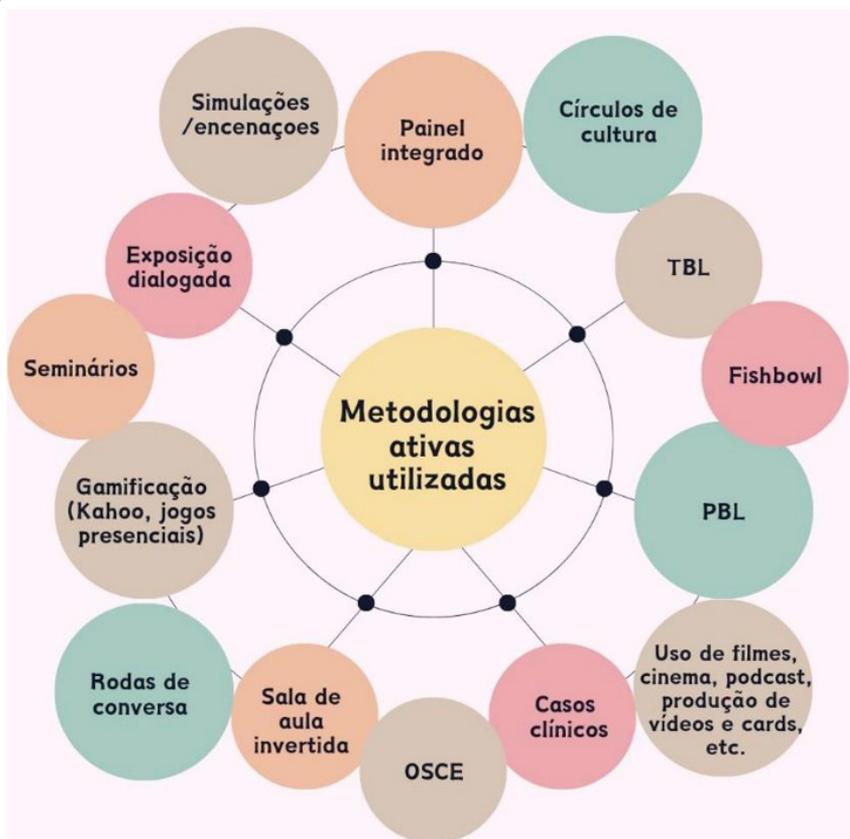
Source: Research data.

Analyzing the presented data, we identified that 67% of the responses fall under concept B and 18% under concept A, totaling 85% of the responses in these two categories. Concept C accounts for 15% of the responses, while concept D accounts for 0%.

In this category, it is noteworthy that Participant 12 (a student) rated six indicators as concept C. This is an important observation, as it highlights an individual need to understand how this participant has engaged with the program and the student-teacher relationships, particularly regarding feelings, emotions, support, and listening. What is not the majority is also significant, since we assume that “creative activities are those that provide an experience of wholeness, of fullness, something in which the individual is fully engaged in their multidimensionality” (Moraes, 2015, p. 172). For this to occur, it is essential to have productive spaces that enable relationships of trust (Torre, 2005)

In line with the VADECRIE results, Figure 1 was created to illustrate the active learning methodologies used by the faculty, as mentioned in the interviews with both teachers and students:

Figure 1 – Active learning methodologies used in the UFAL/Arapiraca medical program reported by faculty and students



Source: Research data.

The methodologies mentioned corroborate the active methodologies found in scientific literature. Beyond the reported active methodologies, it is important to present two excerpts from the interviews conducted, which address the active methodologies used by the instructors. The first excerpt is from a faculty participant, and the second is from a student:

I think the one I use the most here is PBL, right? Problem-Based Learning. I do not conduct tutorials, but I always bring a clinical case to the classroom, which ends up being a problem. For example, today my case was about an elderly woman with several health deficits, multiple issues related to her health, and the students had to ask questions to conduct an anamnesis (Participant 2).

So, the main one so far has been tutoring – we had four semesters of tutoring, which is PBL. In the IESC courses, we always had many discussion circles, active participation during the class, activities that followed the lesson, and presentations about the same topic. Seminars, discussion



circles, simulations, and even role-playing activities – in fact, this semester, we have been doing a lot of simulations to mimic what happens in real life so that we can gain familiarity with it. In anatomy, we had a lot of TBL; we answered questions beforehand and then discussed them with the professor. In pediatrics, we often had pre-tests and post-tests – before class, we would study the topic, answer a questionnaire, have the lesson, and then answer the same questionnaire again to see what we had learned. In medical skills training, we would dedicate a day to simulating patient care. Our classes were very conversational – the professor would introduce a topic, we would discuss what we knew about it, and then the professor would agree with what we had said and add any necessary information (Participant 8).

Considering both accounts and the curricular organization of the program (UFAL, 2023), it is evident that PBL (tutoring) is one of the most widely used active learning methods in the course, since during the first two years (basic cycle), the modules are structured around problem-based situations. In the PBL methodology, or Problem-Based Learning (PBL), the “[...] trigger for the teaching-learning process is the problem or problem situation” (Aquilante *et al.*, 2011, p. 148).

There are several steps to guide the strategy, namely: 1) problem identification: students are presented with a complex and realistic problem that stimulates curiosity and motivation for learning. The problem should be challenging enough to require the application of prior knowledge and the search for latest information; 2) teamwork: problem-solving in PBL is conducted in groups, in which students collaborate, discuss ideas, and share knowledge. Teamwork develops communication, leadership, and cooperation skills; 3) active research: students are encouraged to seek relevant information to solve the problem, using various sources of knowledge such as books, scientific articles, interviews, among others. Active research stimulates autonomy and the ability to seek solutions independently; 4) discussion and reflection: after the identification of the problem and the research conducted, students meet to discuss their findings, share perspectives, and reflect on the resolution process. Group discussion promotes the exchange of experiences and the collective construction of knowledge; and 5) presentation of solutions: at the end of the process, students present the solutions found for the problem, justifying their choices and demonstrating the reasoning used. The presentation of solutions allows for learning assessment and feedback from peers and instructors (Camargo; Daros, 2018).

It is important to emphasize that, although active methodologies have steps to be followed, there are openings along the way to enhance creative processes. For example, in constructing a problem situation, the instructor can integrate various strategies and make use of music, film scenes, literature, and so on. Students, in their pursuit of achieving the learning objectives, can utilize different approaches to research, to constructing what they have learned, and to how they will share their learning within the group. Thus, PBL stimulates critical thinking, creativity, and problem-solving, preparing students for the challenges of the contemporary world.

In the organization of the modules of this tutorial axis, the construction of clinical cases should address the physiology and pathophysiology of the various organ systems and discuss the main health impairments and the interaction of humans with their physical,

biological, and social environment, promoting the integration of diverse knowledge areas. This becomes a powerful space for reconnecting knowledge, as Morin (2005) describes in the systemic or organizational principle, which allows linking the knowledge of the parts with the knowledge of the whole, or vice versa.

In the account of a faculty member below, one can observe a didactic strategy that provides students with a space for speaking, listening, exchanging, constructing, and deconstructing. It is a sensitive learning activity, in which the content is interwoven and stitched together not only through concepts but also through emotions, feelings, and affections:

There was a class in which I used... They had to create a tapestry... The class had to discuss the issues, work on the theme. Then, in groups, they had to assemble the tapestry like a mosaic with the ideas they were connecting... This exercise is by doing, listening to ideas, sharing issues, accepting differences, and assembling them into a mosaic. This was a Latin American methodology, Arpilleras. It is the art of creating and making... these tapestries, these stitches, and as you stitch, you are making history. So, you gather a group of women, each of whom tells her story and assembles a tapestry with the stories of that group, and as they do this... you end up with a piece, a work, a work of art, right? [...] Because there you have what? History, sharing, what was told, what was opened up... This is something you can do a lot with, especially in the psychology and health course, when you discuss how one feels about their profession, the pressures... all of this to help with the students' own mental health. What are you producing? A dynamic... you use a methodology based on this dynamic, and you have an objective... to create a discussion circle about the experiences each person has had and has in that area (Participant 1).

Morin (2005, p. 85), in his text “Complexity and the Enterprise”, provides an example that aligns with the discussion we are addressing:

Let us consider a contemporary tapestry. It contains threads of linen, silk, cotton, and wool in assorted colors. To understand this tapestry, it would be useful to know the laws and principles related to each of these types of thread. However, the sum of knowledge about each of these individual threads is insufficient to understand this new reality, which is the fabric itself – that is, the qualities and properties inherent to this texture. Moreover, it is incapable of helping us understand its form and overall configuration.

We identify a transdisciplinary and complex didactic approach through a teaching strategy that addresses human wholeness, considering the complexity of reality and the plurality of languages that enable sensitive perspectives and listening, grounded in transversal and multireferential knowledge (Moraes, 2015). As an example, we have the cognitive operator of the dialogical principle, which is based on the idea that, in a complex system, principles can coexist that, even if clearly contradictory, need to be together for the system to make sense (Morin, 2005).

Another account demonstrates how some instructors maintain an attentive focus on the student and the importance of didactic guidance in response to contextual needs, reflecting an ecologized action (Morin, 2005). When asked in the interview to describe a remarkable experience with active methodologies, the faculty participant stated:



It was the gamification activities, because I saw students who were sleeping wake up and have their eyes wide open (gesture indicating alertness) during the class. When I said, “I’m going to do gamification!” they got up, moved the chairs, and went there saying: it was the best class, it was everything! So, gamification and case studies really stimulate their interest in understanding the content. Many times, I am tired, spending a long time making countless questions, printing, preparing, researching, spending a week looking for materials, but when I see them, that they have grasped it, that they learned everything, it is truly gratifying (Participant 3).

In the overall analysis of this category, it is evident that there is proof that the course features a creative faculty, that instructors go beyond what is outlined in the curriculum, and that students’ feelings are acknowledged. Furthermore, emotion serves as a communication resource, and instructors contextualize teaching in alignment with reality, create innovative situations, and recognize the importance of fostering and developing values such as respect, empathy, and listening.

From the data, we infer that, despite the existing highlights, there is a movement—still insufficient—toward understanding and implementing active methodology strategies by the instructors. There are reports that confirm this observation, indicating that only a few teachers fully engage in this approach and that there are challenges in applying the methodologies to certain content areas.

I see people who are very dedicated to learning and developing, but I also see many who do not care, right? They just give their class, drag out a seminar, and think that counts as active methodology, especially during the internship. Really, in the internship, they want us to pass on a lot... our own experience... but we have ways, like dialogued presentations, to share knowledge while not just leaving students sitting and listening. There are many resolute teachers, but I still believe greater engagement is needed. It is still very heterogeneous; many do extraordinarily little, many do nothing, so it is still quite inconsistent (Participant 3)

There are definitely inclusion limitations, methodology limitations, and some methods I believe do not work very well. Some instructors cannot implement a methodology correctly in a way that makes the student feel fully involved in their own learning. I think the key issue is not knowing which methodology to use for a particular topic and how to apply it. The moment you implement these methodologies, which is the biggest challenge. It would certainly be particularly useful to identify a methodology that works and to provide training for instructors so they can use these different methodologies. Here, many teachers are also accustomed to traditional methods for years, and suddenly in this course, they are faced with an active methodology. They feel pressured to use it, whether by coordination or by a colleague in the same axis, and they either cannot, do not commit, or lack support – someone to help them with this type of methodology (Participant 8).

Among the barriers that hinder the cultivation of Complex Thinking and Trans disciplinarity are the lack of theoretical and scientific foundations in teacher training, along with the absence of epistemological clarity, which makes it difficult to understand

the process of knowledge construction and the development of learning. These aspects are essential for understanding the functional mechanisms of thought, knowledge, and human action (Moraes, 2019).

Thus, it is important to understand didactics in its complexity, as Bataloso (2015, p. 67) points out:

[...] perhaps the best didactics is the one that is not decreed, not written, not spoken, because, in reality, if it can offer us anything, it is through the reflective emergences of the present moment in a living process of human communication, in which all and each of the elements of the teaching-learning process are integrated and inseparably connected.

It becomes essential that instructors have access to discussions highlighting that didactics operates within scenarios of uncertainty, so that they can observe, analyze, and understand learning processes, expanding knowledge, and recognizing that learning is a process of complex nature. Only through this openness will it be possible to propose principles, guidelines, and strategies aimed at the effectiveness of teaching processes. As Moraes (2015, p. 155) states: “We understand that teaching-learning processes do not constitute a single, uniform process, but a complex multiple unity, through occurring interactions and emerging processes.” And, as Morin (2005, p. 183) notes, “there is not only diversity in the one, but also relativity in the one, relationality, otherness, uncertainties, ambiguities, dualities, divisions, complementarity, antagonisms.”

Creative methodologies and strategies

Creative teaching leads us to consider creative strategies that are based on meaningful learning, the development of cognitive skills, a transformative attitude, the planning of innovative, flexible, and motivating activities, and mediation that considers collaboration, experience, and student engagement (Torre, 2005). This aligns with the principle of reintroducing the knowing subject into the construction of their own knowledge, aiming to reinstate the active role of the subject in all knowledge, emerging as a response to the exclusion of the subject caused by inflexible epistemological objectivism (Morin; Ciurana; Motta, 2003).

In this sense, this category of the instrument allows us to verify a) whether both the methodology and the strategies used are flexible, imaginative, varied, adapted to goals, dynamic, and student- or agent-centered; b) whether they aim to be impactful, engaging, creative, and innovative; and c) whether they make use of technological, human, analog, and virtual resources (Torre, 2012).

According to Torre (2005, p. 162), the creative method⁴:

[...] must have the power to focus mental energies, to stimulate, to facilitate the ideation process, to break the logic, when necessary, to provoke and surprise the student, and to distance itself from the problem. It is plural and diversifying; flexible in order to address problems from different

4 - It is important to clarify that the method refers to the “organization and sequence of actions to achieve a goal, and creativity lies in the person’s ability to generate new ideas and express them” (Torre, 2005, p. 167).



points of view. It must be motivating for the student. A methodology that bores or annoys the student works against creative stimulation. Considering our students' opinions will provide indications of whether our methodology sparks ideas or puts them to sleep. [...] In other words, creative teaching relies on the creativity of the method.

Creativity requires distinct forms of expression and materialization of the creative object, considering various languages, such as musical, aesthetic, bodily, playful, and poetic, which allow the transdisciplinary subject to explore the richness of their inner world, to engage in self-knowledge, and to recognize their latent potentials (Moraes, 2021).

Considering the discussion, we identified, in the National Curriculum Guidelines for Undergraduate Medical Courses (DCN), fundamental points that relate to this theme. Article 29 addresses the structure that the course must have:

[...] II – to use methodologies that prioritize the active participation of the student in the construction of knowledge and in the integration of content, ensuring the inseparability of teaching, research, and extension; III – to include ethical and humanistic dimensions, developing in the student attitudes and values oriented toward active multicultural citizenship and human rights; [...] VII – to use different teaching-learning scenarios, especially the health units across the three levels of care within the SUS, allowing the student to know and experience health policies in varied life situations, practice organization, and multiprofessional teamwork; [...] (Brasil, 2014, p. 12).

According to Articles 32 and 34 of the same resolution:

Art. 32. The Undergraduate Medical Course must employ active methodologies and criteria for monitoring and evaluating the teaching-learning process as well as the course itself, in addition to developing instruments that verify the structure, processes, and outcomes, in accordance with the National System for the Evaluation of Higher Education (SINAES) and with the curricular dynamics established by the Higher Education Institution (HEI) where it is implemented and developed. [...] Art. 34. The Undergraduate Medical Course must maintain a permanent Program for Teacher Training and Development in Health, aimed at valuing the teaching work in undergraduate education, increasing the involvement of faculty with the Course Pedagogical Project, and enhancing it regarding the educational proposal contained in the document, through conceptual and pedagogical mastery that includes active teaching strategies, based on interdisciplinary practices, so that they assume greater commitment to transforming medical education, integrated into the daily life of teachers, students, workers, and users of health services (Brasil, 2014, p. 12-13).

After analyzing the data, it becomes evident that there is a clear orientation toward the curricular construction of a course designed around strategies in which the student can be the protagonist of their own learning process, being supported and guided by the faculty at all stages of the educational process. The course's PPC is based on these guidelines, as cited below:



The teaching-learning methodology strategies used in the course depend on the program content, the module/discipline, the year of study, the type of activity (practical, theoretical-practical, or theoretical), the teaching scenarios, and the instructor's preference. These strategies can be used in their original design, adapted from other methods, or in combination with other approaches. Among them are: simulated patient care, dialogued lectures, text study, brainstorming, portfolio, concept mapping, guided study, discussion lists via digital platforms, problem-solving, verbalization and observation groups, dramatization, seminars, case studies, symposiums, panels, forums, workshops, field studies, research-based teaching, TBL, PBL, and others (UFAL, 2023, p. 63-64).

In Table 3, following our analysis, it is possible to visualize, individually, the participants' responses for each indicator of the category. In Table 4, there is a summary of the total number of responses for each concept, and in Graph 2, a percentage overview of the responses by concept is presented.

Table 3 – Frequency of values and concepts in the category Creative Methodologies and Strategies

Questions / Indicators	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8	Participant 9	Participant 10	Participant 11	Participant 12
Does the course plan consider material, human resources, and strategies?	9 A	9 A	8 B	7 B	9 A	9 A	8 B	10 A	8 B	10 A	8 B	7 B
Are environmental, social, and emotional awareness objectives in the course projects?	8 B	7 B	6 B	7 B	8 B	8 B	8 B	10 A	8 B	7 B	8 B	6 B
Does the systems, programs, methods, strategies, and activities prioritize creativity development?	9 A	7 B	7 B	6 B	8 B	7 B	8 B	8 B	7 B	4 C	4 C	7 B
Do teachers seek alternative solutions to problems in activities with students?	9 A	8 B	6 B	7 B	9 A	9 A	8 B	1 D	8 B	8 B	6 B	6 B
Are art, music, and theater used as teaching resources?	10 A	7 B	5 C	8 B	5 C	5 C	3 C	6 B	6 B	2 D	3 C	1 D
Do teachers create situations and dialogues about the observed reality with students?	10 A	8 B	7 B	8 B	9 A	8 B	8 B	5 C	9 A	6 B	5 C	4 C
Do teachers enable students to relate feeling, thinking, and acting?	10 A	8 B	6 B	8 B	9 A	8 B	5 C	5 C	7 B	5 C	6 B	3 C
Questions / Indicators	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Participant 7	Participant 8	Participant 9	Participant 10	Participant 11	Participant 12
Is collaboration worked on inside and outside the classroom, including in assessment?	9 A	7 B	6 B	7 B	8 B	9 A	7 B	2 D	8 B	4 C	5 C	4 C
Are other professionals invited to participate in student training?	10 A	9 A	8 B	8 B	8 B	9 A	5 C	4 C	7 B	7 B	4 C	10 A
Do teachers relate analog resources with virtual technologies in student learning?	10 A	8 B	6 B	8 B	9 A	9 A	8 B	8 B	10 A	9 A	9 A	8 B

Source: Research data

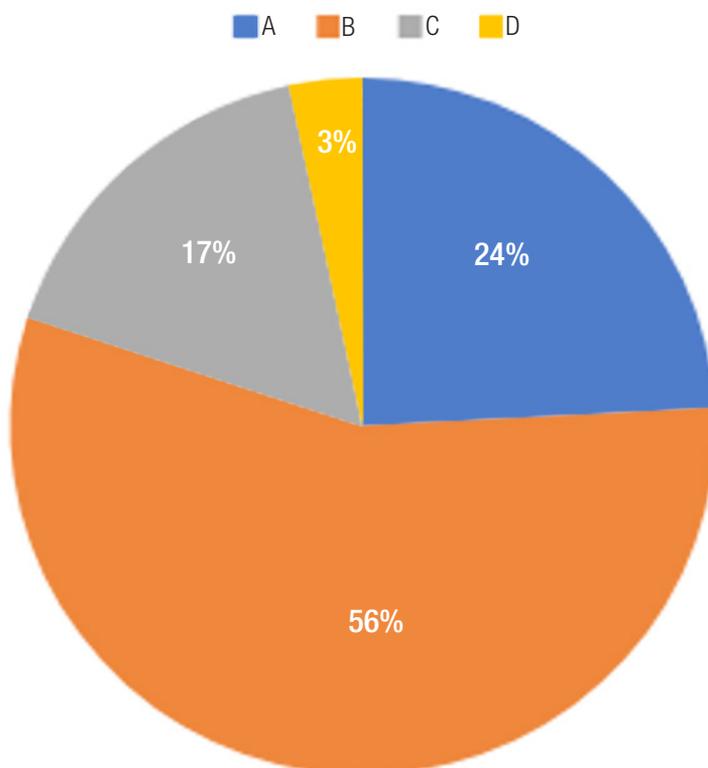


Table 4 – Quantitative summary of concepts in the category Creative Methodologies and Strategies

Quantitative	Concept
29	A
67	B
20	C
4	D

Source: Research data.

Graph 2 – Percentage summary of concepts in the category Creative Methodologies and Strategies



Source: Research data.

In this category, the results indicate that 56% of participants' responses fall under concept B and 24% under concept A, totaling 80% for these two categories. The remaining 20% are distributed as 17% for concept C and 3% for concept D.

There is an important observation regarding indicator 5. Are art, music, and theater used as teaching resources? Among the 12 participants, seven assigned their responses to concepts C and D. Although some teaching activities involving these resources were

observed, it is evident that their use could and should be expanded in the course. Figures 2 to 5 present some examples of the activities that have already been conducted.

Figure 2 – Simulated care conducted at SAMU/ALAGOAS building



Source: UFAL, 2023.

Figure 3 – Activity on territorialization presentation entitled: “Expressions of a living territory: how they work, how they love, and how they die”



Source: course archive.



Figure 4 – Image of artistic material produced by a student for the activity: “Expressions of a living territory: how they work, how they love, and how they die”



Medicina da Terra

Se caiu o menino, se fez um arto
e ficou todo doído de uma banda,
ou de repente gripou, ficou arriado,
caço minha saúde logo na planta!

Chego à unidade, ao doutor eu já digo
que já usei lambedor, e também o chá.
Mas, quase sempre, eu nem chego lá:
com o chá que cura, eu fico sadio!

Na horta tão plena, tão cheia de vida,
Ali vive a cura das minhas feridas.
Mas, se não consigo, entra a medicina.

E assim se resolve na Vila do Padre:
o remédio é da terra, todo mundo já sabe
a quem recorrer quando adoecido.

*E, ó, não tem dor no pé da barriga,
nem no espinhaço, nem vista cansada,
que com esse chá não dê uma melhorada:
é a pessoa tomar, que fica novinha!*

Texto e ilustração: Dyzon Francelino Silva

Translator’s Note: The translation aims to preserve the poem’s oral rhythm, tone, and cultural nuances.

Earth’s Medicine
If the boy takes a fall, makes a bruise,
And one whole side is aching through,
Or catches a cold, feels weak and blue—
I’ll seek my healing straight from the root!
I go to the clinic, tell the doctor plain:
“I’ve had my syrup, and the herbal tea.”
But truth be told, most times it’s me—
With my healing brew, I’m well again!
In the garden—so full, so alive—
Lives the cure that keeps me fine.
And if it fails, then medicine joins in.
That’s how it goes in the Padre’s town:
We know our cure, it’s well renowned,
We know where to turn when sickness
begins.
Oh, there’s no ache low in the belly,
No back pain, no weary eyes so heavy,
That won’t improve with this good tea—
Just take a sip, and you’ll feel new and free!

Text and illustration: Dyzon Francelino Silva

Source: Course archive.

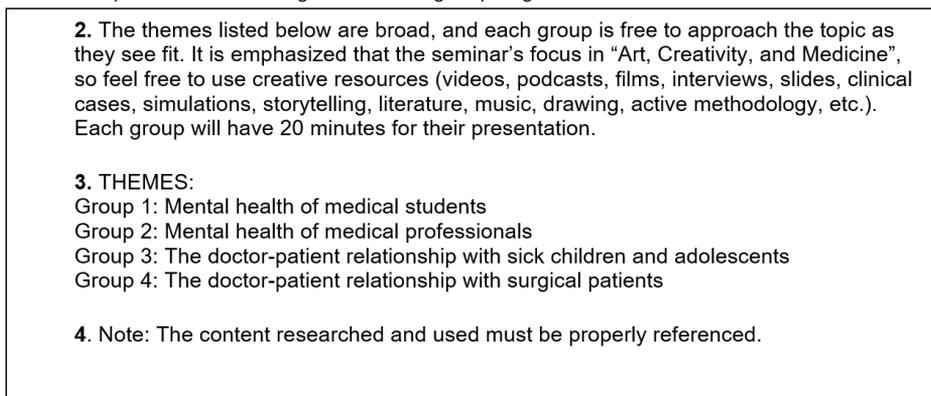
Figure 5 – Didactic activity conducted through a board game



Source: Course archive.

In the course documents, we also found the activity entitled ‘Art, Creativity, and Medicine,’ designed based on the idea of thematic seminars; however, the content to be addressed had to be linked to a creative methodology. The class was divided into groups, and a guideline was provided, which they were expected to use as a basis for constructing the activity, as illustrated in Figure 6:

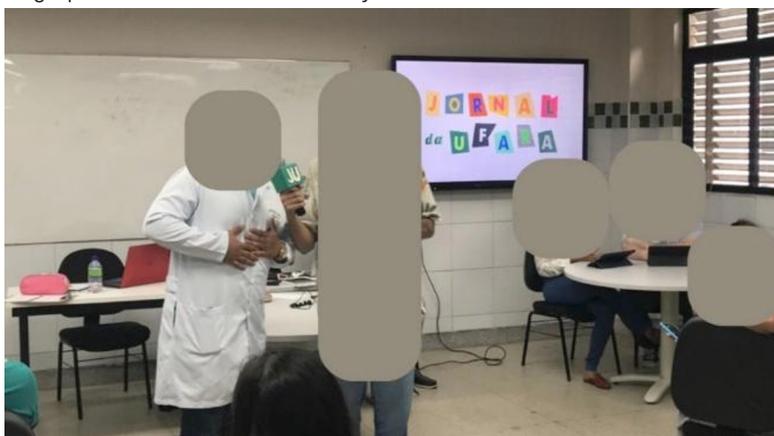
Figure 6 – Excerpt from the class guideline for group organization



Source: Course document.

As an example, we will show how one of the groups organized their activity. The group's theme was the doctor-patient relationship with sick children and adolescents. The group created a news program called UFARA, and through this element, they were able to address the topic. In addition to constructing the scenario, they included key aspects for reflecting on this relationship, such as an interview conducted within the news program with a pediatrician and the presentation of a project called IUPI (a real element, as it is a project that exists at the university with health students). Below, in Figure 7, is a record of part of the scenario created:

Figure 7 – Photograph of the scenario created by the students



Source: Course archive.



In this experience, the students were given only a single theme and, as a group, were required to organize themselves and define the teaching and learning strategy. One of the aspects was that the methodology employed should take care to engage the rest of the class in the process, while creativity and freedom in the construction were valued. The activity enabled the development of various skills, such as intergroup relationships and the students' relationship with the class, requiring communication skills to enhance dynamics, creativity, autonomy, protagonism, etc.

As Mitjans Martínez (2013) points out, creative learning is identified by the generation of one's own ideas about what has been studied – ideas that, by transcending the given, express novelty as an essential characteristic of creativity. It is a type of learning that, although it contains the given, goes beyond the full appropriation of information. In this way, the individual, in the process of creative learning, expresses themselves through the personalized elaboration of information and original ideas, through inquiry, questioning the given, and going beyond what is provided.

We infer that, beyond the potential openings within the various existing active methodologies to work from the perspective of creative and inclusive spaces, the very guidance of the DCNs (which stipulates that the course must make use of active methodologies) itself presents a potential opening for the expansion, creation, flexibility, and adaptation of creative and inclusive teaching strategies, thereby fostering students' active and meaningful learning.

Considering this, and corroborating the data presented thus far, we provide some excerpts from the statements of the faculty participants regarding active methodology:

Active methodologies are, as the concept suggests, learning centered on the student. [...] We need to develop methods that ensure the student's learning. These methodologies make the student participate more, preventing them from becoming just a spectator. Instead, they engage actively, having previously studied the content so they can bring their questions to class, allowing for a richer discussion with the professor – not just the professor presenting a slide lecture while the student passively watches (Participant 2).

I see it as a method that requires the participation of all parties. It is a methodology in which the responsibility for learning doesn't fall solely on the professor – who organizes everything, plans the content, and delivers the knowledge. I believe active methodologies integrate the process differently because they distribute the responsibility for learning. It is not only about the professor being prepared, studying, and guiding students toward their goals, but also about the students taking their share of responsibility – preparing themselves and actively participating. Moreover, I think active methodology promotes not only content learning but also the development of other important skills such as communication and organization, since students need to plan, communicate, respect others' opinions, and work as a team. These are skills that traditional methodology doesn't provide much opportunity to practice or refine. I believe active methodology allows students to improve in these equally important aspects (Participant 4).



Thus, through VADECRIE and the data found in course documents and interview reports, the program confirms evidence of the indicator, taking into account the resources to be used in the plans, which include social, emotional, and environmental awareness, and connect, whenever possible, to real-life contexts. In addition, there is a mindful space for the development of creativity through resources such as music, theater, and art – even if still in an incipient manner – and some professionals, from the municipal health network, are invited to assist in certain educational situations. Some didactic strategies are based on virtual learning technologies. Indicators 7 and 8 reveal that, for some students, these initiatives are still insufficient within the course; therefore, this represents an aspect that requires more careful attention.

Final considerations

Based on the discussions and analyses conducted within the two categories, the results indicate that the program has a creative faculty and that the active methodologies employed constitute powerful learning spaces. These spaces allow each student to be recognized in their uniqueness within the shared experience, which is fundamental when considering the importance of future physicians acknowledging the dimension of the subject – both in their future patients and in themselves – as a guiding element of the clinical encounter.

However, it is also important to highlight the challenges faced by faculty members in adopting and adapting active methodologies for certain types of content. It is essential that teachers have access to discussions that address didactics in contexts of uncertainty, enabling them to observe, analyze, and understand learning processes. This broadening of knowledge should lead to the understanding that learning is a complex process by nature. Only through such openness will it be possible to propose principles, guidelines, and strategies aimed at enhancing the effectiveness of teaching processes.

Thus, the importance of creative and inclusive pedagogical practices—such as those mentioned above—during medical training is emphasized, so that students may experience processes inherent to their future professional practice. Putting knowledge into practice, identifying difficulties and anxieties along the way, and being able to express emotions and feelings are also integral to the profile expected of a physician upon graduation—one who is capable of perceiving themselves as a subject immersed in the complexity of life and the lives of their patients, not as separate entities, but within the encounter that constitutes this relationship.

We hope that attitudes of sensitive listening, creativity, and inclusion will enable not only more accurate diagnoses but also greater possibilities for offering support to both professionals and patients, thereby fostering trust in the process of treatment and healing.



References

AQUILANTE, Aline Guerra *et al.* Situações-problema simuladas: uma análise do processo de construção. **Revista Brasileira de Educação Médica**, Brasília, DF, v. 35, n. 2, p. 147-156, 2011.

BATALLOSO, Juan Miguel. A escola criativa e transdisciplinar do futuro. *In*: MORAES, Maria Cândida. **Transdisciplinaridade, criatividade e educação**: fundamentos ontológicos e epistemológicos. Campinas: Papirus, 2015. p. 119-143.

BOELEN, Charles. A new paradigm for medical schools a century after Flexner's report. **Bull World Health Organ**, Genebra, v. 80, n. 7, p. 592-3, 2002.

BONOMA, Thomas V. Case research in marketing: opportunities, problems and a process. **Journal of Marketing Research**, New York, v. 12, p. 199-208, 1985.

BRASIL. Ministério da Educação e Cultura. Resolução nº 3, de 20 de junho de 2014. Institui diretrizes curriculares nacionais do curso de graduação em medicina e dá outras providências. **Diário Oficial da União**, Brasília, DF, 23 jun. 2014.

CAMARGO, Fausto; DAROS, Thuinie. **A sala de aula inovadora**: estratégias pedagógicas para fomentar o aprendizado ativo. Porto Alegre: Penso, 2018.

DIAS, Simone Regina; VOLPATO, Arceloni Neusa. **Práticas inovadoras em metodologias ativas**. Florianópolis: Contexto Digital, 2017.

SCOREL, Sarah. História das políticas de saúde no Brasil de 1964 a 1990: do golpe militar à reforma sanitária. *In*: GIOVANELLA, Lígia *et al.* (org.). **Políticas e sistemas de saúde no Brasil**. Rio de Janeiro: Fiocruz, 2008. p. 385-434.

GOMES, Andréia Patrícia; REGO, Sérgio. Transformação da educação médica: é possível formar um novo médico a partir de mudanças no método de ensino-aprendizagem? **Revista Brasileira de Educação Médica**, Brasília, DF, v. 35, n. 4, 2011. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022011000400016&lng=pt&nrm=iso&tlng=pt. Acesso em: 20 ago. 2024.

KOIFMAN, Lilian. O modelo biomédico e a reformulação do currículo médico da Universidade Federal Fluminense. **História, Ciências, Saúde, Manguinhos**, Rio de Janeiro, v. 8, n. 1, p. 48-70, mar. 2001.

LUDKE, Menga; ANDRÉ, Mari. **Pesquisa em educação**: abordagens qualitativas. São Paulo: EPU, 1986.

MACHADO, Clarisse Daminelli Borges; WUO, Andrea; HEINZLE, Marcia. Educação médica no Brasil: uma análise histórica sobre a formação acadêmica e pedagógica. **Revista Brasileira de Educação Médica**, Brasília, DF, v. 42, n. 4, p. 66-73, 2018.

MENDES, Isabel Amélia Costa. Desenvolvimento e saúde: a declaração de Alma-Ata e movimentos posteriores. **Revista Latino Americana de Enfermagem**, Ribeirão Preto, v. 12, n. 3, p. 447-48. 2004.



MITJANS MARTÍNEZ, Albertina. Aprendizaje creativo: desafíos para la práctica pedagógica. **CS**, Cali, n. 11, p. 311-341, jun. 2013. Disponível em: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S2011-03242013000100011&lng=es&nrm=iso. Acesso em: dez. 2023.

MORAES, Maria Cândida. Criatividade em uma perspectiva ecossistêmica. *In*: BERG, Juliana; VESTENA, Carla Luciene Blum; COSTA-LOBO, Cristina; CUEVAS, Jessica Cabrera (org.). **Coletânea tecido em criatividade**. v. 1. São Paulo: Pimenta Cultural, 2021. p. 103-124.

MORAES, Maria Cândida. **Saberes para uma cidadania planetária**: homenagem a Edgard Morin. Rio de Janeiro: Wak, 2019.

MORAES, Maria Cândida. **Transdisciplinaridade, criatividade e educação**: fundamentos ontológicos e epistemológicos. Campinas: Papyrus, 2015.

MORIN, Edgar. Da necessidade de um pensamento complexo. *In*: MORIN, Edgar. **Introdução ao pensamento complexo**. 5. ed. Porto Alegre: Sulina, 1999. p. 15-18. Disponível em: <http://www.eternoretorno.com/wp-content/uploads/2008/08/necessidade-de-um-pensamento-complexo-edgar-morin.pdf?x31337>. Acesso em: 10 fev. 2023.

MORIN, Edgar. **Introdução ao pensamento complexo**. Porto Alegre: Sulina, 2005.

MORIN, Edgar; CIURANA, Emilio-Roger; MOTTA, Raúl Domingo. **Educar na era planetária**: o pensamento complexo como método de aprendizagem pelo erro e a incerteza humana. São Paulo: Cortez; Brasília, DF: Unesco, 2003.

NICOLESCU, Basarab. **O manifesto da transdisciplinaridade**. São Paulo: Trion, 2008.

NOGUEIRA, Maria Inês. A reconstrução da formação médica nos novos cenários de prática: inovações no estilo de pensamento biomédico. **Physis**: Revista de Saúde Coletiva, Rio de Janeiro, v. 24, n. 3, p. 909-930, set. 2014. <http://dx.doi.org/10.1590/s0103-73312014000300013>

PAGLIOSA, Fernando Luiz; DA ROS, Marco Aurélio. O relatório Flexner: para o bem e para o mal. **Revista Brasileira de Educação Médica**, Brasília, DF, v. 32, n. 4, p. 492-499, 2008. <https://doi.org/10.1590/S0100-55022008000400012>

PAUL, Patrick. **Saúde e transdisciplinaridade**: a importância da subjetividade nos cuidados médicos. São Paulo: Edusp, 2013.

RODRIGUES, Carla Cristina; TODARO, Mônica de Ávila; BATISTA, Cássia Beatriz. **Saúde do idoso**: discursos e práticas educativas na formação médica. *Educação em Revista*, Belo Horizonte, v. 37, 2021. <https://doi.org/10.1590/0102-469820811>

SAMPIERI, Roberto Hernández; COLLADO, Carlos Fernández; LUCIO, Maria del Pilar Baptista. **Metodologia da pesquisa**. 5. ed. Porto Alegre: Penso, 2013.



SANTOS, Akiko. Complexidade e transdisciplinaridade em educação: cinco princípios para resgatar o elo perdido. **Revista Brasileira de Educação**, Rio de Janeiro, v. 13, n. 37, p. 71-84, jan./abr. 2008.

SANTOS, Akiko. Teorias e métodos pedagógicos sob a ótica do pensamento complexo. *In*: SANTOS, Akiko. **Didática sob a ótica do pensamento complexo**. Porto Alegre: Sulina, 2005. p. 59-78.

SOUZA, Carlos Dornels Freire de. Programa Saúde da Família – PSF: a ação do estado, o cenário de implantação e a importância do território para a sua efetivação. **Hygeia**, Uberlândia, v. 10, n. 18, p. 207-215, 2014.

SUANNO, João Henrique. **Escola criativa e práticas pedagógicas transdisciplinares e ecoformadoras**. 2013. Tese (Doutorado) – Universidade Católica de Brasília, Brasília, DF, 2013.

TORRE, Saturnino de la. **Dialogando com a criatividade**. São Paulo: Madras, 2005.

TORRE, Saturnino de la. **Instituciones educativas creativas**: instrumento para valorar el desarrollo creativo de las instituciones educativas (Vadecrie). Sitges: Círculo Rojo – Investigación, 2012.

UFAL. Universidade Federal de Alagoas. **Projeto pedagógico do curso de medicina**: Bacharelado, Campus Arapiraca. Arapiraca: UFAL, 2018.

UFAL. Universidade Federal de Alagoas. **Projeto pedagógico do curso de medicina**: Bacharelado, Campus Arapiraca. Arapiraca: UFAL, 2023.

YIN, Robert K. **Estudo de caso**: planejamento e método. 5. ed. Porto Alegre: Bookman, 2015.

Received on January 26, 2024

Revised on November 12, 2024

Accepted on February 07, 2025

Editor: Profa. Dr. Rosana Passos

Raquel de Lima Santos is an adjunct professor at the Federal University of Alagoas (UFAL), Arapiraca campus. She holds a degree in Psychology from UFAL, is a specialist in childhood and adolescence developmental problems (Centro Lydia Coriat / Faculdade de Desenvolvimento do Rio Grande do Sul – FADERGS-RS) and earned her Master's in Psychology and PhD in Education from UFAL.

Maria Dolores Fortes Alves is a professor at the Federal University of Alagoas (UFAL), teaching in both undergraduate and graduate programs. She coordinates the Postgraduate Program (lato sensu) in Special Education from a Transdisciplinary Perspective at CIED-UFAL. She holds a PhD in Education: Curriculum (Pontifical Catholic University – PUC/SP, 2013) with a research stay at the University of Barcelona (2012); a Master's in Education (PUC/SP, 2008); and a Master's in Psychopedagogy and a degree in Pedagogy from Universidade Santo Amaro (UNISA).