Active teaching-learning methods in physiotherapy training: analysis of teacher representations

Métodos ativos de ensino-aprendizagem na formação em fisioterapia: análise das representações docentes

Micaela Freire Fontoura [1]
Washington da Silva Santos [1]
Ricardo Goes de Aguiar [2]
Karla Rocha Pithon [1*]

[1] Universidade Estadual do Sudoeste da Bahia (UESB), Jequié, Bahia, Brazil
[2] Universidade Federal de Alfenas (UNIFAL-MG), Alfenas, Minas Gerais, Brazil

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***Correspondence:** karla.rocha@uesb.edu.br

Abstract

Introduction: The increasing demands of social and healthcare systems necessitate the transformation of pedagogical and curricular practices in higher education through the adoption of active teaching-learning methods. **Objective:** To explore the representations held by physiotherapy professors regarding active teaching-learning methods and their implications for the profession. **Methods:** Thirty professors from two public universities were interviewed. The analysis was guided by the Theory of Social Representations and the Theory of the Central Nucleus. Data were analyzed using EVOC 2005 software, which facilitated the construction of a four-quadrant table, and IRAMUTEQ software was employed for descending hierarchical classification. **Results:** The representations identified include core elements such as *learning*, *student autonomy*, *dialogue*, *student*, and *teacher* (central quadrant), with peripheral elements like *interactivity*. Five classes were appointed: 1) Experience with active teaching-learning methods; 2) Conceptions on professional training based on active teaching-learning methods; 3) Aspects that contemplate active teaching-learning methods scenario; 4) Active teaching-learning methods; 5) Challenges of professional practice based on active teaching-learning methods. **Conclusion:** We noticed that teachers of undergraduate physiotherapy courses understand active teaching-learning methods and their implications for the practice of the profession, highlighting the student's autonomy and their position as a possible central axis.

Keywords: Problem-based learning. Health education. Higher education. Continuing education. physiotherapy.

Resumo

Introdução: *As crescentes demandas dos sistemas sociais e de saúde exigem a transformação das práticas pedagógicas e curriculares no ensino superior por meio da adoção de métodos ativos de ensino-aprendizagem.* ***Objetivo:*** *Explorar as representações mantidas por professores de fisioterapia sobre métodos ativos de ensino-aprendizagem e suas implicações para a profissão.* ***Métodos:*** *Trinta professores de duas universidades públicas foram entrevistados. A análise foi orientada tendo por base a Teoria do Núcleo Central, com uma aproximação da Teoria das Representações Sociais. Os dados foram analisados usando o software EVOC 2005, que direcionou a construção de um quadro de quatro casas, e o software IRAMUTEQ foi empregado para classificação hierárquica descendente.* ***Resultados:*** *As representações identificadas incluem elementos centrais como* aprendizagem, autonomia do aluno, diálogo, aluno e professor *(quadrante central), com elementos periféricos como* interatividade. *Cinco classes foram apontadas: 1) Experiência com métodos ativos de ensino-aprendizagem; 2) Concepção sobre a formação profissional pautada nos métodos ativos de ensino-aprendizagem; 3) Aspectos que comtemplam o cenário dos métodos ativos de ensino-aprendizagem; 4) Métodos ativos de ensino-aprendizagem; 5) Desafios da prática profissional pautada nos métodos ativos de ensino-aprendizagem.* ***Conclusão:*** *Percebe-se que os docentes dos cursos de graduação em fisioterapia apreendem os métodos ativos de ensino-aprendizagem e suas implicações para o exercício da profissão, destacando a autonomia do aluno e a sua posição como possível eixo central.*

Palavras-chave: *Aprendizagem baseada em problemas. Educação em saúde. Universidades. Especialidade de fisioterapia.*

Introduction

The information age, with its advances in science and technology, triggered a revolution in society, since the speed at which information is spread and the ease of access to knowledge has influenced the educational model, revealing that some pedagogical strategies and procedures have become outdated practices.[1]

In a panorama of rapid changes in society and knowledge, education has been changing and its conception has varied according to several aspects that privilege both the human and the technical, emotional, sociopolitical, and cultural dimensions, leading us to rework and rethink the problematic of education and teacher training.[2,3] Thus, a curricular transformation will only take place if there is a change in educational practices, which points to the need for urgent changes in higher education institutions aiming, among other aspects, at the reconstruction of their social role.[2-4]

Concurrently, the process of higher education in health has historically been based on the use of traditional methodologies, under the strong influence of the Cartesian-Newtonian inspired mechanism. This fragmented and reductionist system produced a teaching method that is dissociated from the service and the real needs of the current health system.[4-7] In addition to this, higher education in health has experienced a process of criticism and questioning over the last few years. Thus, new pedagogical approaches have been built that are implicated in training professionals as social actors with the skills and abilities needed to deal with complex situations.

From this perspective, the problematic that permeated this study translated into the following question: "What are the representations of the active teaching-learning methods by physiotherapy teachers with and without experience with the methodology?". Given the above, the objective of the study was to understand the representations of professors of undergraduate courses in physiotherapy about active teaching-learning methods and their implications for the practice of the profession.

The relevance of this study lay in the fact that it gathered experiences and representations of professors about active teaching-learning methods and, at the same time, points out the challenges about the use of these methods during professional practice, from the point of view of these professionals. Therefore, personal experience, associated with practical knowledge, can be a tool for the transformation of pedagogical practices. This involves comprehending and making inferences about active teaching-learning methods based on physiotherapy education, thus forming social representations, as the theory pointed out.[8,9]

Methods

This was a qualitative study, directed by the Consolidated Criteria for Reporting Qualitative Research tool

and anchored in the theoretical-methodological framework of the Theory of Social Representations, in its structural approach. The Central Core Theory, used as the support of the structural approach to the Theory of Social Representations, is organized around a central nucleus and peripheral elements that establish the representation of a given object by an investigated group, the first being the reason for structuring, meaning and permanence over time. The central nucleus is connected to the social memory of the group, this being the consensual aspect. On the other hand, the peripheral system relates to the most immediate context, it is flexible and presents the practical aspects to be analyzed.[8]

Thus, it makes way for the understanding of the process through which the comprehension of the object of study is perceived by individuals within the relationships established by them, in their construction of reality and incorporation of the universe. The theoretical proposition deals with the connection between subject and object, and how the construction of individual and collective knowledge occurs in the construction of representations derived from common sense.[9] The adoption of this theory as a reference aligns with the object of study, as it makes it possible to recognize the meanings attributed by individuals to their actions, considering the contexts in which they are inserted and, in addition to assisting in the comprehension of reality, enables an expanded view of the investigated data.[10]

The research was conducted from June 2020 to April 2021, in cooperation with two public universities that offer bachelor's degrees in physiotherapy in the Northeast region of Brazil. One of them is Federal University of Sergipe, Lagarto campus, which already has active teaching-learning methods implemented, while the other one is Southwest Bahia State University, and it uses traditional education in the formative process.

The population consisted of 30 professors of the physiotherapy course, 15 from each institution, who agreed to participate voluntarily in the study through electronic contact (e-mail). Professors who met the eligibility criteria were invited to participate through an intentional non-probabilistic sample, namely: (1) to be an active teacher linked to the institution and to have taught there for at least one year; and (2) not being away from their activities, for any reason, during the timeframe of the study. Participants that we were unable to be contacted by e-mail after three attempts were excluded from the study.

The interviews were conducted through a semi-structured script with 15 questions that gathered data related to the sociodemographic profile, the representation of active teaching-learning methods in the formative process of the undergraduate course in physiotherapy, and the repercussions they have on professional performance.

The interview guide's questions were about the participant's knowledge about active teaching-learning methods; the challenge to introduce the active teaching-learning methods in his/her practice; about participant's experience with active teaching-learning methods; how is organized the active teaching-learning methods in their university and the use of active teaching-learning methods to develop other abilities more than the content. They were made possible by the proximity of the researchers with the field, the reconnaissance of the participants and an invitation to participate. Due to the limitations imposed by the COVID-19 pandemic, the interviews were performed remotely through video calls on Google Meet platform and recorded with an average duration of 35 minutes each. The data was collected and analyzed by the same researcher.

The Free Word Association Test (FWAT) pilot was applied with all volunteers, since they weren't familiar with the technique, using the word "fireman". Soon after, the following inquiry was made: "what are the first five words that come to mind when you hear the term active teaching-learning methods?". The terms given were recorded, according to the order of evocation, in individual forms, cataloged numerically, with the numbering corresponding to the order in which the video calls were made by the researchers. The average evocation time was 15 seconds, with a minimum of 8 and a maximum of 30 seconds to the five terms.

The socio-demographic data was consolidated in Excel®, exported for analysis in the statistical software Jamovi®, version 1.8.4, and presented through descriptive statistics, using absolute and relative frequencies. For materialization of the corpus of the study, the words were typed in different Word files, with appropriate coding for analysis, by the software *Ensemble de programmes permettant l'analyse des evocations* (EVOC 2005®) and *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ®). Soon after, the file was saved in .txt format (format used by EVOC) and .txt Unicode UTF-8 (format recognized by IRAMUTEQ®).

We proceeded with the assessment of the evocations, through analysis and construction of the four-house board, graphically demonstrating the terms relating to the central nucleus and peripheral system, referring to the set of evocations given. The average frequency of evocation and the average order of evocation was considered. For this study, we chose to perform the analysis by correlating the elements of the central nucleus and the first periphery.

The textual corpus was submitted to treatment in IRAMUTEQ®, version 0.7 alpha 2, to perform the descending hierarchical classification, following three stages: a) the preparation and codification of the initial text; b) the descending hierarchical classification, performed by data processing; and c) the interpretation of the classes.[11]

Ethical guidelines

To meet the ethical standards of scientific research, the present study was evaluated and approved by the Ethics in Research Committees of both institutions (CAAE: 31479020.3.2001.5546; 31479020.3.1001.0055). To ensure the confidentiality of the participants, who signed a Consent Form, the interview identification was given through the term "participant", followed by the number of each interview, according to the order in which they were conducted.

Results

We observed that there was a greater distribution of females (60.0%). Regarding the time since graduating from their bachelor's studies, 66.7% had graduated more than 15 years before the study, and the time working as a professor in the institution was less than 10 years (66.7%) (Table 1).

A hundred and fifty words were listed in the natural order of the FWAT, out of which 88 were different and 64 were pronounced only once. The terms with enunciation lower than three were excluded, as shown in Table 2.

Within the participants analyzed considering the Central Core Theory, the representations of professors of the physiotherapy course regarding active teaching-learning methods in the possible central nucleus are based on the terms "apprenticeship", "student autonomy", "dialogue", "student" and "teacher". The terms "student autonomy" and "student" merit attention for showing that the nucleus is centered on the student, while the term "teacher" reveals that the research participants consider the idea that the teacher is more tied to the methods itself than the student (Table 2).

Table 1 - Characterization of professor according to individual variables (n = 30)

Variables	n (%)
Sex	
Female	18 (60.0)
Male	12 (40.0)
Age group	
< 40 years	13 (43.3)
≥ 40 years	17 (56.7)
Time since graduation	
< 15 years	10 (33.3)
≥ 15 years	20 (66.7)
Academic title	
Masters	8 (26.7)
Doctorate	22 (73.3)
Time working as a teacher at the HEI	
< 10 years	20 (66.7)
≥ 10 years	10 (33.3)

Note: HEI = higher education institution.

The descending hierarchical classification of the evocations produced a dendrogram (Appendix), that allows for the discussion of the content of the representations in Table 2. Thus, the general corpus consisted of 30 texts, separated into 641 text segments (TS), of which 473 TS (73.79%) were suitable for usage; 22,217 occurrences emerged (words, shapes, or words), out of which 3,169 were distinct words and 1,945 only had a single occurrence. The analyzed content was categorized into five classes: class 1, with 130 TS (27.48%); class 2, with 76 TS (16.07%); class 3, with 87 TS (18.39%); class 4, with 89 TS (18. 82%); and class 5, with 91 TS (19.24%); these being the classes of interest of the study. Thus, each class that emerged in the descending hierarchical classification (Reinert method)[11] was treated as a category, which will be described, operationalized, and exemplified below.

Table 2 - Structure of the social representation of active teaching-learning methods among professors through the Free Word Association Test

Central elements (frequency ≥ 5)			**Elements of the first periphery (frequency ≥ 5)**		
Evocation	AFE	AOE < 3	Evocation	AFE	AOE ≥ 3
Apprenticeship	6	2,833	Interactivity	5	3,600
Student autonomy	12	2,583			
Dialogue	5	2,400			
Student	13	1,462			
Teacher	5	2,600			
Contrast elements (frequency < 5)			**Elements of the second periphery (frequency < 5)**		
Evocation	AFE	AOE < 3	Evocation	AFE	AOE ≥ 3
Learning	4	3,000	Knowledge building	3	3,333
Knowledge	4	3,000	Mediator	3	4,000
Construction	3	2,333	Method	3	3,667
Challenge	3	2,000	Change	3	3,667
Teaching	4	3,000			
Innovation	3	2,667			

Note: AFE = average frequency of evocation; AOE = average order of evocation.

Experience with active teaching-learning methods

This category, originating from class 1, deals with the experiences of professors regarding active teaching-learning methods and the representation of these methods in their professional practices. It makes up 27.48% (*f* = 130 TS) of the corpus analyzed. This class was mostly associated with the statements of professors who have doctorate (88 TS; $\chi^2 = 2.17$) and emphasized professors who are linked to the institution that uses active teaching-learning methods in their professional training (58 TS; $\chi^2 = 2.28$), although they do not present statistical significance.

In the analysis performed, we were able to verify that the professional experience of the professor concerning the methods points to relevant aspects of their experiences even before teaching, through the presentation of a subjective historical clipping. This can be observed in the examples:

My experience with active methods began [...] *in 2011 as a teacher, until then I had no direct experiences; during the course of my professional training either in undergrad or at the time of my master's degree, I had no experience*. (Participant 18)

I had experience, the entrance exam was even tailored to medicine when I went to university and the course, it had implemented the active teaching-learning methods, and as I said at the beginning, I had the experience of doing the training in [...], *and it's really a method that I was delighted with*. (Participant 6)

Conceptions on professional training based on active teaching-learning methods

Class 2 comprised 16.07% (*f* = 76 TS) of the total corpus analyzed. The statements of professors younger than 40 years old (52 TS; $\chi^2 = 6.42$); less than 15 years since graduation (41 TS; $\chi^2 = 5.64$); who had a master's degree (35 TS; $\chi^2 = 2.74$); and, with less than 10 years working as a teacher in the higher education institution (57 TS; $\chi^2 = 2.61$) stand out in this class. It reflects how professors perceive the profile of professionals whose curricular matrix is focused on active teaching-learning methods or their experience with those methods during the formative process.

This class highlighted some relevant aspects, as participants significantly perceived that professionals had an advantage in their education, particularly in terms of "autonomy" ($\chi^2 = 46.78$) and the act of "seeking"

(χ^2 = 14.38) further education on a daily basis. We also found that professors consider active teaching-learning methods to be "important" (χ^2 = 21.49) to training and consequently to the performance of the physical therapist. The following reports illustrate this idea:

You make them, hum, responsible for their own teaching process, mediated by the teacher, so I think autonomy is the keyword to, hum... favor this future professional physiotherapist, hum, you can immerse yourself in the problem, seek answers to this problem. (Participant 2)

Another training that is very important, which is part of a complete professional, which are other issues that sometimes the more traditional format, the less active format does not give tools for the student to develop in other fields. (Participant 8)

Aspects that contemplate the active teaching-learning methods scenario

Class 3, on the other hand, covered 18.39% (*f* = 87 TS) of the corpus. It identified elements that are inserted in the context of the active teaching-learning methods and that indicate the need to understand the relationship of those methods with the academic universe through a discussion anchored in curricular, methodological, and pedagogical aspects. Words found in this class suggest this understanding, such as: "tutorial" (χ^2 = 22.42), "theory" (χ^2 = 22.42), "curriculum" (χ^2 = 12.78), and "knowledge" (χ^2 = 9.76). The participants' statements illustrate this thought:

In theory we have read and everything, but in fact what is really lacking is practice, or even practical training, to start doing something wrong and eventually getting it right... (Participant 12)

So this is the main problem I see, the main challenge is to bring the active methodology, right? As the main method of teaching in our curriculum, in our daily life, since the traditional [method] *is very entrenched in us, right?* (Participant 2)

Active teaching-learning methods

In class 4, 18.82% (*f* = 89 TS) of the total corpus proved relevant. This class considered the male participants (39 TS; χ^2 = 2.48). This class emphasizes a more focused approach to understanding the concept of active teaching-learning methods and makes it possible to identify the teacher's representation by listing the words "process" (χ^2 = 23.19), "method" (χ^2 = 12.42) and "knowledge" (χ^2 = 14.61). It was possible to observe in the statements of this class a highlight for the figure of the "teacher" (χ^2 = 43.74) when compared to the "student" (χ^2 = 24.31), which suggests that professor experiencing, training or even studying active teaching-learning methods still cannot strip themselves of the role that traditional methodology has rooted in their professional practices: that of being the holder of knowledge and protagonist of the teaching-learning process. As the examples reinforce:

I understand how the methodology tries to put both the teacher subject as well as the student in the most central role and make it so that the methodologies are more participatory and not directive, that we must be a part, right, of the process of training and teaching/ learning. (Participant 4)

[Those] *are the methods in which one seeks... to build an interaction between students and professor in the process of teaching and learning, creating a comparison between students and professor and among students themselves in the production of knowledge.* (Participant 13)

Challenges of professional practice based on active teaching-learning methods

In the last class 5, the corpus represented 19.24% (*f* = 91 TS) of the text segments. This class draws attention to pointing out the challenges that professor perceives in professional practices regarding the use of active teaching-learning methods. Therefore, some words that are associated with the discussion of this study stand out: "self-knowledge" (χ^2 = 21.21), related to experiences with methods and the quest to learn about them; the "classroom" (χ^2 = 16.93) as a physical space that requires adaptations for a significant experience of active teaching-learning methods; and finally, the act of "studying" (χ^2 = 6.4), which directs our gaze to the idea of continuing education. Some text segments illustrate class 5:

I understand that there are countless challenges and the main one that I think brings along other [challenges] *is the aspect of the absence of teacher professionalization, the lack of professor, especially in health education*. (Participant 18)

I think the biggest challenge for the teacher is to disconnect some of the internal structure that he already carries, I think that, bringing it to myself already, is the biggest challenge and I already suggest a way out of this challenge, which is self-knowledge. (Participant 7)

Discussion

The present study identified that the representations of physiotherapy professors about active teaching-learning methods are focused on what some authors consider a new paradigm in the education of health professionals,[12-14] which also includes physiotherapists.[15-18] We also observed that this paradigm seeks to meet the principles and guidelines of the current public health system since it aims to provide more humanized care to the population anchored in evidence-based practice. It is also recognized that the teaching-learning process should be active and independent, leading to the overcoming of theory and practice, valuing the articulation of work between the health service and the community.[15-18]

From this perspective, the analyzed professor's representations point to the need to overcome the organization of the traditional teaching model in physiotherapy that is in place in most Brazilian universities. This is particularly relevant given the historical evolution of physiotherapy education in Brazil, which, through the National Curricular Guidelines, encouraged the shift from a technical-professional model to a curriculum with an emphasis on comprehensive training. This shift occurred in line with the growing demand for professionals capable of facing the multifaceted challenges of the Unified Health System (SUS).[19]

The National Curricular Guidelines serve as a fundamental tool for ensuring the quality of education, as they establish minimum national standards and align training with the epidemiological context and healthcare model. Understanding this historical context provides a critical lens to analyse the challenges and resistance encountered by teachers when adopting active teaching-learning methods.[20]

With this perspective in mind, and to achieve this overcoming, it is necessary to understand the challenges that the use of these methods imposes on both actors involved in this process (professors and students). However, this research sought to apprehend only the perspectives of professors. The literature indicates that professors understand that the use of active teaching-learning methods in their professional practices fosters characteristics that are relevant and necessary for future physiotherapists and are recommended in the curricular guidelines of health courses, including the physiotherapy course. Additionally, these methods facilitate the development of students' autonomy and interactive learning processes among students while fostering competencies essential to professional practice. However, it is important to note that these methodologies cannot be applied without the professional mastering of the technique itself, as each methodology is based on epistemological assumptions that must align with the teacher's conception of student development, considering them as beings of potential and autonomy.[12-18]

Among the challenges these methods present to professional practice, a considerable number of professors demonstrated resistance to changing the traditional teaching system. This is largely due to their training having been rooted in this model. Professors also expressed difficulty in evaluating whether essential knowledge was sufficiently addressed through active teaching-learning methods and in perceiving student autonomy as fostering, rather than hindering, active engagement. This condition reinforces what researchers have been debating about the fact that professors of physiotherapy courses, because they were exposed to traditional training methods while undergraduates, even if they specialize further, still have a perspective that focuses on the traditional methodology. This requires training and professional development in active methodologies to break the paradigm that surrounds the context of their performance.[13-18]

Almost all participants stated that these methods place the student at the center of their learning process. However, it is essential to mention that the participants also reinforced the importance of teacher mediation in this process, given that the established professional has the skills and competencies for such mediation. These findings corroborate the literature that emphasizes the importance of pedagogical practice based on mediating and motivating actions that meet the student's needs

fully in the building of knowledge, but also in the transformation of the individual.[15,16,18,21]

We must reinforce that, among the findings, the professors elucidated that the professional profile of the physiotherapist who is trained with an experience in the active teaching-learning methods stands out when compared to the others, which corroborates the scientific literature.[14-18] Professionals trained by active methods develop a critical and reflective spirit about reality, and become able to mobilize their knowledge actively, knowing how to solve problems through the active search for objective solutions and agendas in practice based learning.[15,16,18-22] Thus, we found evidence that the reflections in relation to other analyses focused on this theme, along with the teaching-learning process in the area of physiotherapy, are relevant to the current context of society in the same way that the possibilities of diversification and stimuli in the educational field are necessary. Therefore, we consider that the actors involved in the teaching-learning process need subsidies that support advancement in knowledge intertwined with contemporaneity.

It is interesting to note that the design of this study made it possible to compare the knowledge about active teaching-learning methods of two distinct groups of teachers; one that effectively uses the technique in their daily work and another that maintains traditional methodologies. This practical difference can be observed in Class 3. Maintaining traditional teaching potentially impacts the training of new teachers in Brazil. In the group studied, most teachers in practice were trained in traditional methodologies, as can be observed in the statements of Class 1. This scenario of implementing active methodologies is not restricted to national institutions; it has been a challenge at an international level for some decades.[23-25] Therefore, training teachers to work with active methodologies is a necessity.

In Brazil, discussion on modernization of physiotherapy teaching techniques has been expanding, especially in relation to the National Curricular Guidelines for the Undergraduate Course of Physiotherapy – the current document is dated to 2002.[19] The Brazilian Association of Physiotherapy Education (ABENFISIO) and the Federal Council of Physiotherapy and Occupational Therapy (COFFITO) are the institutions that are coordinating this update, which has already been evaluated by the Plenary of the National Health Council, as set out in the Resolution No. 559, 2017.[26]

Five classes show that even without using active methodologies, teachers know this method and recognize its importance. However, studies about digital education do not show the same receptiveness[27] and present reservations.[28] It is important to highlight the way in which the social representations formulated are linked to the experiences of the professors included in the present study. We could observe in this study the significance of some sociodemographic variables (gender, time of graduation, and title), which were important aspects of the diversity of thought among professors. This suggests that different social positions implicate the formulation of different ways of representing the social phenomenon in question.

By incorporating the analysis of the interaction between institutional, pedagogical and systemic factors and relating it to the historical and political context of physiotherapy education in Brazil, this study contributes to advancing the discussion on ways to integrate active learning methodologies into physiotherapy curricula.

We must note that this study allowed for the identification of the representations of professors about the active teaching-learning methods through the discussion of historical, methodological, and subjective aspects. However, despite the contributions brought by this research, it is not exempt from limitations, because using a non-probabilistic and relatively small sample interferes in the generalization of data for the general population. This limitation, however, does not invalidate research, considering that it constitutes a study at an exploratory level, but one that already gathers important indications of the representational field of this group, paving the way for future expansions. Moreover, this study presents data from only two public higher education institutions, and, in this sense, it is not possible to observe differences between social representations of professors from the public and private educational contexts. We suggest that in future studies this perspective be addressed, as well as involving more educational institutions.

Conclusion

Professors of undergraduate physiotherapy courses understand active teaching-learning methods and their implications for the practice of the profession, highlighting the student's autonomy and their position as a possible central axis.

It is necessary to understand the moment experienced by the professors of physiotherapy courses, which shows a need for curricular changes. As well as the need for the interpretation of the reality of these social actors, since the way these professionals attribute meaning to the active teaching-learning methods allows us to establish nexuses for reflection on the object of this study, envisioned by professor stemming from the realities experienced by them. Also assisting in the planning of interventional practices aimed at training this population.

The present study contributes with necessary reflections for breaking the paradigm of traditional training in physiotherapy courses and for thinking about possibilities for using active teaching-learning methods.

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Authors' contributions

All authors contributed to the conception and design of the work, analysis and interpretation of data. MFF, RGA and KRP were responsible for the acquisition; MFF and KRP drafted the work, and WSS and RGA substantively revised it. All authors approved the final version.

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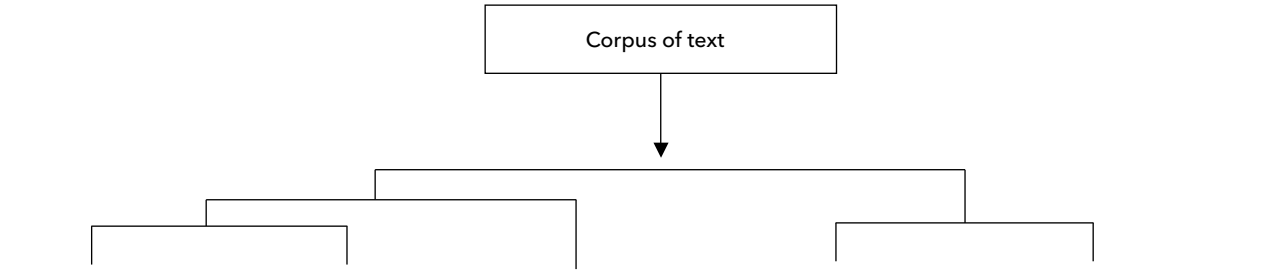
Appendix

Dendrogram of the descending hierarchical classification of the evocations



class 2 - (76/473 TS) - 16.07%
theme form
< 40 years old
< 15 years since graduating
***Master´s degree**
***< 10 years as a aprofessor at the HEI**

Word	*f*	χ^2
Autonomy	10	46.78
Physiotherapist	15	46.47
Professional	20	37.31
theme_form	12	25.33
Important	11	21.49
Question	9	19.83
To train	11	19.70
Very	31	18.12
More	27	17.71
To want	7	16.31
To answer	3	15.77
Characteristic	3	15.77
Clear	3	15.77
Life	4	15.32
To find	4	15.32
To seek	9	14.38
Time (instance)	13	13.35
To give	12	11.69
Component	4	11.54
To think	5	10.61
To tend to	4	8.89
To perceive	8	8.87
Right	7	8.24
Because	20	7.81
Active methodologies	6	7.68
Graduation	11	7.20
Difference	2	5.73
Whole	2	5.73
Challenged	2	5.73
Trajectory	2	5.73

class 3 - (87/473 TS) - 18.39%

Word	*f*	χ^2
Today	26	65.99
Moment	17	40.47
Day	8	36.10
To find	36	26.19
Active method	9	23.02
Tutorial	5	22.42
Theory	5	22.42
Problem	8	19.11
Profession	4	17.90
Expositional	4	17.90
People	38	17.82
Demand	5	17.07
To happen	7	15.36
Area	6	14.24
To read	6	14.24
Class	9	14.02
Curriculum	4	12.78
Part	10	11.26
To bring	8	11.02
After	5	10.55
Including	6	9.81
Knowledge	16	9.76
Excellent	3	8.61
Research	5	8.44
To live	5	8.44
To insert	5	8.44
To see	12	7.63
To wait	4	7.11
Something	5	6.80
Positive	3	5.83

class 5 - (91/473 TS) - 19.24%
theme_cha

Word	*f*	χ^2
theme_cha	20	49.17
Question	9	38.51
Biggest	11	29.17
Challenge	24	26.06
To exist	10	22.43
Self-knowledge	5	21.21
To visualize	5	21.21
To like	5	21.21
Education	6	20.21
Classroom	4	16.93
Person	9	16.57
Lack	6	16.28
Show	5	16.07
Even	17	15.22
Really	8	13.34
To find	32	13.29
Distance education	3	12.67
Necessary	5	12.46
Main	7	12.11
Maybe	7	12.11
Possible	4	12.01
Through	4	12.01
To learn	5	9.80
To imagine	4	8.80
To research	3	8.07
Certainty	3	8.07
Less	5	7.79
Within	8	6.66
Best	7	6.40
To study	7	6.40
Subject	5	6.22

class 1 - (130/473 TS) - 27.48%
theme_exp
***UFS**
***Doctorate**

Word	*f*	χ^2
Experience	43	99.63
University	22	45.06
theme_exp	22	41.89
Teacher	24	30.02
Year	19	24.34
Undergraduate	9	24.21
Subject	11	21.89
Lizard	8	21.47
Course	16	19.48
Before	8	17.36
To take	6	16.03
Campus	7	14.71
Time	7	14.71
Doctorate	5	13.33
Previously	7	11.64
Activity	7	11.64
To teach	4	10.64
Idea	4	10.64
When	25	10.08
To begin	14	9.59
Use	5	9.51
Cycle	5	9.51
Past	5	9.51
UFS	6	9.22
Case	11	9.19
To speak	19	8.01
Acting	3	7.97
To adapt	3	7.97
I've experienced	3	7.97
To introduce	3	7.97

class 4 - (89/473 TS) - 18.82%
theme_atlm
***Male**

Word	*f*	χ^2
theme_atlm	27	111.61
Professor	39	43.74
Role	6	26.22
Student	11	24.31
Process	12	23.19
Figure	5	21.80
ATLM	5	21.80
Learning	7	17.52
Facing	4	17.41
Facilitator	4	17.41
TLP	5	16.56
Necessarily	5	16.56
To build	5	16.56
To pass	10	16.53
Knowledge	18	14.61
To put	10	13.29
Curricular component	3	13.03
Protagonist	3	13.03
To mediate	3	13.03
Discussion	5	12.88
Method	21	12.42
Enable	4	12.38
To use	10	11.93
To belive	11	9.94
Content	7	9.18
Teaching/Learning	3	8.34
Knowledge building	3	8.34
To exit	6	7.84
Bright/Clear	4	6.83
Place	5	6.50
Active methods	9	5.78

Note: HEI = higher education institution; UFS = Universidade Federal de Sergipe; ATLM = active teaching learning methods; TLP = teaching learning processes.