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Active Methodologies in Higher Education in Brazilian Health: an Integrative Review in Face of Evidence-Based Practice Paradigm*

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ABSTRACT

Despite the many benefits mentioned in the literature about the use of active methodologies in higher education in Health to promote meaningful learning, such methods have found it difficult to be effective in Brazil. Overcoming this problem requires a diagnosis that allows a reflection on the production of knowledge about the theme, therefore, this study analyzed the national production on active methodologies in higher education in Health between 2013 and 2018. Methodology: It is about an integrative review in 5 national and international databases, which resulted in 42 eligible studies. Results: Most of the literature (73,8%), comes from experience reports and case series, (evidence levels VI and VII) published in 2016 and 2017, carried out by public institutions (78,6%) and without funding (71,4%). They were developed in Nursing (35,7%) and Medicine (19%) courses, seeking to understand the students' perception (28,6%) about the insertion of active methodologies, especially Problem-Based Learning (25%). The main advantages mentioned about active methodologies were the promotion of autonomy and critical and holistic thinking in the student. The aspects that threaten the realization of active learning, dealt with traditional curricula, poor infrastructure and inadequate teacher training. Conclusion: The low investment in research may justify the difficulty of implementing active methodologies, reinforcing the intensive use of a traditional curricular pedagogy that reduces the hassles that an evidence-based Brazilian health education can bring to all individuals of a passive learning culture.

KEYWORDS

Higher education. Health and education. Active methods. Problem-based learning. Evidence-based practice.

* Tradução certificada do português para o inglês por Mike Capacchione, M.Sc. University of Arizona, AZ, USA. E-mail: mike@amcham.com.br

Metodologias Ativas na Educação Superior em Saúde Brasileira: uma Revisão Integrativa Frente ao Paradigma da Prática Baseada em Evidências

RESUMO

Apesar dos diversos benefícios mencionados pela literatura acerca do uso de metodologias ativas na educação superior em saúde para a promoção de uma aprendizagem significativa, tais métodos têm encontrado dificuldades para efetivar-se no Brasil. A superação dessa problemática necessita de um diagnóstico que permita uma reflexão sobre a produção de conhecimento sobre o tema, por isso este estudo analisou a produção nacional sobre metodologias ativas no ensino superior em saúde entre 2013 e 2018. Metodologia: Trata-se de uma revisão integrativa em 5 bases de dados nacionais e internacionais, que resultou de 42 estudos elegíveis. Resultados: A maior parte da literatura (73,8%), advém de relatos de experiência e séries de casos, (níveis VI e VII de evidência) publicados em 2016 e 2017, realizados por instituições públicas (78,6%) e sem financiamento (71,4%). Foram desenvolvidas nos cursos de Enfermagem (35,7%) e Medicina (19%), buscando compreender a percepção dos estudantes (28,6%) sobre a inserção de metodologias ativas, especialmente da Aprendizagem Baseada em Problemas (25%). As principais vantagens mencionadas acerca das metodologias ativas foram a promoção de autonomia e pensamento crítico e holístico no estudante. Já os aspectos que ameaçam a efetivação da aprendizagem ativa, versaram sobre os currículos tradicionais, infraestrutura precária e, uma formação docente deficitária. Conclusão: O baixo investimento em pesquisas pode justificar a dificuldade de efetivação das metodologias ativas, reforçando o uso intensivo de uma pedagogia tradicional curricular que reduz o incômodo que uma educação para a saúde brasileira baseada em evidências pode trazer a todos os indivíduos de uma cultura passiva de aprendizagem.

PALAVRAS-CHAVE

Educação superior. Saúde e educação. Métodos ativos. Aprendizagem baseada em problemas. Prática baseada em evidências.

Metodologías Activas en la Enseñanza Universitaria de Salud en Brasil: una Revisión Integrativa Frente al Paradigma de la Práctica Basada en las Evidencias

RESUMEN

A pesar de los diversos beneficios mencionados por la literatura acerca del uso de metodologías activas en la educación universitaria en salud, para la promoción de un aprendizaje significativo, esos métodos han encontrado dificultades para hacerse efectivos en Brasil. La superación de una problemática necesita de un diagnóstico que permita reflexionar sobre la producción de conocimiento sobre el tema, así en este estudio se ha analizado la producción nacional sobre las metodologías activas en la enseñanza universitaria de salud entre 2013 y 2018. Metodología: Este estudio se utiliza de una visión integrativa en cinco bases de datos nacionales e internacionales, lo que resultó en 42 estudios elegibles. Resultados: La mayor parte de la literatura (73, 8%) viene de relatos de experiencia y series de casos (niveles VI y VII de evidencia) publicados en el 2016 y el 2017, realizados por instituciones públicas (78, 6%) y sin financiamiento (71,4%). Fueron realizadas en las carreras de Enfermería (35,7%) y Medicina (19%), buscando comprender la percepción de los estudiantes (28,6%) acerca de la inserción de metodologías activas, en especial en el Aprendizaje Basado en Problemas (25%). Las principales ventajas mencionadas acerca de las metodologías activas fueron la promoción de la autonomía y del pensamiento crítico y holístico en el estudiante. Los aspectos que amenazan la efectuaación del aprendizaje activo versaron sobre los currículos tradicionales, infraestructura precaria y una formación docente deficitaria. Conclusión: La baja inversión en investigación puede justificar la dificultad de utilización de las metodologías activas, reforzando el uso intensivo de una pedagogía tradicional curricular que reduce la importancia que una educación para la salud del Brasil basada en evidencias puede traer a todos los individuos de una cultura pasiva de aprendizaje.

PALABRAS CLAVE

Enseñanza universitaria. Salud y enseñanza. Métodos activos. Aprendizaje basado en problemas. Práctica basada en evidencias.

Introduction

Significant changes have occurred in the health area, such as the evidence-based practice paradigm (GALVÃO; SAWADA; MENDES, 2003; PEDROSA *et al.*, 2015; MELNICK; ATALLAH, 2011; MENDES; SILVEIRA; GALVÃO, 2008; SOUZA; SILVA ; CARVALHO, 2010), as well as curricular and methodological development aiming at offering students training that leads to academic and professional success, developing skills, technical abilities and especially a mastery feeling, has been progressively materializing and presenting a new reality in higher education teaching in connection with Brazil, among which stand out the Active Teaching and Learning Methodologies, which reveal many possibilities and challenges to teachers in the face of this new paradigm (BORGES *et al.*, 2014; BRASIL, 2014; MELLO; ALVES; LEMOS, 2014; MAMEDE; PENAFORTI, 2001; MITER *et al.*, 2008; MORAN, 2018; REUL *et al.*, 2016). Since participating in a traditional lecture class produces a lower level of brain activity compared to other activities, such as individual homework and even sleeping (POH; SWENSON; PICARD, *et al.*, 2010), not considering neuroactivity as responsible for learning, but one of the important predictors of this process.

Active methodologies combined with technologies seek to create conditions for mobilizing knowledge and providing technical-scientific complements for traditional teaching methodologies, in order to overcome their deficiencies. It removes the student from a passive role as he/she is made responsible for his/her learning process, building knowledge in an interdisciplinary and holistic way (ARAUJO; QUILICI, 2012; BRANDÃO; COLLARES; MARÍN, 2014; FLATO; GUIMARÃES, 2011; MAMEDE; PENAFORTI, 2001; MELLO; ALVES; LEMOS, 2014; MITRI *et al.*, 2008; MORAN, 2018; SANTOS; SATO, 2012).

This teaching model provides a refined intellectual and skills repertoire, such as clinical reasoning, crisis management, effective communication, leadership, interpersonal relationships, teamwork and moreover, it provides not only the opportunity to learn from success, but also from reciprocal mistakes, producing greater knowledge retention (ARAUJO; QUILICI, 2012; BRANDÃO; COLLARES; MARÍN, 2014; FLATO; GUIMARÃES, 2011; MAMEDE; PENAFORTI, 2001; MITRI *et al.*, 2008; MORAN, 2018; SANTOS; SATO, 2012).

In addition to competencies, active methodologies seek to make students learn to learn, that is, manage themselves and their learning process, identifying how best to learn, tools and strategies best suited to their idiosyncratic capacities, so that they can progressively evolve at their own pace (MAMEDE; PENAFORTI, 2001; MORAN, 2018; RIBEIRO, 2008; MITRE *et al.*, 2008; KODJAOGLANIAN *et al.*, 2003).

There is a diversity of active strategies and methodologies for health education, such as: Simulation-Based Teaching [SBL] (ARAUJO; QUILICI, 2012; BRANDÃO; COLLARES; MARÍN, 2014; SANTOS; SATO, 2012; MESQUITA, *et al.*, 2015) associated with the use of virtual reality and specific computer Software (ARAUJO; QUILICI, 2012), Problematization (CARVALHO *et al.*, 2016a; CARVALHO *et al.*, 2016b; GUEDES-

GRANZOTTI, *et al.*, 2015; REUL, *et al.*, 2016; FUJITA, *et al.*, 2016), Constructivist Spiral (LIMA, 2017), Experiential Learning (MENDONÇA; FREITAS; OLIVEIRA, 2017), Problem Based Learning (PBL) or Learning Based on Problems in Face-to-Face Format (BORGES *et al.*, 2014; MAMEDE; PENAFORTI, 2001; MELLO; ALVES; LEMOS, 2014; LIMBERGER, 2013; GUEDES-GRANZOTTI, *et al.*, 2015; RIBEIRO, 2008) and distance learning (TOMAZ *et al.*, 2015), Project-Based Learning (SANTOS *et al.*, 2017; MORAN, 2018), Peer Instruction (ALMEIDA, 2018), Dramatization (BONAMIGO; DESTEFANI, 2010), Role-playing (FRANCISCHETTI *et al.*, 2011; MESQUITA, *et al.*, 2015), Critical-Reflection Portfolio (REUL, *et al.*, 2016; COSTA e COTTA, 2014), among others.

Although different strategies and methodologies optimize teaching processes in order to make learning more efficient and meaningful, some difficulties for its application and effectiveness have been encountered in the Brazilian context, allowing some theorists to question its helpfulness, such as Bento *et al.*, (2017) who identified that 64.7% of a sample of 345 medical students from the Midwest region undergoing PBL, presented mild, moderate or severe symptoms of anxiety regarding the methodology, which significantly decreased as of the fourth year. In this sense, the authors consider the method as an additional stressor involved in medical training which requires a long time for adaptation by the student (BENTO *et al.*, 2017). On the other hand, authors such as Chagas *et al.* (2018), who evaluated 178 medical students at the Federal University of São Carlos, stated that low quality of life levels in medical students, regardless of being exposed to a traditional curriculum or based on active methodologies.

However, part of the nursing students from the Southeast region feel insecure about their own training in the face of problematization, as they are not highly directed by their academic teacher-advisors for not having at least at the beginning of the process, much clarity about what would actually be important to study and perceive negatively having advisors from other areas (ALMEIDA, 2013), besides teaching impasses about the new way to evaluate (BRESSA, 2018). Difficulties of a different order have also been reported in higher education to implement the active methodologies that deal with seeking ways to engage the students in the active process and overcome their basic education training deficits in increasingly crowded classrooms (ADADA, 2017).

In this direction, in order to advance knowledge in a clear and comprehensive way on the subject and build tools and practices based on evidence that meet the educational needs that work and experience the new paradigm of active learning in health higher education, we ought to understand what has already been developed in this connection and what scientific productions have advanced in terms of possibilities and challenges for the effectiveness of such methods.

Therefore, this study that aimed to characterize the scientific production in the last five years on active methodologies in health higher education was guided by the following questions: 1) "What has been produced in Brazil about active methodologies in the context of health higher teaching?". 2) "What possibilities and limits implied in the use of such methodologies have been discussed in these investigations?"

Methodology

The integrative review was adopted as a methodological design; it consists in the identification, organization, evaluation and systematic synthesis of the investigation results on the subject in question. It is Evidence-Based Practice (MELNICK; ATALLAH, 2011; MENDES; SILVEIRA; GALVÃO. 2008; SOUZA; SILVA; CARVALHO, 2010) and is considered as the broadest among the existing reviews, since it allows the inclusion of different types of empirical and theoretical studies and can serve different purposes, allowing a more comprehensive understanding of the phenomenon investigated (MENDES; SILVEIRA; GALVÃO. 2008; ROMAN; FRIEDLANDER, 1998; SOUZA; SILVA; CARVALHO, 2010).

The execution of the integrative review includes six essential elements, namely: 1) To elaborate the guiding question in a clear and specific manner; 2) Search for literature in the databases appropriate to the issue, including the criteria for the inclusion or exclusion of studies; 3) Extract information from selected studies using a previously systematized instrument; 4) Critical analysis of the studies included, which comprises assessing the level of evidence of the designs, as well as their usefulness; 5) Discuss the results found, revealing gaps and notes for future investigations and 6) Present the integrative review in detail through tables, charts or graphs, providing a complete view of the data to the reader (MENDES; SILVEIRA; GALVÃO. 2008; ROMAN; FRIEDLANDER, 1998; SOUZA; SILVA; CARVALHO, 2010).

Search Strategy

Searches were carried out in the databases: Virtual Health Library (VHL) that covers the Scientific Electronic Library Online (SCIELO) and Latin American and Caribbean Literature in Health Sciences (LILACS), Public Medline or Publisher Medline (PubMed) National Library of Medicine, Brazilian Digital Library of Theses and Dissertations (BDTD), Education Resources Information Center (ERIC) and Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES) using the Federated Academic Community (CAFe) resource to expand the possibilities of results, through the search strategy with the following combined descriptors: “Active Methodologies” and “Higher Education” in national databases, as well as the related keywords in English: “Active Learning” and “Higher Education” in the PubMed and ERIC databases, using “AND” between the words. For the purpose of an updated review, the last 5 years were selected as a time frame, comprising the period from 2013 to 2018; accesses occurred in February 2019.

Eligibility Criteria

The pre-selection phase carried out independently by the first and third author, included the application of the following inclusion criteria: 1) Descriptors present in the title of the text, in the Abstract or in the keywords, 2) Empirical works available carried out in

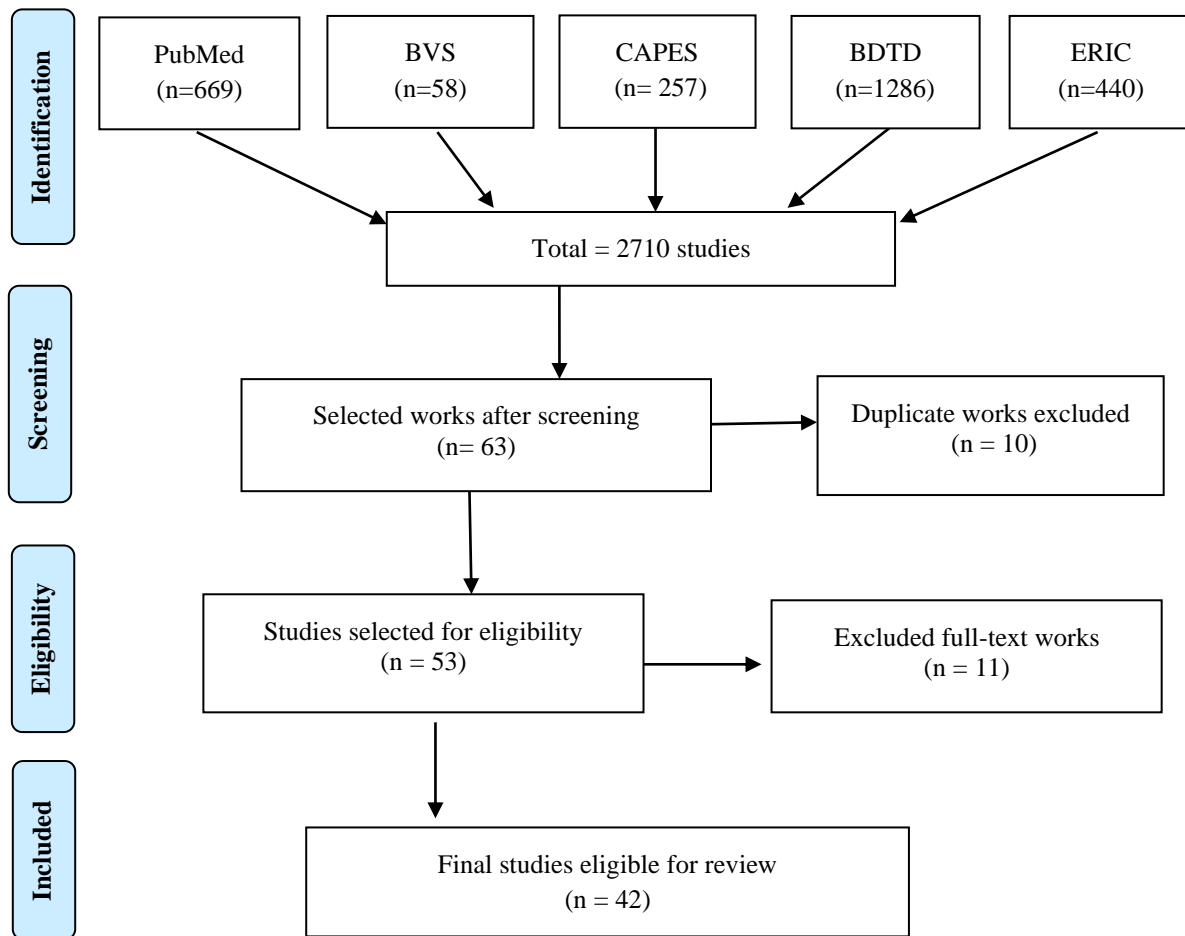
Brazil, through 3) Articles, Theses and Dissertations published in Portuguese, English or Spanish, 4) that addressed as a central theme the use of active methodologies in the framework of health higher education.

The following exclusion criteria were applied: a) theoretical studies, b) conference abstracts and/or works that proved to be incomplete, c) works that aimed at the exclusive evaluation of an ICT or DICT not directly linked to an active methodology. As well as, d) studies that used active methodologies in the context of elementary, secondary or vocational education unrelated to higher education, e) Theses or Dissertations found in the survey that had their empirical collection published in a scientific journal, opting for the latter to be included in the corpus of this review due to the lower risk of bias in a work with double-blind peer review.

Data Extraction and Review

The studies that emerged from the initial survey (N = 2710) were screened by reading their titles and abstracts, yielding 63 papers. Then, the pre-selected papers were read in full, with duplicates being excluded (N = 10) as well as those which did not meet the eligibility criteria (N = 11), according to the flowchart in Figure 1.

Figure 1. Flowchart of the search and selection process for studies based on the PRISMA model (Galvão; Pansani; Harrad, 2015)



Source: The authors (2019).

The selected works (N = 42) had their information extracted and categorized from the collection instrument previously prepared by the authors, composed of the following categories of analysis: 1) Type of publication and institution, 2) Paper title, 3) Authors and year of publication, 4) If funding available, 5) Periodicals, 6) Objective of the study, 7) Type of methodology investigated, 8) Methodological design adopted, 9) Participants and their health course, 10) Region where the study was developed, 11) Main results and 12) Classification of the level of investigation evidence.

For the analysis of the methodological quality, the classification model of the level of evidence proposed by Cook *et al.*, (1992) adapted by Melnik and Atallah (2011), which can vary from I to VIII, where I corresponds to the systematic review, was adopted. with meta-analysis; II-Randomized Clinical Trials with large samples, III-Randomized Clinical Trials with reduction of experimental control, IV-Observational and longitudinal studies, V-Studies that have case and control groups; VI-Series of cases, such as cross-sectional, descriptive and exploratory studies; VII-Case reports or experience and VIII-Expert opinion or theoretical essay. Therefore, the lower the value attributed to the study, the greater the reliability and validity of its scientific evidence.

In order to expand the possibilities of analysis in this study, the abstracts of the selected works were used as textual *corpus* and submitted to the IRaMuTeQ software *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* (RATINAUD, 2009), which is anchored in the R statistical software and in the Python language (CAMARGO, JUSTO, 2013) by two different investigators, seeking a greater reliability of the results. The IRaMuTeQ has been widely used by the Humanities and Social Sciences, allowing the overcoming of the dichotomy between quantitative and qualitative analyses, since it involves integration between the systematization of data resulting from statistical analysis and the critical interpretation of the investigator on the textual correlations produced by the software (LAHLOU, 2012), besides providing a clearer and more objective graphic representation for the reader (CAMARGO, JUSTO, 2013).

Among the five types of analysis available in the IRaMuTeQ, for this study general textual statistics (Graph 2), Word Cloud (Figure 2) and Similitude Analysis (Figures 3 and 4) were applied to the summaries of publications compared by language. The first analysis characterizes the general information of the terms frequency, the second represents graphically the frequency of occurrence of the terms in the sample corpus, and the third consists of the identification of co-occurrences between the words based on the graph theory, indicating the connection between the terms, allowing to represent them structurally. For the similarity analysis and for the words, adjectives, nouns (common names), verbs and adverbs. The other classes were programmed as complementary, if necessary (CAMARGO, JUSTO, 2013).

Results

Based on the selection of studies applying the eligibility criteria, it was possible to identify a significant number of papers indexed in the BDTD; however, publications in the form of articles predominated. Investigations were mostly performed by investigators of government universities, with participants from the Nursing and Medicine courses in the Southeast and Northeast regions. In addition, there was a small amount of funded studies, and, when available, CAPES was the main funding agency mentioned, as shown in Table 1.

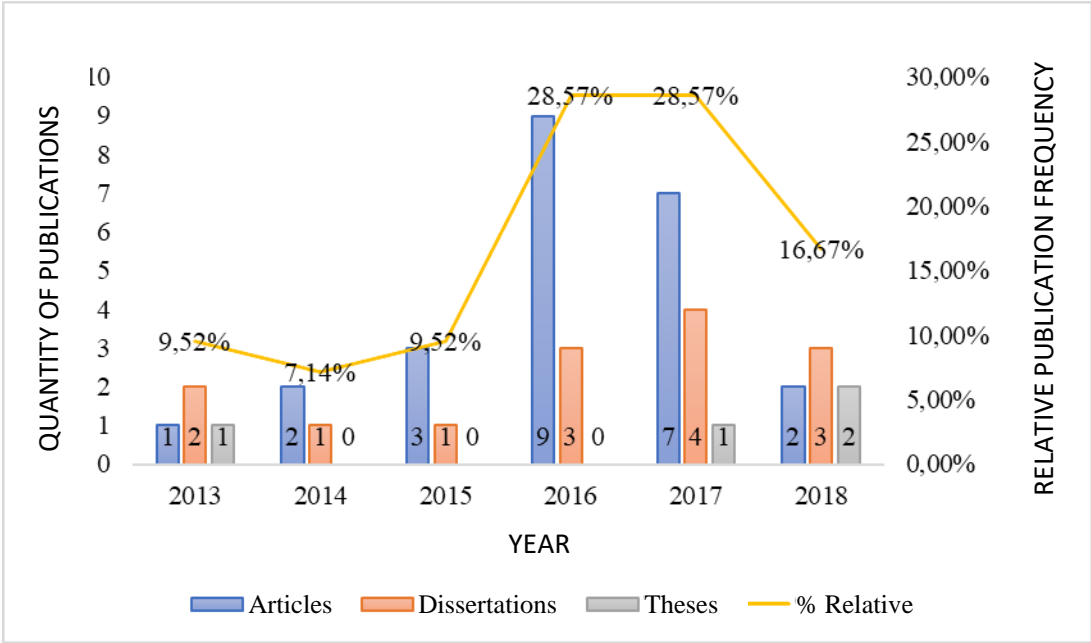
Table 1. Characterization of publications on active methodologies in the previous five years

Database	No.	%
BDTD	18	42.8
BVS	12	28.6
CAPES	6	14.3
PubMed	6	14.3
Total	42	100.0
Investigators affiliation	No.	%
Public	33	78.6
Private	5	11.9
Public and Private	4	9.5
Total	42	100.0
Funding	No.	%
CAPES	10	23.8
CNPq e CAPES	1	2.4
FAPEMIG	1	2.4
None	30	71.4
Total	42	100.0
Surveyed audience course	No.	%
Nursing	15	35.7
Medicine	8	19.0
Mixed	6	14.3
Dentistry	5	11.9
Pharmacy	4	9.5
Speech Therapy	2	4.8
Nutrition	2	4.8
Total	42	100.0
Studied Region	No.	%
Southeast	18	42.8
Northeast	13	30.9
South	6	14.3
Mid-West	4	9.5
North and South	1	2.4
Total	42	100.0

Source: The authors (2019).

Still characterizing publications about active methodologies in health higher education in the last five years, the results indicated that the years 2016 and 2017 reveal the largest amount of studies, as shown in Chart 1, especially in the format of articles published mostly in the Portuguese language (76.2%, N=32).

Chart 1. Publications submitted by character and period



Source: The authors (2019).

The investigation sought mainly to understand the reaction of students from the insertion of active methodologies or strategies, describing experiences of implementing such methods in disciplines and comparing the academic performance of students submitted to active methods versus the traditional method (Table 2).

Table 2. Investigations objectives (2013-2018)

Objective	No.	%
Understand the student's perception of active methods	12	28.6
Describe the use of active methods in subjects/courses	7	16.7
Compare academic performance between active and traditional methods	7	16.7
Compare the perception between teacher and student about active methods	4	9.5
Understand the teaching perception about the use of active methods	4	9.5
Assess the performance level of students submitted to active methods	3	7.1
Assess students' mental health	3	7.1
Quality/effectiveness analysis of active method developed by the authors	2	4.8
Total	42	100.0

Source: The authors (2019).

With regard to the type of active methodology studied (Table 3), it was possible to verify that Problem-Based Learning was the main methodology investigated, followed by Problematization and Simulation-Based Learning, revealing that a significant number of publications addressed more than one methodology or strategy in its investigation as shown in Table 1, corroborated by the significant amount of works that compare student performance in different methods, as shown in Table 2.

Table 3. Active methodologies and strategies investigated

Methodology	No.	%
Problem-Based Learning	13	25
Problematization	8	15.4
Simulation-Based Learning	6	11.5
Critical-reflection portfolio	3	5.8
Case study	3	5.8
Interdisciplinary Debate	2	3.8
Role- Play	2	3.8
Concept Maps	2	3.8
Problem and Project Based Learning	1	1.9
Team-Based Learning	1	1.9
Peer Instruction	1	1.9
Experience Learning	1	1.9
Flipped classroom	1	1.9
Blended Learning	1	1.9
Serious games	1	1.9
Diagnostic Workshop	1	1.9
Not specified	5	9.6
Total	52	100.0

Fonte: Os autores (2019).

In order to study the active methodologies, the designs used cited by the authors of the studies reviewed were: Experience Report (16.1%, N = 7), Descriptive and exploratory qualitative study (19%, N = 8) and Qualitative descriptive cross-sectional (9.5%, N = 4), Quantitative cross-sectional (9.52, N = 4), Quasi-experimental (7.1%, N = 3), Randomized experimental (9.52%, N = 4) , Cross-sectional (quali-quantitative) hybrid studies (7.1%, N = 3), Randomized clinical trial (4.8%, N = 2), Case study (7.1%, N = 3) and a single study (2.4%, N = 1) for Investigation-Intervention, Observational longitudinal study, Exploratory quantitative transversal and Prospective observational transversal study, respectively. Converting the designs informed by the authors of the selected works to the levels of evidence proposed by Cook *et al* (1992) adapted by Melnik and Atallah (2011) one can see a predominance of studies with a low level of evidence (VI and VII = 73.8% N = 31), according to Table 4.

Table 4. Levels of evidence for selected papers

Level of Evidence	No.	%
VII- (Case Report)	11	26.2
VI- (Case series - cross-sectional observational)	20	47.6
V- (Case-control study)	7	16.7
IV- (Cohort / observational-longitudinal study)	2	4.8
III- (Low quality randomized clinical trial)	2	4.8
II- (Large clinical trial - controlled Mega-Trial)	0	-
I- (Systematic Review with meta-analysis)	0	-
Total	42	100.0

Source: The authors (2019).

With regard to the dissertations and theses reviewed, the *Universidade Federal de Sergipe* was the institution with the largest number of publications (N=3), followed by the *Universidade Federal do Rio Grande do Norte* (N=2) and the *Universidade Estadual Paulista -UNESP* (N=2). As for the publication vehicle of the articles evaluated in this study, 50% were published in journals with Qualis B1 and B2, and the *Revista Brasileira de Educação Médica* displayed the largest number of publications.

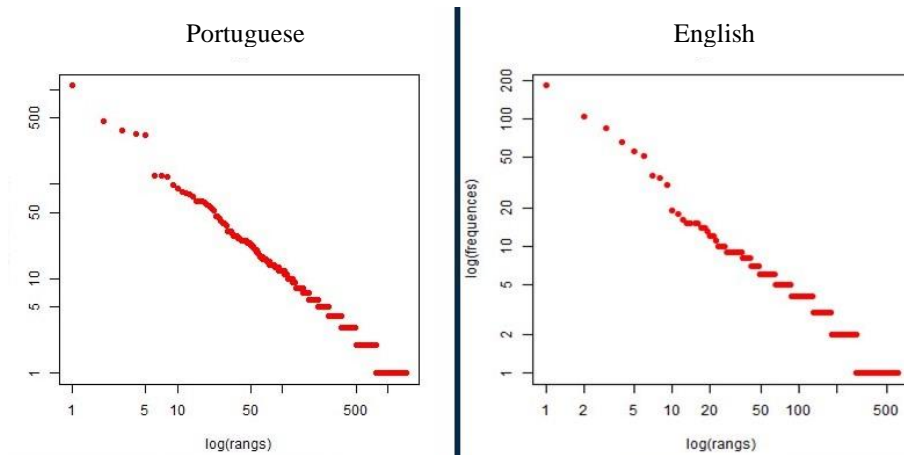
Table 5. Works published in Journals

Journals and Qualis (triennium 2017-2019)	No.	%
Revista Brasileira de Educação Médica (B-2)	3	12.5
Revista da ABENO (B-3)	2	8.3
PLoS ONE (A-1)	2	8.3
Interface- Comunicação, Saúde, Educação (A-4)	2	8.3
Revista Mineira de Enfermagem (B-1)	1	4.2
Distúrbios da Comunicação (B-3)	1	4.2
Revista de Enfermagem UFPE Online (B-4)	1	4.2
Bioscience Journal (B-1)	1	4.2
Semina: Ciências Sociais e Humanas (B-2)	1	4.2
Cogitare Enfermagem (B-1)	1	4.2
Revista Brasileira de Ensino Superior (B-2)	1	4.2
Revista Portuguesa de Educação (A-1)	1	4.2
Nurse Education Today (A-1)	1	4.2
Investigación y Educación en Enfermería (B-1)	1	4.2
International Journal of Psychiatry in Clinical Practice (B-1)	1	4.2
Advances in Physiology Education (A-3)	1	4.2
Currents in Pharmacy Teaching and Learning (B-1)	1	4.2
Arquivos de Neuropsiquiatria (B-2)	1	4.2
Revista de Ensino, Educação e Ciências Humanas (A-3)	1	4.2
Total	24	100.0

Source: The authors (2019).

Regarding the content of the selected publications, when submitting abstracts in Portuguese (N = 32) and English (N = 10) to IRaMuTeQ, it was possible to verify that the textual corpus in Portuguese was broken down into 245 text segments, where 8,801 occurrences emerged, of which 2025 were distinct words and 1202 had a single occurrence (hapax). The English text corpus, on the other hand, was divided into 62 text segments, in which 2,123 occurrences emerged, where 680 were distinct words and 386 hapax, allowing to conclude that in both languages few words were repeated many times and many words presented a reduced number of words occurrence (Chart 2).

Chart 2. General occurrence of words in the textual corpus by language



Source: The authors (2019).

When comparing publications by language in order to verify which words have the highest occurrence, it was possible to verify that in Portuguese there is a predominance of the words "teaching", "student", "how", "student", "learning", "active methodologies", "study", "course", "teacher" and "nursing". On the other hand, the most frequent terms in English were: "students", "group", "care", "pharmaceutical", "study", "method", "learn", "result", "teach" and "compare", corroborating the research objectives described in the Table 2.

In view of the above, it can be inferred that the texts in Portuguese in general were focused on the understanding of this new teaching format. The works seek to discuss how active methodologies impact the teaching and learning process based on students' and course teachers' skills as a whole, from a qualitative understanding of the phenomenon, with emphasis on nursing courses. Partly corroborating with the analyses of publications in English that show a concern with focus on the students, aiming at evaluating and comparing the results of their performance considering both active and traditional teaching and learning methods, especially in pharmacy and nursing courses using an experimental design investigation, more aligned with international discussions on active learning, where both results of similarity analyses are in line with those of word clouds.

Discussion

The aim of this study was to characterize the scientific publications about active learning methods in health higher education in Brazil in the last five years. The data obtained show that the studies discuss experience of inserting active methodologies in the courses or disciplines. This is especially true after the new updates of the national curricular guidelines for courses in the area of health such as medicine (BRASIL, 2014/2019, nursing (BRASIL, 2001/2019) and pharmacy (BRASIL, 2017/2019), which advocate the use of such methods that teach “learning to learn”. The discussions focus on how this shift of paradigm can be difficult for both teachers who need to reframe their social representations about teaching, as well as for the students themselves in breaking with a culture they were exposed to involving a traditional teaching method. These changes generate possibilities and distress in all the players involved in the learning process (ADADA, 2017; ALMEIDA, 2013; ALMEIDA, 2018; COSTA; COTTA, 2014; GUEDES-GRANZOTTI *et al.*, 2015; IAMADA, 2018; FUJITA *et al.*, 2016; MATIAS, 2013; OLIVEIRA, 2015; OLIVEIRA, 2017).

Still regarding the publications reviewed, it should be noted that problem-based learning was the most recurrent method mentioned, since it was one of the first to be disseminated (FARIAS; MARTIN; CRISTO, 2015). The Nursing and Medicine and Pharmacy courses may have been the ones that populated most the samples studied due to the fact that both include a competency-based education in their national curricular guidelines (BRASIL, 2014/2019; BRASIL, 2001/2019; BRASIL, 2017/2019). These recent changes may explain the high number of works published in 2016 and 2017, as well as the methodological designs in the form of experience reports and qualitative research seeking to verify adherence and impacts of the insertion of active methods and strategies in the student group. However, the decrease in the year 2018 needs further investigation.

The small number of controlled studies that included a refined statistical analysis, were more critical in relation to the effectiveness and preference of active methodologies overlapping traditional methods (ABREU, 2018; CARDOSO *et al.*, 2016; CARVALHO, 2017; CZEPULA *et al.*, 2017; JESUS, 2018; MAGALHÃES *et al.*, 2014; SOUSA *et al.*, 2016), unlike qualitative exploratory studies and experience reports that focused on the positive rather than the negative aspect (ANDRADE, *et al.*, 2016; BARDINI, *et al.*, 2016;

CARVALHO *et al.*, 2016b; CESÁRIO, 2014; COSTA; COTTA, 2014; FABBRO *et al.*, (2018); FUJITA, *et al.*, 2016; GUEDES-GRANZOTTI, *et al.*, 2015; LIMBERGER, 2013; MENDONÇA, FREITAS e OLIVEIRA, 2017; REUL, *et al.*, 2016; TUROLE, 2016).

This scenario together with the funding incipience, may discourage investigators from developing studies of higher methodological quality and to publish in a greater impact journal due to the high costs of research, favoring a biased movement, lacking scientific evidence to support the new paradigm, that associated with the current national scenario of government budget cuts in education, science and technology, threaten the implementation of active learning in health higher education in Brazil (BRASIL, 2019; CAPES, 2019-A; 2019B).

Possibilities and Limitations in the Use of Active Methodologies Discussed in Publications

The studies indicated as main potentialities of the use of active methodologies in the teaching and learning process, the greater **critical-reflection thinking** in students (CARVALHO, 2017; FABBRO *et al.*, 2018; JESUS, 2018), **autonomy**, (FABBRO *et al.*, 2018; GOTARDELO *et al.*, 2017), **self-confidence** (RABÊLO, 2017; SAKAMOTO, 2017), **knowledge retention or integration between theory and practice** (CZEPULA *et al.*, 2017; FABBRO *et al.*, 2018; MENDONÇA; FREITAS; OLIVEIRA, 2017) and **holistic vision** (ANDRADE *et al.*, 2016; IRINEU, 2018), providing a **dynamic work between peers and teachers** (GOTARDELO *et al.*, 2017; SAKAMOTO, 2017, our emphasis).

Such findings are in accordance with the literature, which points out that students who have active methodologies included in their learning process end up feeling more prepared in their professional performance (BAPTISTA *et al.*, 2014; DUARTE, 2016) and recognize more easily the skills that need to be worked on in their repertoire, which implies offering safety to the patient, about the care he/she will receive (BAPTISTA *et al.*, 2014; SOUZA; NOGUCHI; ALVARES, 2019). In this same direction, studies point out that neuroscience and psychology have proven that knowledge is better incorporated and applied when constructed through teaching based on practical training and educational assessments that take into account the students' context (COOKE *et al.*, 2006; FUJITA *et al.*, 2016; REUL *et al.*, 2016), in line with the pedagogical proposal of active methodologies ((ARAÚJO; QUILICI, 2012; BRANDÃO; COLLARES; MARÍN, 2014; FLATO; GUIMARÃES, 2011; MELLO; ALVES; LEMOS, 2014; MITRI *et al.*, 2008; SANTOS; SATO, 2012).

Regarding the main limitations or variables that hinder the implementation of active methodologies in health higher education, the physical structure and the provision of equipment and materials in technical format stood out (CARVALHO *et al.*, 2016a; IRINEU, 2018; NEVES; SOUSA; VASCONCELOS, 2014). Likewise, a curricular proposal predominantly based on traditional models, merely expository (ALMEIDA 2013; CARVALHO *et al.*, 2016a; CAVEIÃO *et al.*, 2015; COSTA, COTTA, 2014; FERREIRA, 2013; IAMADA, 2018; IRINEU, 2018; MATIAS, 2013; NEVES; SOUSA; VASCONCELOS, 2014; OLIVEIRA, 2015; REUL *et al.*, 2016) associated with teachers or

students who corroborate and defend this model (ALMEIDA, 2013; ALMEIDA, 2018; FUJITA *et al.*, 2016; MATIAS, 2013; OLIVEIRA, 2015; OLIVEIRA, 2017; REUL *et al.*, 2016).

Teachers have difficulties such as the lack of time to go deeper in these subjects (CESÁRIO, 2014; COSTA, COTTA, 2014; FABBRO *et al.*, 2018; IAMADA, 2018; MAGALHÃES *et al.*, 2014), producing an overload on students (GOTARDELO *et al.*, 2017) and insecurity about what they ought to study (ALMEIDA, 2013), contributing to a stressful context that causes losses in the students' mental health, such as anxious and depressive symptoms (ARAGÃO *et al.*, 2017; BENTO *et al.*, 2017; FABBRO *et al.*, 2018) and interference with their quality of life (CHAGAS *et al.*, 2018). In this sense, the teaching difficulty in employing new pedagogical methodologies may be related to the fact that teachers usually integrate into their repertoire the methodological models they have experienced in their own educational process (ALMEIDA, 2013; BEHRENS, 1999).

In this connection, Troncon (2004) argues that several factors may be associated to the difficulty in implementing active learning methodologies and their evaluation, such as a lack of human resources who have appropriate knowledge for their application, institutional and infrastructure difficulties, and especially cultural factors, both in relation to teachers and to students, since a cooperative educational climate and receptive to new methods is required for a successful implementation of this paradigm.

There is an incipient teacher education with a focus on active learning and the student (ADADA, 2017; ALMEIDA, 2013; MATIAS, 2013; NEVES; SOUSA; VASCONCELOS, 2014; REUL, *et al.*, 2016), as well as to the use of technologies who operationalize the content through the integration between pedagogical and digital resources (MORAN, 2018), or even due to deficiencies in the teacher skills that will later be required from the student, which could also justify teachers resistance in relation to the paradigm shift (ADADA, 2017; ALMEIDA 2013; CARÁCIO, *et al.*, 2014). In this sense, Almeida's survey (2013) found in the speech of many interviewed students, that in the student conception, many educators lacked training, as they were silent in the mediation of the learning process and they transferred their responsibility to the student, failing to deepen the tutorial discussions, while at the same time, not complying with the time necessary for students to master the subject taught, in line with the data collected in interviews with teachers by Iamada (2018).

It is also worth highlighting the student's estrangement in connection with the new pedagogical proposal (COSTA and COTTA, 2014; FUJITA, *et al.*, 2016), and in macro-structural terms it is relevant to understand that the Brazilian political-economic system, which weakens the teachers' work and all the educational context (ABONIZIO, 2012), favors occupational stress (BENEVIDES-PEREIRA, 2012, RIBEIRO, 2016) which, when associated with the other variables mentioned, can create conditions that cause the individual some degree of mental illness, such as burnout (BENEVIDES-PEREIRA, 2012; BERNARDINI, 2017; RIBEIRO, 2016). This directly impacts on teacher self-efficacy (BERNARDINI, 2017; FERREIRA; AZZI, 2010, 2011), an important predictor for academic and professional success (BANDURA, 1986; DANTAS *et al.*, 2015) that correlates with the

perception of how much students see themselves able to perform a given action (TSCHANNEN-MORAN; WOOLFOLK-HOY; HOY, 1998), resulting in mental illness and a deficient student formation, when such beliefs are weakened due to a range of stressors.

Just as the assumptions of an evidence-based practice GALVÃO; SAWADA; MENDES, 2003; MELNIK; ATALLAH, 2011; PEDROSA *et al.*, 2015), health education needs to articulate empirical evidence of quality research, combined with the experience of teaching practice and the preference of the student group for certain active methodologies (MELNIK; ATALLAH, 2011) for the adoption of a practice that effectively promotes learning, considering the biopsychosocial political and geographic context in which students are inserted, minimizing or extinguishing possible conflicts of interest by giving up counting only on reports of students and teachers' satisfaction with the method.

Final Considerations

The data presented show a lack of Brazilian studies based on evidence through representative samples, controlled and randomized designs with comparative analyses. And also the fostering of investigations on the subject to offer a safer scenario about the implications of using the most different methodologies and active strategies in the most different frameworks, which could justify the difficulty of implementing the active methodologies in the Brazilian health education.

It is possible that the survey strategy used in the aforementioned databases may have influenced the outcome of the results found (see the low methodological quality studies rate that make up the sample of this study). However, it is believed that the review carried out, will allow a more objective and detailed reading of this new paradigm, allowing the identification of important gaps that associated with the small number of studies published in other languages, may suggest a known weakness of the Brazilian investigators in discussing broadly with peers.

Health education, whose social function is to train professionals who meet the demands of the population that uses the health system and the labor market, should invest in quality teacher training and scientific research that studies and promotes the choice of methods of education. Active learning aligned to each specificity of each higher education, as well as the student idiosyncrasy that the student's institution works, so that not only active teaching and learning methodologies can take place in the Brazilian context of health education. But in addition professionals of excellence be also able to become increasingly autonomous and critical about their own process of learning and continuing education, favoring an evidence-based practice in different contexts of professional insertion.

Randomized studies, with an experimental and quasi-experimental design, with robust and well-controlled samples, especially with teachers and managers (see the few publications retrieved) or single subject designs, could provide important data about the Brazilian non-validation considering this new paradigm, such as presenting variables that could influence

teaching self-efficacy for the use of active methodologies and their impact on the student community, since these are important factors in fostering meaningful learning based on competency-grounded teaching.

References

- ABONIZIO, Gustavo. Precarização do trabalho docente: apontamentos a partir de uma análise bibliográfica. **Ensino de Sociologia em Debate**, Londrina, v. 1, n. 1, p. 1-28, 2012. Disponível em: <http://www.uel.br/revistas/lenpes-pibid/pages/arquivos/1%20Edicao/1ordf.%20Edicao.%20Artigo%20ABONIZIO%20G.pdf>. Acesso em 26 fev. 2019.
- ADADA, Flávia. **Estudo sobre a percepção do discente sobre as metodologias** ativas na educação superior. 2017. 142f. Dissertação (Mestrado em Educação) - Universidade Estadual do Oeste do Paraná, Cascavel, 2017. Disponível em: <http://tede.unioeste.br/handle/tede/3340>. Acesso em: 15 abr. 2019.
- ALMEIDA, Emilene Pereira. **Metodologias ativas no ensino de enfermagem:** contribuições para a formação do enfermeiro crítico e reflexivo. 78 f. Dissertação (Mestrado em Ciências do Cuidado a Saúde) - Universidade Federal Fluminense, Niterói, 2013. Disponível em: <https://app.uff.br/riuff/bitstream/1/2939/1/Emilene%20Pereira%20de%20Almeida.pdf>. Acesso em: 26 fev. 2019.
- ALMEIDA, Vera Lúcia Carneiro de. **A (re) construção dos saberes dos professores bacharéis e o uso de metodologias ativas na Universidade Federal de Sergipe em Lagarto.** 2018. 240f. Dissertação (Mestrado em Educação) - Universidade Federal de Sergipe, São Cristovão, 2018. Disponível em: https://www.monografias.ufs.br/bitstream/riufs/8127/2/VERA_LUCIA_CARNEIRO_ALMEIDA.pdf. Acesso em: 26 fev. 2019.
- ARAÚJO, Ana Loísa de Lima e Silva.; QUILICI, Ana Paula. O que é simulação e por que simular. In: QUILICI, Ana Paula *et al.* **Simulação clínica: do conceito à aplicabilidade.** São Paulo, SP: Atheneu, 2012, 192 p. ISBN 9788538803294.
- ATALLAH, Álvaro Nagib.; PUGA, Maria Eduarda dos Santos. A colaboração Cochrane e o seu Papel como Produtora das Melhores Evidências. In: MELNIK, Tamara.; ATALLAH, Álvaro Nagib. **Psicologia baseada em evidências:** provas científicas da efetividade da psicoterapia. São Paulo, SP: Grupo Gen, 2011. 392p. ISBN 8572888748.
- BANDURA. Albert. **Social foundations of thought and action:** A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall, 1986. 640 p. ISBN 9780138156145.
- BAPTISTA, Rui Carlos Negrão *et al.* Simulação de alta-fidelidade no curso de enfermagem: ganhos percebidos pelos estudantes. **Revista de Enfermagem Referência**, Coimbra, n. 1, p. 135-144, 2014. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0874-02832014000100015&lng=pt&nrm=iso. Acesso em: 15 abr. 2019.

BEHRENS, Marilda Aparecida. A prática pedagógica e o desafio do paradigma emergente. **Revista Brasileira Estudos Pedagógicos**, Brasília, v. 80, n. 196, p. 383-403, 1999.

Disponível em: <https://docplayer.com.br/8062480-A-pratica-pedagogica-e-o-desafio-do-paradigma-emergente.html>. Acesso 15 abr. 2019

BENEVIDES-PEREIRA, Ana Maria Teresa. Considerações sobre a síndrome de burnout e seu impacto no ensino. **Bol. psicol**, São Paulo, v. 62, n. 137, p. 155-168, dez. 2012.

Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S0006-59432012000200005&lng=pt&nrm=iso. Acesso em: 15 abr. 2019.

BENTO, Leda Márcia Araújo *et al.* Percepção dos Alunos de Medicina Quanto a Aprendizagem X Ansiedade na Metodologia Ativa. **Revista de Ensino, Educação e Ciências Humanas**, Londrina, v. 18, n. 2, p. 178-182, 2017. Disponível em:

<https://revista.pgsskroton.com.br/index.php/ensino/article/view/4612>. Acesso em: 26 fev. 2019.

BERNARDINI, Priscile. **Estudo correlacional sobre autoeficácia e Burnout no trabalho docente no ensino superior**. 2017. 103f. Dissertação (Mestrado em Educação) -

Universidade do Oeste Paulista, Presidente Prudente, 2017. Disponível em:

<http://bdtd.unoeste.br:8080/jspui/handle/jspui/1027>. Acesso em 15 abr. 2019.

BONAMIGO Elcio Luiz.; DESTEFANI, Amanda dos Santos. A dramatização como estratégia de ensino da comunicação de más notícias ao paciente durante a graduação médica. **Revista Bioética**, Brasília, v. 18, n. 3, p. 725-742, 2010. Disponível em:

<https://www.redalyc.org/pdf/3615/361533254016.pdf>. Acesso em 20 abr. 2019.

BORGES, Marcos de Carvalho *et al.* Aprendizado baseado em problemas. **Medicina (Ribeirão Preto. Online)**, Ribeirão Preto, v. 47, n. 3, p. 301-307, 2014. Disponível em:

<http://www.periodicos.usp.br/rmrp/article/view/86619>. Acesso em 25 abr. 2019

BRANDÃO, Carolina Felipe Soares.; COLLARES, Carlos Fernando.; MARIN, Heimar de Fatima. A simulação realística como ferramenta educacional para estudantes de medicina. **Sci Med**, Porto Alegre, v. 24, n. 2, p. 187-192, 2014. Disponível em:

<http://revistaseletronicas.pucrs.br/ojs/index.php/scientiamedica/article/view/16189/11485>.

Acesso em 15 abr. 2019.

BRASIL. Ministério da Economia. **Portaria nº 424, de 21 de agosto de 2019. Dispõe sobre medidas de racionalização de gastos e redução de despesas para o exercício de 2019 no âmbito do Ministério da Economia, autarquias e fundações vinculadas**. Diário Oficial da União, Brasília, Ed.162, Seção 1, p. 6, 2019. Disponível em:

<http://www.in.gov.br/web/dou/-/portaria-n-424-de-21-de-agosto-de-2019-211914320?fbclid=IwAR02vAG9kCufRZvoJh8CWbnee8LB48IahnBtnMfXAnCrYFpx90wBWMU7gyY>. Acesso em 24 ago. 2019.

BRASIL. Ministério da Educação. Conselho Nacional de Educação, **Resolução C. N. E. CES 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, v. 23, 2014. Disponível em:

http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=15874-rces003-14&category_slug=junho-2014-pdf&Itemid=30192. Acesso em 15 abr. 2019.

BRASIL. Ministério da Educação. Conselho Nacional de Educação, Resolução C. N. E. CES nº 546, de 7 de junho de 2017. Institui diretrizes curriculares nacionais do curso de graduação em Farmácia e dá outras providências. **Diário Oficial da União**, Brasília, Seção 1, p.36, 2017. Disponível em:

http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=70251-pces248-17-pdf&category_slug=agosto-2017-pdf&Itemid=30192. Acesso em 20 jun. 2019.

BRASIL. Ministério da Educação. Conselho Nacional de Educação, **Resolução C. N. E. CES nº 3, de 7 de novembro de 2001. Institui diretrizes curriculares nacionais do curso de graduação em Enfermagem**. Diário Oficial da União, Brasília, Seção 1, p.37, 2001.

Disponível em: <http://portal.mec.gov.br/cne/arquivos/pdf/CES03.pdf>. Acesso em 20 jun. 2019.

BRESSA, Rebeca Carvalho. **Autoeficácia do docente de medicina na utilização do Objective Structured Clinical Examination (OSCE)**. 2018. 198f. Dissertação (Mestrado em Educação) - Universidade do Oeste Paulista, Presidente Prudente, 2018. Disponível em: <http://bdtd.unoeste.br:8080/jspui/handle/jspui/1107>. Acesso em: 12 mai. 2019.

CAMARGO, Brígido Vizeu.; JUSTO, Ana Maria. IRAMUTEQ: um software gratuito para análise de dados textuais. **Temas em psicologia**, Ribeirão Preto, v. 21, n. 2, p. 513-518, dez. 2013. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1413-389X2013000200016&lng=pt&nrm=iso. Acesso em: 13 jul. 2019.

CARÁCIO, Flávia Cristina Castilho. *et al.* A experiência de uma instituição pública na formação do profissional de saúde para atuação em atenção primária. **Ciência & Saúde Coletiva**, Rio de Janeiro, v. 19, p. 2133-2142, 2014. Disponível em: <https://www.scielo.org/pdf/csc/2014.v19n7/2133-2142/pt>. Acesso em 15 abr. 2019.

CARVALHO, Amanda Cordeiro de Oliveira *et al.* O planejar docente: relato sobre uso de métodos ativos no ensino de enfermagem. **Rev. enferm. UFPE on line**, Recife, v. 10, n. 4, p. 1332-1338, 2016a. Disponível em: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11121/12603>. Acesso em: 26 fev. 2019.

CARVALHO, Wellington Mendes *et al.* Aceitação da utilização de metodologias ativas nos estágios no SUS por discentes da graduação e pós-graduação em Odontologia. **Revista da ABENO**, Porto Alegre, v. 16, n. 1, p. 88-98, 2016b. Disponível em: <https://revabeno.emnuvens.com.br/revabeno/article/view/224/204>. Acesso em: 26 fev. 2019.

CAVEIÃO, Cristiano *et al.* Percepção de docentes sobre o processo de aprendizado em administração de enfermagem. **Cogitare Enfermagem**, Curitiba, v. 20, n. 1, p. 103-111, 2015. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/40628>. Acesso em: 24 fev. 2019.

CHAGAS, Nathália Bordeira *et al.* Qualidade de Vida de Estudantes de Medicina em um Curso que Adota Metodologias Ativas de Ensino-Aprendizagem. **Rev. bras. educ. med**, Brasília, v. 42, n. 4, p. 96-102, 2018. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022018000400096&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

COOKE, Molly *et al.* American medical education 100 years after the Flexner report. **New England journal of medicine**, Waltham, v. 355, n. 13, p. 1339-1344, 2006. Disponível em: <https://www.nejm.org/doi/full/10.1056/nejmra055445>. Acesso em 23 jan. 2019.

COORDENAÇÃO DE APERFEIÇOAMENTO DE PESSOAL DE ENSINO SUPERIOR (CAPES), 7 de junho de 2019a. **CAPES muda concessão de bolsas de cursos nota 3 e amplia prazo do PrInt**. Brasília, DF, 2019. Disponível em: www.capes.gov.br/36-noticias/9526-capes-muda-concessao-de-bolsas-de-cursos-nota-3-e-amplia-prazo-do-print. Acesso em 20 ago. 2019.

COORDENAÇÃO DE APERFEIÇOAMENTO DE PESSOAL DE ENSINO SUPERIOR (CAPES), 7 de junho de 2019b. **CAPES mantém o pagamento de todas as bolsas em vigor**. Brasília, DF, 2019. Disponível em: <http://www.capes.gov.br/36-noticias/9477-capes-mantem-o-pagamento-de-todas-as-bolsas-em-vigor>. Acesso em 20 ago 2019.

COSTA, Glauce Dias; COTTA, Rosângela Minardi Mitre. O aprender fazendo: representações sociais de estudantes da saúde sobre o portfólio reflexivo como método de ensino, aprendizagem e avaliação. **Interface-Comunicação, Saúde, Educação**, Botucatu, v. 18, p. 771-784, 2014. Disponível em: https://www.scielo.org/scielo.php?pid=S1414-32832014000400771&script=sci_abstract. Acesso em: 26 fev. 2019.

DANTAS, Marilda Aparecida *et al.* Relações entre autoeficácia acadêmica e estratégias de estudo e aprendizagem: mudanças ao longo do primeiro semestre do Ensino Médio. **Psicol. Ensino & Form.**, Brasília, v. 6, n. 1, p. 33-51, 2015. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S2177-20612015000100004&lng=pt&nrm=iso. Acesso em: 19 jan. 2019.

DUARTE, Hugo Miguel Santos. **Percepção de aprendizagem, satisfação e autoeficácia dos estudantes de enfermagem sobre a simulação de alta-fidelidade**. 2016. 102 f. Dissertação de Mestrado (Mestrado em Enfermagem à Pessoa em Situação Crítica) - Instituto Politécnico da Escola Superior de Saúde de Leiria, Leiria, Portugal, 2016. Disponível em: <https://www.iconline.ipleiria.pt/handle/10400.8/1708>. Acesso em 19 jan. 2019.

FARIAS, Pablo Antônio Maia; MARTIN, Ana Luiza de Aguiar Rocha; CRISTO, Cinthia Sampaio. Aprendizagem ativa na educação em saúde: percurso histórico e aplicações. **Revista brasileira de educação médica**, Brasília, v. 39, n. 1, p. 143-150, 2015. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022015000100143&lng=en&nrm=iso. Acesso em: 19 jan. 2019.

FERREIRA, Luiza Cristina Mauad.; AZZI, Roberta Gurgel. Docência, *Burnout* e considerações da Teoria da auto-eficácia. **Psicologia, Ensino & Formação**, Brasília, v.1, n.2, p.23-34, abr. 2010. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S2177-20612010000200003&lng=pt&nrm=iso. Acesso em 20 ago. 2019.

FERREIRA, Luiza Cristina Mauad.; AZZI, Roberta Gurgel. *Burnout* do professor e crenças de auto-eficácia. **Eccos Revista Científica**, São Paulo, n. 26, p. 179 – 191, jul/ dez. 2011. Disponível em: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S2177-20612010000200003&lng=pt&nrm=iso. Acesso em: 20 ago. 2019.

FLATO, Uri Adrian Prync.; GUIMARÃES, Helio Penna. Educação baseada em simulação em medicina de urgência e emergência: a arte imita a vida. **Rev Soc Bras Clin Méd**, São Paulo, v. 9, n. 5, p. 360-364, 2011. Disponível em: <http://www.sbcm.org.br/revistas/RBCM/RBCM-2011-05.pdf#page=37>. Acesso em: 19 jan. 2019.

FRANCISCHETTI, Ieda. *et al.* Role-playing: estratégia inovadora na capacitação docente para o processo tutorial. **Interface (Botucatu)**, Botucatu, v. 15, n. 39, p. 1207-1218, dez. 2011. Disponível em: https://www.scielo.org/scielo.php?pid=S1414-32832011000400019&script=sci_abstract&tlng=es. Acesso em 19 jan. 2019.

FUJITA, Júnia Aparecida Laia da Mata *et al.* Uso da metodologia da problematização com o Arco de Maguerz no ensino sobre brinquedo terapêutico. **Revista Portuguesa de Educação**, Braga, v. 29, n. 1, p. 229-258, 2016. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0871-91872016000100011&lng=pt&nrm=iso. Acesso em: 26 fev. 2019.

GALVÃO, Taís Freire; PANSANI, Thais de Souza Andrade; HARRAD, David. Principais itens para relatar Revisões sistemáticas e Meta-análises: A recomendação PRISMA. **Epidemiologia e Serviços de Saúde**, Brasília, v. 24, p. 335-342, 2015. Disponível em: <https://www.scielo.org/pdf/ress/2015.v24n2/335-342/pt>. Acesso em: 19 jan. 2019.

GALVÃO, Cristina Maria; SAWADA, Namie Okino; MENDES, Isabel Amélia Costa. A busca das melhores evidências. **Revista da Escola de Enfermagem da USP**, São Paulo, v. 37, n. 4, p. 43-50, 2003. Disponível em: <http://www.scielo.br/pdf/reeusp/v37n4/05>. Acesso em: 19 jan. 2019.

GUEDES-GRANZOTTI, Raphaela Barroso *et al.* Metodologias Ativas e as Práticas de Ensino na Comunidade: sua importância na formação do Fonoaudiólogo. **Distúrbios da Comunicação**, São Paulo, v. 27, n. 2, p. 369-374, 2015. Disponível em: <http://revistas.pucsp.br/dic/article/view/20026/16993>. Acesso em: 26 fev. 2019.

KODJAOGLANIAN, Vera Lucia *et al.* Inovando métodos de ensino-aprendizagem na formação do psicólogo. **Psicol. cienc. prof.**, Brasília, v. 23, n. 1, p. 2-11, Mar. 2003. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-98932003000100002&lng=en&nrm=iso. Acesso em: 19 jan. 2019.

LAHLOU, Saadi. Text mining methods: An answer to Chartier and Meunier. **Papers on Social Representations**, Lisboa, v. 20, n. 38, p.1-7, 2012. Disponível em: <http://eprints.lse.ac.uk/id/eprint/46728>. Acesso em: 13 jul. 2019.

LIMA, Valéria Vernaschi. Espiral construtivista: uma metodologia ativa de ensino-aprendizagem. **Interface-Comunicação, Saúde, Educação**, Botucatu, v. 21, p. 421-434, 2017. Disponível em: <https://www.scielo.org/pdf/icse/2017.v21n61/421-434/pt>. Acesso em: 19 jan. 2019.

LIMBERGER, Jane Beatriz. Metodologias ativas de ensino-aprendizagem para educação farmacêutica: um relato de experiência. **Interface-Comunicação, Saúde, Educação**, Botucatu, v. 17, p. 969-975, 2013. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-32832013000400020&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

MAMEDE, Sílvia; PENAFORTE, Julio. (Org). **Aprendizagem baseada em problemas: anatomia de uma abordagem educacional**. Fortaleza, CE: Hucitec, 2001. 151p. ISBN 9788527105712.

MELLO, Carolina de Castro Barbosa; ALVES, Renato Oliveira; LEMOS, Stela Maris Aguiar. Metodologias de ensino e formação na área da saúde: revisão de literatura. **Rev. CEFAC**, São Paulo, v. 16, n. 6, p. 2015-2028, Dec. 2014. Disponível em: <https://www.redalyc.org/pdf/1693/169339740031.pdf>. Acesso em: 19 jan. 2019.

MELNIK, Tamara.; ATALLAH, Álvaro Nagib. Psicologia Baseada em Evidências: Articulação entre a Pesquisa e Prática Clínica. *In*: MELNIK, Tamara.; ATALLAH, Álvaro Nagib. **Psicologia baseada em evidências: provas científicas da efetividade da psicoterapia**. São Paulo, SP: Grupo Gen, 2011. 392p. ISBN 8572888748.

MENDES, Karina Dal Sasso; SILVEIRA, Renata Cristina de Campos Pereira; GALVÃO, Cristina Maria. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. **Texto & contexto enfermagem**, Santa Catarina, v. 17, n. 4, p. 758-764, 2008. Disponível em: <http://www.redalyc.org/articulo.oa?id=71411240017>. Acesso em: 20 jan. 2019.

MENDONÇA, Simone de Araújo Medina; FREITAS, Erika Lourenco; OLIVEIRA, Djenane Ramalho. Competencies for the provision of comprehensive medication management services in an experiential learning project. **PloS one**, San Francisco, v. 12, n. 9, p. e0185415, 2017. Disponível em: <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0185415&type=printable>. Acesso em: 26 fev. 2019.

MESQUITA, Alessandra Rezende *et al.* The effect of active learning methodologies on the teaching of pharmaceutical care in a Brazilian pharmacy faculty. **PloS one**, San Francisco, v. 10, n. 5, p. e0123141, 2015. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4430170/pdf/pone.0123141.pdf>. Acesso em: 26 fev. 2019.

MITRE, Sandra Minardi *et al.* Metodologias ativas de ensino-aprendizagem na formação profissional em saúde: debates atuais. **Ciência & saúde coletiva**, Rio de Janeiro, v. 13, p. 2133-2144, 2008. Disponível em: <https://www.scielo.org/pdf/csc/2008.v13suppl2/2133-2144/pt>. Acesso em: 19 jan. 2019.

MORAN, José. Metodologias ativas para uma aprendizagem mais profunda. *In*: BACICH, Lilian; MORAN, José. (Org). **Metodologias ativas para uma educação inovadora: uma abordagem teórico-prática**. Porto Alegre, RS: Penso Editora, 2018. 260p. ISBN 8584291156.

NEVES, Janaina das; SOUSA, Anete Araújo de; VASCONCELOS, Francisco de Assis Guedes. Formação em Nutrição em Saúde Coletiva na Universidade Federal de Santa Catarina: reflexões sobre o processo de ensino para fortalecer o Sistema Único de Saúde. **Rev. Nutr.**, Campinas, v. 27, n. 6, p. 761-773, dez. 2014. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1415-52732014000600761&lng=en&nrm=iso. Acesso em: 19 jan. 2019.

PEDROSA, Karilena Karlla Amorim *et al.* Enfermagem baseada em evidência: caracterização dos estudos no Brasil. **Cogitare Enfermagem**, Curitiba, v. 20, n. 4, p.733-741, 2015. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/40768>. Acesso em: 19 jan. 2019.

POH, Ming-Zher; SWENSON, Nicholas.; PICARD, Rosalind Wright. A wearable sensor for unobtrusive, long-term assessment of electrodermal activity. **IEEE transactions on Biomedical engineering**, Chicago, v. 57, n. 5, p. 1243-1252, 2010. Disponível em: <https://ieeexplore.ieee.org/abstract/document/5415607>. Acesso em: 15 jan. 2019.

RATINAUD, Pierre. **IRAMUTEQ: Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires [Computer software]**, 2009. Disponível em: <http://www.iramuteq.org>. Acesso em: 08 jul. 2019.

REUL, Marília Araújo *et al.* Metodologias ativas de ensino aprendizagem na graduação em Odontologia e a contribuição da monitoria-relato de experiência. **Revista da ABENO**, Porto Alegre, v. 16, n. 2, p. 62-68, 2016. Disponível em: <https://revabeno.emnuvens.com.br/revabeno/article/view/241/220>. Acesso em: 26 fev. 2019.

RIBEIRO, Luis Roberto de Camargo. **Aprendizagem baseada em problemas: uma experiência no ensino superior**. São Carlos, SP: EdUFSCar, 2008. 151p. ISBN 9788576001140.

RIBEIRO, Deive Brito. **A síndrome de Burnout em professores do ensino superior. Um estudo numa IES do Interior do Ceará**. 2016. 132f. Dissertação (Mestrado) - Universidade Lusófona de Humanidade e Tecnologia, Lisboa – PT. Disponível em: <http://hdl.handle.net/10437/7640>. Acesso em: 15 ago. 2019.

ROMAN, Arlete Regina; FRIEDLANDER, Maria Romana. Revisão integrativa de pesquisa aplicada à enfermagem. **Cogitare Enfermagem**, Curitiba, v. 3, n. 2, p. 109-112, 1998. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/44358/26850>. Acesso em: 15 jan. 2019.

SANTOS, Eliana Corrêa.; SATO, Simone Nomie. Simulação na graduação de profissionais da saúde. In: QUILICI, Ana Paula *et al.* **Simulação clínica: do conceito à aplicabilidade**. São Paulo, SP: Atheneu, 2012, 192 p. ISBN 9788538803294.

SANTOS, Josiele Cristine Ribeiro, *et al.* Metodologias ativas e interdisciplinaridade na formação do nutricionista. **Semina: Ciências Sociais e Humanas**, Londrina, v. 38, n. 1, p. 117-128, 2017. Disponível em: <http://www.uel.br/revistas/uel/index.php/seminasoc/article/view/28205/21729>. Acesso em: 26 fev. 2019.

SOUZA, Leonardo Santos; NOGUCHI, Cinthia de Sousa; ALVARES, Lucas Bondezan. Uma nova possibilidade de construção do conhecimento em psicologia. **Estudos Interdisciplinares em Psicologia**, Londrina, v. 10, n. 1, p. 237-251, 2019. Disponível em: <http://www.uel.br/seer/index.php/eip/article/view/29246/25495>. Acesso em: 20 jul. 2019.

SOUZA, Marcela Tavares de; SILVA, MICHELLY Dias da; CARVALHO, Rachel. Revisão integrativa: o que é e como fazer. **Einstein (São Paulo)**, São Paulo, v. 8, n. 1, p. 102-106, 2010. Disponível em: http://www.scielo.br/pdf/eins/v8n1/pt_1679-4508-eins-8-1-0102. Acesso em: 19 jan. 2019.

TOMAZ, Jose Batista Cisne *et al.* Effectiveness of an online Problem-Based learning curriculum for training family medical doctors in Brazil. **Education for Health**, Mumbai, v. 28, n. 3, p. 187-193, 2015. Disponível em: <http://www.educationforhealth.net/text.asp?2015/28/3/187/178605>. Acesso em: 19 jan. 2019.

TRONCON, Luiz Ernesto de Almeida. Clinical skills assessment: limitations to the introduction of an "OSCE"(Objective Structured Clinical Examination) in a traditional Brazilian medical school. **São Paulo Medical Journal**, São Paulo, v. 122, n. 1, p. 12-17, 2004. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-31802004000100004&lng=en&nrm=iso. Acesso em: 20. ago. 2019.

TSCHANNEN-MORAN, Megan; HOY, Anita Woolfolk; HOY, Wayne. Teacher efficacy: its meaning and measure. **Review of Educational Research**, Thousand Oaks, v. 68, n. 2, p. 202-248, 1998. Disponível em: <https://journals.sagepub.com/doi/abs/10.3102/00346543068002202>. Acesso em: 19 jan. 2019.

References of Selected Papers

ABREU, Gláucia Cadar de Freitas. **Efeito da elaboração de mapas conceituais baseados na fisiopatologia sobre a acurácia diagnóstica de estudantes de medicina**. 2018. 49f. Dissertação (Mestrado em Ensino em Saúde) - Universidade José do Rosário Vellano-UNIFENAS, Belo Horizonte, 2018. Disponível em: <http://tede2.unifenas.br:8080/jspui/handle/jspui/199#preview-link0>. Acesso em: 26 fev. 2019.

ALMEIDA, Emilene Pereira. **Metodologias ativas no ensino de enfermagem: contribuições para a formação do enfermeiro crítico e reflexivo**. 78 f. Dissertação (Mestrado em Ciências do Cuidado a Saúde) - Universidade Federal Fluminense, Niterói, 2013. Disponível em: <https://app.uff.br/riuff/bitstream/1/2939/1/Emilene%20Pereira%20de%20Almeida.pdf>. Acesso em: 26 fev. 2019.

ALMEIDA, Vera Lúcia Carneiro. **A (re) construção dos saberes dos professores bacharéis e o uso de metodologias ativas na Universidade Federal de Sergipe em Lagarto**. 2018. 240f. Dissertação (Mestrado em Educação) - Universidade Federal de Sergipe, São Cristovão, 2018. Disponível em: https://www.monografias.ufs.br/bitstream/riufs/8127/2/VERA_LUCIA_CARNEIRO_ALMEIDA.pdf. Acesso em: 26 fev. 2019.

ANDRADE, Ana Flávia Leite *et al.* Processo Ensino-Aprendizagem em Bioética: um Debate Interdisciplinar. **Rev. bras. educ. méd**, Brasília, v. 40, n. 1, p. 102-108, 2016. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022016000100102&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

ARAGÃO, José Aderval *et al.* Prevalence of depressive symptoms among medical students taught using problem-based learning versus traditional methods. **International journal of psychiatry in clinical practice**, London, v. 22, n. 2, p. 123-128, 2018. Disponível em: <https://www.tandfonline.com/doi/abs/10.1080/13651501.2017.1383438>. Acesso em 26 fev. 2019.

BARDINI, Vivian Silveira dos Santos *et al.* Práticas pedagógicas no ensino de histologia: estratégias para incentivar o aluno na consolidação dos conhecimentos. **Revista Brasileira de Ensino Superior**, Passo Fundo, v. 2, n. 4, p. 15-21, 2016. Disponível em: <https://seer.imed.edu.br/index.php/REBES/article/view/1380/1070>. Acesso em: 26 fev. 2019.

BENTO, Leda Márcia Araújo *et al.* Percepção dos Alunos de Medicina Quanto a Aprendizagem X Ansiedade na Metodologia Ativa. **Revista de Ensino, Educação e Ciências Humanas**, Londrina, v. 18, n. 2, p. 178-182, 2017. Disponível em: <https://revista.pgskroton.com.br/index.php/ensino/article/view/4612>. Acesso em: 26 fev. 2019.

BRASIL, Guilherme da Costa. **Simulação realística como estratégia de ensino na enfermagem materno infantil**. 2017. 142f. Dissertação (Mestrado em Enfermagem) - Universidade de Brasília, Brasília, 2017. Disponível em: http://repositorio.unb.br/bitstream/10482/24468/1/2017_GuilhermedaCostaBrasil.pdf. Acesso em: 26 fev. 2019.

CARDOZO, Lais Tono *et al.* Effect of a puzzle on the process of students' learning about cardiac physiology. **Advances in physiology education**, Rockville, v. 40, n. 3, p. 425-431, 2016. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/27516391>. Acesso em: 26 fev. 2019.

CARVALHO, Amanda Cordeiro de Oliveira *et al.* O planejar docente: relato sobre uso de métodos ativos no ensino de enfermagem. **Rev. enferm. UFPE on line**, Recife, v. 10, n. 4, p. 1332-1338, 2016a. Disponível em: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/11121/12603>. Acesso em: 26 fev. 2019.

CARVALHO, Diana Paula de Souza Rego Pinto. **O desenvolvimento do pensamento crítico na formação de estudantes de graduação em enfermagem mediante uma intervenção de ensino: estudo experimental randomizado**. 2017. 111f. Tese (Doutorado em Enfermagem) - Universidade Federal do Rio Grande do Norte, Natal, 2017. Disponível em: https://repositorio.ufrn.br/jspui/bitstream/123456789/23655/1/DianaPaulaDeSouzaRegoPintoCarvalho_TESE.pdf. Acesso em: 26 fev. 2019.

CARVALHO, Wellington Mendes *et al.* Aceitação da utilização de metodologias ativas nos estágios no SUS por discentes da graduação e pós-graduação em Odontologia. **Revista da ABENO**, Porto Alegre, v. 16, n. 1, p. 88-98, 2016b. Disponível em: <https://revabeno.emnuvens.com.br/revabeno/article/view/224/204>. Acesso em: 26 fev. 2019.

CAVEIÃO, Cristiano *et al.* Percepção de docentes sobre o processo de aprendizado em administração de enfermagem. **Cogitare Enfermagem**, Curitiba, v. 20, n. 1, p. 103-111, 2015. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/40628>. Acesso em: 24 fev. 2019.

CÉSAR, Carla Patrícia Hernandez Alves Ribeiro *et al.* Active teaching methodologies in health area: comparison between the oral and written speeches of college students. **Bioscience Journal**, Uberlândia, v. 33, n. 1, p. 219-224, 2017. Disponível em: <http://www.seer.ufu.br/index.php/biosciencejournal/article/view/34388/19772>. Acesso em: 26 fev. 2019.

CESÁRIO, Juleandrea Bido. **O portfólio reflexivo como estratégia mediadora da aprendizagem sobre ser docente de enfermagem**. 2014. 134f. Dissertação (Mestrado em Enfermagem) - Universidade Federal de Mato Grosso, Cuiabá, 2014. Disponível em: http://ri.ufmt.br/bitstream/1/344/1/DISS_2014_Juleandrea%20Bido%20Cesário.pdf. Acesso em: 26 fev. 2019.

CHAGAS, Nathália Bordeira *et al.* Qualidade de Vida de Estudantes de Medicina em um Curso que Adota Metodologias Ativas de Ensino-Aprendizagem. **Rev. bras. educ. med.**, Brasília, v. 42, n. 4, p. 96-102, 2018. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022018000400096&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

COSTA, Glaucete Dias da; COTTA, Rosângela Minardi Mitre. O aprender fazendo: representações sociais de estudantes da saúde sobre o portfólio reflexivo como método de ensino, aprendizagem e avaliação. **Interface-Comunicação, Saúde, Educação**, Botucatu, v. 18, p. 771-784, 2014. Disponível em: https://www.scielo.org/scielo.php?pid=S1414-32832014000400771&script=sci_abstract. Acesso em: 26 fev. 2019.

CZEPULA, Alexandra Ingrid dos Santos *et al.* Active methodology and blended learning: An experience in pharmaceutical care. **Currents in Pharmacy Teaching and Learning**, Amsterdã, v. 10, n. 1, p. 106-111, 2018. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S1877129716302155>. Acesso em: 26 fev. 2019.

DANIEL, Jéssica Campos; PESSALACIA, Juliana Dias Reis; ANDRADE, Ana Flávia Leite. Interdisciplinary debate in the teaching-learning process on bioethics: academic health experiences. **Investigacion y educacion en enfermeria**, Medellín, v. 34, n. 2, p. 288-296, 2016. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/28569932>. Acesso em: 26 fev. 2019.

FABBRO, Márcia Regina Cangiani *et al.* Estratégias ativas de ensino e aprendizagem: percepções de estudantes de enfermagem. **REME rev. min. enferm**, Belo Horizonte, v. 22, p. e-1138, 2018. Disponível em: <http://www.reme.org.br/artigo/detalhes/1276>. Acesso em: 26 fev. 2019.

FERREIRA, Raína Pleis Neves. **Uso de diferentes estratégias de ensino no aprendizado de estudantes da área da saúde**. 2016. 66f. Dissertação (Mestrado em Ensino em Saúde) - Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, 2016. Disponível em: <http://acervo.ufvjm.edu.br/jspui/handle/1/1298>. Acesso em: 26 fev. 2019.

FERREIRA, Anne Laura Costa. **Metodologias ativas de ensino aprendizagem no curso de graduação em enfermagem: a percepção do estudante**. 2013. 61f. Dissertação (Mestrado em Ensino na Saúde) - Universidade Federal de Alagoas, Maceió, 2013. Disponível em: <http://www.repositorio.ufal.br/handle/riufal/1954>. Acesso em: 26 fev. 2019.

FUJITA, Júnia Aparecida Laia da Mata *et al.* Uso da metodologia da problematização com o Arco de Maguerz no ensino sobre brinquedo terapêutico. **Revista Portuguesa de Educação**, Braga, v. 29, n. 1, p. 229-258, 2016. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0871-91872016000100011&lng=pt&nrm=iso. Acesso em: 26 fev. 2019.

GOTARDELO, Daniel Riani *et al.* Role-Play Preceded by Fieldwork in the Teaching of Pharmacology: from “Raw Sap” to “Elaborated Sap”. **Revista Brasileira de Educação Médica**, Brasília, v. 41, n. 4, p. 533-539, 2017. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-55022017000400533&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

GUEDES-GRANZOTTI, Raphaela Barroso *et al.* Metodologias Ativas e as Práticas de Ensino na Comunidade: sua importância na formação do Fonoaudiólogo. **Distúrbios da Comunicação**, São Paulo, v. 27, n. 2, p. 369-374, 2015. Disponível em: <http://revistas.pucsp.br/dic/article/view/20026/16993>. Acesso em: 26 fev. 2019.

IAMADA, Cristina Forti **Avaliação formativa na aprendizagem baseada em problemas: fortalezas e fragilidades**. 2018. 105f. Dissertação (Mestrado em Educação nas Profissões da Saúde) - Pontifícia Universidade Católica de São Paulo, Sorocaba, 2018. Disponível em: <http://publicacoes.fcc.org.br/ojs/index.php/eae/article/view/1969/1945>. Acesso em: 26 fev. 2019.

IRINEU, Roxane de Alencar. **A metodologia ativa e a mediação de gênero na formação superior em saúde: perspectivas de docentes do Brasil e de Portugal**. 2018. 204 f. Tese (Doutorado em Educação) - Universidade Federal de Sergipe, São Cristóvão, 2018. Disponível em: https://ri.ufs.br/bitstream/riufs/9506/2/ROXANE_ALENCAR_IRINEU.pdf. Acesso em: 26 fev. 2019.

JESUS, Elisdete Maria Santos. **Método tradicional e ativo: uma análise dos estilos de aprendizagem e pensamento crítico de estudantes de farmácia e medicina**. 2018. 176 f. Tese (Doutorado em Ciências da Saúde) - Universidade Federal de Sergipe, Aracaju, 2018. Disponível em: https://teses.ufs.br/bitstream/riufs/9335/2/ELISDETE_MARIA_SANTOS_JESUS.pdf. Acesso em: 26 fev. 2019.

LIMBERGER, Jane Beatriz. Metodologias ativas de ensino-aprendizagem para educação farmacêutica: um relato de experiência. **Interface-Comunicação, Saúde, Educação**, Botucatu, v. 17, p. 969-975, 2013. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-32832013000400020&lng=en&nrm=iso. Acesso em: 26 fev. 2019.

MATIAS, Karolina Kellen. **Metodologias de ensino e práticas pedagógicas em um curso de graduação em odontologia**. 2013. 134 f. Tese (Doutorado em Ciências da Saúde) - Universidade Federal de Goiás, Goiânia, 2013. Disponível em: <https://repositorio.bc.ufg.br/tede/bitstream/tede/3734/5/Tese%20-%20Karolina%20Kellen%20Matias%20-%202013.pdf>. Acesso em: 26 fev. 2019.

MAGALHÃES, Lucas Vilas Bôas *et al.* A Brazilian original pedagogical approach to the teaching of neurology. **Arquivos de neuro-psiquiatria**, São Paulo, v. 72, n. 10, p. 747-752, 2014. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/25337724>. Acesso em: 26 fev. 2019.

MENDONÇA, Simone de Araújo Medina; FREITAS, Erika Lourenco; OLIVEIRA, Djenane Ramalho. Competencies for the provision of comprehensive medication management services in an experiential learning project. **PLoS one**, San Francisco, v. 12, n. 9, p. e0185415, 2017.

Disponível em:

<https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0185415&type=printable>. Acesso em: 26 fev. 2019.

MESQUITA, Alessandra Rezende *et al.* The effect of active learning methodologies on the teaching of pharmaceutical care in a Brazilian pharmacy faculty. **PloS one**, San Francisco, v. 10, n. 5, p. e0123141, 2015. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4430170/pdf/pone.0123141.pdf>. Acesso em: 26 fev. 2019.

MIRANDA, Fernanda Maria. **Webfólio: Uma estratégia para a formação de enfermeiros**. 2016. 147f. Dissertação (Mestrado em Enfermagem) - Universidade Federal de São Carlos, São Carlos, 2016. Disponível em: <https://repositorio.ufscar.br/bitstream/handle/ufscar/7856/DissFMM.pdf?sequence=1&isAllowed=y>. Acesso em: 26 fev. 2019.

OLIVEIRA, Gésica Kelly da Silva. **Concepções de docentes sobre o uso de metodologias ativas: um enfoque na formação de enfermeiros**. 2017. 110f. Dissertação (Mestrado em Educação em Ciências e Matemática) - Universidade Federal de Pernambuco, Caruaru, 2017. Disponível em: <https://attena.ufpe.br/bitstream/123456789/29443/1/DISSERTAÇÃO%20Gésica%20Kelly%20da%20Silva%20Oliveira.pdf>. Acesso em: 26 fev. 2019.

OLIVEIRA, Nagila Garcia Galan. **Significações das metodologias de ensino aprendizagem para professores e alunos do curso de graduação em enfermagem**. 2015. 52f. Dissertação (Mestrado em Cuidado em Saúde e Gestão de Sistemas) - Universidade Estadual Paulista Júlio de Mesquita Filho, Botucatu, 2015. Disponível em: <http://hdl.handle.net/11449/132101>. Acesso em: 26 fev. 2019.

RABÊLO, José Wilamy Cosme. **Metodologia ativa de ensino-aprendizagem aplicada na disciplina de Medicina Laboratorial: percepção dos estudantes**. 2017. 64f. Dissertação (Mestrado em Ensino na Saúde) - Universidade Federal do Rio Grande do Norte, Natal, 2017. Disponível em: <https://repositorio.ufrn.br/jspui/handle/123456789/23737>. Acesso em: 26 fev. 2019.

REUL, Marília Araújo *et al.* Metodologias ativas de ensino aprendizagem na graduação em Odontologia e a contribuição da monitoria-relato de experiência. **Revista da ABENO**, Porto Alegre, v. 16, n. 2, p. 62-68, 2016. Disponível em: <https://revabeno.emnuvens.com.br/revabeno/article/view/241/220>. Acesso em: 26 fev. 2019.

SAKAMOTO, Sabrina Ramires. **Aprendizagem baseada em equipes: Um ensaio clínico randomizado na graduação em enfermagem e a construção de tecnologia educativa**. 2017. 108f. Dissertação (Mestrado em Enfermagem) - Universidade Estadual Paulista Júlio de Mesquita Filho, Botucatu, 2017. Disponível em: https://repositorio.unesp.br/bitstream/handle/11449/152340/sakamoto_sr_me_bot.pdf?sequence=3&isAllowed=y. Acesso em: 26 fev. 2019.

SANTOS, Josiele Cristine Ribeiro, *et al.* Metodologias ativas e interdisciplinaridade na formação do nutricionista. **Semina: Ciências Sociais e Humanas**, Londrina, v. 38, n. 1, p. 117-128, 2017. Disponível em: <http://www.uel.br/revistas/uel/index.php/seminasoc/article/view/28205/21729>. Acesso em: 26 fev. 2019.

SOUSA, Vanessa Emille Carvalho *et al.* The construction and evaluation of new educational software for nursing diagnoses: a randomized controlled trial. **Nurse education today**, Amsterdã, v. 36, p. 221-229, 2016. Disponível em: <https://www.sciencedirect.com/science/article/abs/pii/S0260691715004335>. Acesso em: 26 fev. 2019.

TUROLE, Daniela Cristina Sandy. **Simulação realística como recurso metodológico no ensino de graduação em enfermagem: percepção do aluno**. 2016. 167f. Tese (Doutorado em Ciências) - Universidade de São Paulo, Ribeirão Preto, 2016. Disponível em: <http://www.teses.usp.br/teses/disponiveis/22/22134/tde-04042017-151949/en.php>. Acesso em: 26 fev. 2019.