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Active teaching and learning methodologies: today's in health education

Metodologías activas de enseñanza y aprendizaje: la educación actual en salud

Metodologias ativas de ensino e aprendizagem: o ensino de hoje na saúde

ABSTRACT
Objective: To identify and describe the active teaching and learning methodologies and the change in the health teaching movement. Method: This is a bibliographic review, of a descriptive character and qualitative approach, carried out in Health Sciences databases, including the Scientific Electronic Library Online (SciELO), Latin America and the Caribbean in Health Sciences Literature (LILACS) and BDENF (Nursing Database) - through the Virtual Health Library. The search and collection of data occurred in no first semester of 2019. Results: Methodologies based on problems and projects, Learning Methodology based on Projects, Bloom's Taxonomy and Delphi Method, Mobile Applications can be considered the current active methodologies in the teaching-learning process.. Conclusion: The role of the teacher, as a facilitator in the teaching-learning process, is fundamental to adapt to the new demands, to open up to the new pedagogical practices, to accept the challenges that the education of today and the future impose.
DESCRIPTORS: Vocational Education; Health Education; Education Personnel.

RESUMEN
Objetivo: Identificar y describir las metodologías activas de enseñanza y aprendizaje y el cambio en el movimiento de enseñanza en salud. Método: Se trata de una revisión bibliográfica, de carácter descriptivo y enfoque cualitativo, realizada en bases de datos de Ciencias de la Salud, incluyendo la Biblioteca Científica Electrónica en Línea (SciELO), Latinoamérica y el Caribe en Literatura en Ciencias de la Salud (LILACS) y BDENF. (Base de datos de enfermería) - a través de la Biblioteca Virtual en Salud. La búsqueda y recolección de datos ocurrió en primer semestre de 2019. Resultados: Metodologías basadas en problemas y proyectos, Metodología de aprendizaje basada en proyectos, Taxonomía de Bloom y Método Delphi, Aplicaciones móviles pueden considerarse las metodologías activas actuales en el proceso de enseñanza-aprendizaje. Conclusión: El rol del docente, como facilitador en el proceso de enseñanza-aprendizaje, es fundamental para adaptarse a las nuevas demandas, abrirse a las nuevas prácticas pedagógicas, aceptar los desafíos que impone la educación de hoy y del futuro.
DESCRIPTORES: Educación Vocacional; Educación para la Salud; Personal de Educación.

RESUMO
Objetivo: Identificar e descrever as metodologias ativas de ensino e aprendizagem e a modificação no movimento de ensino da saúde. Método: Trata-se de uma revisão bibliográfica, de caráter descritivo e abordagem qualitativa, realizada em bancos de dados Ciências da Saúde, incluindo a Scientific Electronic Library Online (SciELO), América Latina e Caribe em Ciências da Saúde Literatura (LILACS) e BDENF (Banco de Dados de Enfermagem) – por meio da Biblioteca Virtual em Saúde. A busca e coleta dos dados ocorreu no primeiro semestre de 2019. Resultados: Metodologias baseadas em problemas e projetos, Metodologia de Aprendizagem baseada em Projetos, Taxonomia de Bloom e Método de Delphi, Aplicativos Móveis podem ser considerados as metodologias ativas atuais no processo ensino-aprendizagem. Conclusão: O papel do professor, enquanto facilitador no processo de ensino-aprendizagem, é fundamental no sentido de adequar-se às novas demandas, abrir-se para as novas práticas pedagógicas, aceitar os desafios que a educação de hoje e do futuro imprimem.
DESCRITORES: Educação Profissionalizante; Educação em Saúde; Pessoal da Educação.

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INTRODUCTION

Education is a systematic and interactive process of exchanging information between people in a given community, with the specific purpose of helping them to develop knowledge and meanings, incorporating them into their cognitive structure and the collective cultural heritage. [1] It is an individual and collective activity, but, by definition, it concerns construction and social organization.

Education is not only an institutional and instructional process, but also a training instrument for the human, whether in the particularity of the personal pedagogical relationship, or in the context of the collective social relationship, without losing the ethical and political references, having as premise that the process of the formation of an ethical subject, or a citizen, will depend on the construction of the human subject. [2]

The great challenge of the beginning of this century is the growing search for innovative methodologies that enable a pedagogical practice capable of exceeding the limits of purely technical and traditional training, in order to effectively reach the formation of the subject as an ethical, critical, reflective, transformative and humanized being. [3]

Following this same understanding, the literature states[4] that in PBL (Problem-Based Learning), the student starts from problems or situations that aim to generate doubts, imbalances or intellectual disturbances, with strong practical motivation and cognitive stimulation to evoke the necessary reflections in the search for adequate creative choices and solutions.

Based on this assimilation, it is observed that the concepts of awareness, emancipation, social transformation, added to those of self-knowledge and self-reflection are considered essential in the definition of educational objectives to direct the teaching-learning process in the problematization methodology. [5]

Researchers [6,7] interviewed students about the strengths and weaknesses of active learning methods. The analysis of this material was guided by 'dialectical hermeneutics', having as reference the principles of 'method of interpretation of meanings'. Their results pointed to the fact that Active Teaching and Learning Methodologies (ATLMs) encourage constant study, independence and responsibility, enable the integration of biopsychosocial dimensions, prepare for teamwork and bring students closer to users and the community. team. However, these authors claim that the meanings extracted from the students' statements indicate that not everyone is prepared for this; sometimes, they feel lost in search of knowledge, in addition to having difficulties regarding their insertion in the health team.

The use of active teaching methodologies is highlighted in this scenario, where the subject is stimulated to constructive action-reflection-action processes, in which the student has an active posture in relation to his learning, which takes place in a practical situation of experiences, through problems that are challenging and allow you to research and discover solutions applicable to reality. [7]

ATLMs are based on the idea of the student as responsible for the search for knowledge, leaving the teacher the role of facilitator and stimulator of this search. [8]

Given the above, the objective was to identify and describe the active teaching and learning methodologies and the change in the health teaching movement.

METHOD

This is a bibliographic review, with a descriptive character and a qualitative approach. (9) The key words were used: "educação profissionalizante", "educação em saúde" and "pessoal da educação" with the "and" student among them. The Scientific Electronic Library Online (SciELO), Latin America and Caribbean Health Sciences Literature (LILACS) and Nursing Database (BDENF) databases were consulted - through the Virtual Health Library (VHL). The screening and selection of eligible articles was carried out by two reviewers, seeking to ensure methodological rigor in the selection of articles in the databases. Primary studies were included, in Portuguese, which adhered to the proposed theme available in full and published over a period of ten years, comprising 2008 to 2018. Exclusion criteria were: integrative and literature review, books,

chapters and book reviews, manuals, technical reports. Articles that are not related to the study's guiding question will also be excluded.

The screening and selection of articles were presented by a study flow diagram and later there was an extraction of the concepts covered in each article and the works according to their content. The results were presented qualitatively and later discussed with the findings of the literature. Considering the present study as secondary to the literature, it was not necessary to approve the Research Ethics Committee (CEP).

RESULTS

In the database searches, 68 articles were retrieved. Initially, screening by title was performed and 33 articles were excluded in this step. Sequentially, the screening followed by reading the abstracts and 6 articles were excluded. Finally, 16 articles were included for analysis, as shown in the flow diagram of selected studies (Figure 1).

Subsequently, the concepts covered in each article were extracted and the works were described according to their content, with the thematic categorization, divided into: Methodologies based on problems and projects, Learning Methodology based on Projects, Bloom's Taxonomy and Delphi Method, Mobile Applications.

Problem-based and project-based methodologies

Experiencing situations close to reality can bring multiple teachings. Methodologies based on problem solving and/or projects use real cases to encourage students to trigger the theoretical content through situations that need solutions from the challenges of reality. [10]

The Problem Basead Learning (PBL) requires the student to process various learnings, such as: proactivity, teamwork, discussions and interdisciplinarity. When simulating situations close to reality, various mechanisms are triggered, such as logical reasoning, decision making, teamwork, leadership, scenario analysis, testing and hypotheses. [11]

PBL puts the student at the center of the process as he uses previous knowledge, interest and motivation to emancipate himself in the path of knowledge, while involving teamwork and collaborative cycles, overcoming borders by learning from other knowledge and involves your senses to experiment, to 'prototype', to reach solutions. [12]

PBL addresses not only the concepts and procedures that involve cognitive processes, but also with attitudinal aspects, that is, they provoke behavioral responses in students engaged in goals. PBL involves Pavlov's concept of stimulus, response and reinforcement, the processes of metacognition studied by cognitive theory and reflection on one's own experiences, which structure the form of reasoning in such a way that the student is able to reformulate mental processes and gain new insights. [10-12]

PBL has been adopted for more than 50 years, especially in medical courses in the United States and Canada, and has been gaining more space in contemporary education, as the approach transcends the method of memorizing content to respond to assessments adopted in traditional methodologies, in which the content is quickly forgotten by the student. PBL encourages the learner to find solutions and not memorize the answer; to use the recorded knowledge to find the "ways out", testing the hypotheses mentally and concretely, with criticality, checking the possibilities and, in the face of testing autonomously, being able to resolve doubts and questions. [10]

The implementation of PBL promotes a series of possibilities in the classroom, such as emancipation and the role of the student, since the student must have decision-making, while multidisciplinarity is interactive and allows the sharing of experiences and knowledge, these multiple processes permeate and enrich the teaching-learning process. [10-13]

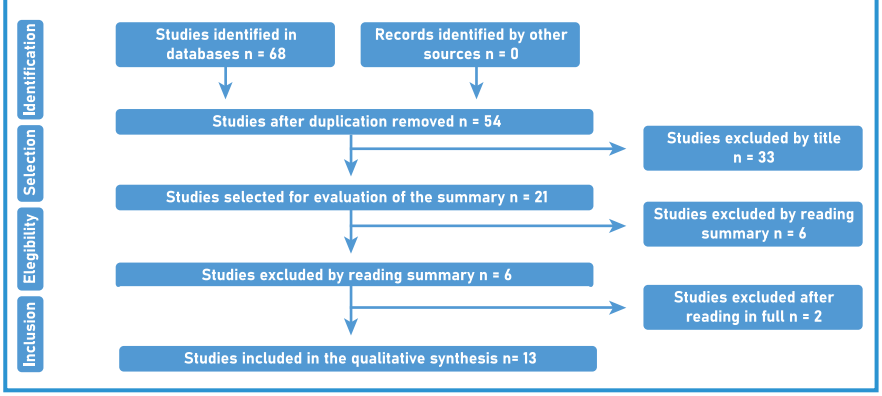
The teacher must motivate his apprentices so that they become active in the learning process, and that they seek to autonomously face the difficulties that present themselves in a shared way with colleagues.

Project-based Learning Methodology

PBL can be used as benchmarks to assess whether the stages being developed by students during the project, whether they are reaching levels of delivery quality and whether the levels of mastery of the competencies established in the objectives of the discipline are also reaching the expected. [14]

To understand project-based learning and the meanings that are involved in it, it is necessary to interpret and contextualize many terms used in this methodology. Chart 1 presents the teacher's and students' conceptions during

Figure 1. Flow diagram of the selected studies for the elaboration of an integrative literature review



Source: the authors, 2020

an author's experience in the integrative project discipline in a technical course in the health area.

Bloom's Taxonomy and Delphi Method

When analyzing the educational scenario, we have teachers from the 20th century teaching in the 21st century, there is an abyss between the moments, overcoming these demands is a real challenge to teachers, the Cartesian model is disconnected from the current world. [15]

One of the best known theories on the restructuring of pedagogical instruments is Bloom's Taxonomy, which classifies defined behaviors as important for learning, thus determining three educational domains: cognitive, emotional and psychomotor. Taxonomy can assist in specifying objectives in order to facilitate the planning of learning experiences and the preparation of assessment programs. [16]

The aforementioned theory clearly places the student as a receiver, not of repetitive knowledge to memorize, but when mediated by a teacher who instructs paths and commands that induce the student to reach the objectives and different levels of learning. For example, in the cognitive domain, verbs are used: demonstrate, employ, use, solve and trace. "Understanding" is associated with converting, decoding, describing, distinguishing and inferring. On the other hand, when we speak of "synthesis", we use verbs such as planning, elaborating, coordinating, proposing, developing and articulating. And as a result of the dynamics, the student's success in carrying out certain actions shows his level of assimilation of content. Soon, the student stops just memorizing and ends up creating something new with the knowledge informed and acquired. [17]

The contemporary teacher is invited to each class to learn from his apprentice and discover motivating strategies and paths.

Along the theoretical path, contributions from Blomm and the Delphique Method were found, although they are preambular, they bring important contributions. The Delphi Method is based on the principle that predictions by a structured group of experts are more accurate compared to those coming from unstructured or individual groups. Each element is thus isolated from the influence of the others. As there is no physical presence of participants at a meeting, this method can be used when the elements of the group are geographically distant. [15]

Construct or concept validity is the direct way to verify the extent to which the measure corresponds to the theoretical construction of the phenomenon to be measured. Although the concept had other names, such as, intrinsic validity, factorial validity and even apparent validity. These various terminologies demonstrate the confused notion that the construct had. [16]

Chart 1. Conceptions of students and teachers who use PBL

CORE	MEANING
Conception	The teacher exposes the anchor theme, but without archetypes.
Pensamento Crítico	Students reflect from empirical and previous/tacit knowledge.
Provocation	Problematization and contextualization
Collaborative Cycle	Teacher motivates collaboration and interpersonal relationships.
Leadership	Engaged, motivated and purposeful students.
Expertise	Teacher with skills to multiply and mediate knowledge and skills.
Innovation	Innovative projects with approach.

Borochovicius, Tortella; 2014

According to Bloom, several researchers used this conceptual terminology based on structured classifications and oriented to define some instructional theories. [18]

Two of the numerous advantages of using taxonomy in the educational context are:

- Provide the basis for the development of assessment tools and the use of differentiated strategies to facilitate, assess and stimulate student performance at different levels of knowledge acquisition;
- Encourage educators to help their students, in a structured and conscious way, to acquire specific skills from the perception of the need to master simpler skills (facts) to later master the most complex ones – concepts. [9]

Mobile Apps

Thinking about a prospective scenario and given the importance of the theme and rapid evolution in the technological development of mobile devices, it is believed that new educational strategies and methodologies will be developed, improved and put into use, demanding more and more studies and evaluative research that produce evidence about its effectiveness. [19]

The use of mobile applications in education, care management, diagnostic tools is innovative, reinforcing and motivating the interest in learning. The mobile devices that host these applications are used by 45% to 85% of healthcare professionals worldwide and are now more commonly employed than books and magazines. [19,20]

In the current context, Information and Communication Technologies (ICTs) focused on the health area have several tools that support the structuring and organization of data and information, enabling storage, processing, real-time and/or remote access and sharing of them, either by the various professionals involved in care, as well as by the patient/user. [21]

In this scenario, the phenomenon of mobile technologies (tablets, smartphones, etc.) stands out, especially the use of mobile applications (also known as Apps - from the English Application) among the world population. Apps are conceptualized as a set of tools designed to perform specific tasks and jobs. Such features add strategic value to the new "Information Age" society. [22,23]

Technology-mediated learning for health professionals has been widely explored in some Western countries that consider them to be effective and useful tools compared to traditional methods.

The importance of recognizing new formats and thinking about projects that are not only used to consume information on the move, but also to produce and distribute information, is emphasized. Mobile devices expand this possibility and make it essential for social inclusion in the information society. [24]

DISCUSSION

The active teaching and learning methodologies are based on the idea of the student as responsible for the search for knowledge itself, leaving the teacher the role of facilitator and stimulator of this search. [8]

In summary, it can be said that in the learning environment of PBL, the teacher has a role in addition to the transmission of technical knowledge, but, above all, the role of behavioral facilitator focused on results, encouraging students to try to overcome their limits and overcome psychological barriers that may prevent them from achieving the desired goals. [25]

Metacognition involves real cognitive knowledge, as well as awareness of individual learning. This subcategory has become increasingly important in the educational area, since the possibility of self-learning and the control of learning related to the autonomy of learning must be an increasingly conscious and subject to measurement process. This is made possible by the use of communication technology in education, the creation of new educational opportunities and the popularization of distance learning. [26]

Technology-mediated learning for health professionals has been widely explored in some Western countries that consider them to be effective and useful tools compared to traditional methods.

In the scope of technologies, accelerated scientific and technological development in the health sector has created ways to build knowledge about the daily activities of nursing services. Advances in computational technology are expected to improve organizational processes at all levels in the coming years, providing operational and strategic benefits to institutions and nursing practice. [27]

Thus, working with the use of devices is not only a necessity, but also a positive scenario for insertion in the daily lives of these professionals. The choice of mobile technology for applications is due to its practicality, technological innovation and because it is an instrument present in people's daily lives. These facts give the tool great potential for use as a support for the teaching and learning process. [27,28]

CONCLUSION

Man is a being who relates to the world in a conscious, intentional, reflective and potentially responsible manner. He is capable of making value judgments about his own way of being and acting and that of other human beings. Through thought, language and work, man gives meaning, knows and modifies the world, understood as the environment or circumstance in which man lives, lives and transforms through his action.

It is necessary to seek innovative teaching that offers the closest possible experience to the real situation and the visualization of practical handling, which can be achieved through digital technologies. Among these technologies, multimedia environments stand out, which allow communication between the individual and the computer, through the use of multiple means of representing information, such as texts, images, sounds, animations and videos.

The traditional Cartesian teacher becomes outdated, he hinders the student in his perspectives of creation and reflection. It is possible to detect the lack of knowledge and resources of many professors for the use of ATLMs, which leaves you the margin of infinite possibilities. Taking possession of current methodologies, technological innovation in favor of education seems to be the way forward. Active methodologies return to the core of human educational training that prepares man for the world, for society. It is not about leaving old good practices, but adapting to the new movement that is taking us.

The role of the teacher, as a facilitator in the teaching-learning process,

is fundamental in order to adapt to the new demands, to open up to the new pedagogical practices, to accept the challenges that the education of today and the future impose, to teach learning, learning to teach and together, teacher and student, building the teaching-learning process is a mutual responsibility. ■

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