

DOI: <https://doi.org/10.36489/nursing.2021v24i276p5670-5685>

# Continuing education and active methodologies in distance courses in nursing: integrative literature review

**ABSTRACT** | Objective: To verify and discuss the active teaching methodologies adopted in the education of nurses in distance learning courses. Method: The research was approved by the Research Ethics Committee of the Federal University of São Paulo. An integrative literature review was carried out on databases using the following descriptors and their combinations: Distance Education, Nursing and Active Methodologies. Results: It was observed that 33,3% of the studies promoted learning through a virtual learning environment, 30,3% used the e-learning format and 12.1% used a hybrid method. Conclusion: Active teaching methodologies have been used in training courses for health professionals, including nursing, and have contributed positively to the quality of care provided to patients.

**Keywords:** Nursing Education; Nursing; Distance Education; Learning; Active Learning.

**RESUMEN** | Objetivo: Verificar y discutir las metodologías activas de enseñanza utilizadas en los cursos de educación a distancia para la educación en enfermería. Métodos: El estudio fue aprobado por el Comité de Ética en Investigación de la Universidad Federal de São Paulo. Se realizó una revisión bibliográfica integradora utilizando los siguientes descriptores y sus combinaciones: educación a distancia, enfermería y metodologías activas. Resultados: Se observó que el 33,3% de los estudios promovió el aprendizaje a través del entorno de aprendizaje virtual, el 30,3% utilizó el formato de aprendizaje electrónico y el 12,1% utilizó el método híbrido. Consideraciones finales: Se han empleado metodologías de Aprendizaje Activo en cursos de capacitación para profesionales de la salud, incluida la enfermería, que han contribuido positivamente a la calidad de la atención brindada a los pacientes.

**Palabras claves:** Educación em Enfermería; Enfermería; Educação a Distância; Aprendizaje; Aprendizaje Activo.

**RESUMO** | Objetivo: Verificar e discutir as metodologias ativas de ensino adotadas na educação de enfermeiros em cursos à distância. Método: A pesquisa foi aprovada pelo Comitê de Ética em Pesquisa da Universidade Federal de São Paulo. Realizou-se revisão integrativa da literatura em bases de dados utilizando os seguintes descritores e suas combinações: Educação à Distância, Enfermagem e Metodologias ativas. Resultados: Observou-se que 33,3% dos estudos promoviam aprendizagem por meio de ambiente virtual de aprendizagem, 30,3% usavam o formato e-learning e 12,1% utilizavam método híbrido. Considerações finais: As metodologias ativas de ensino têm sido empregadas em cursos de capacitação de profissionais de saúde, inclusive enfermagem, e têm contribuído positivamente na qualidade da assistência prestada aos pacientes.

**Palavras-chaves:** Educação em Enfermagem; Enfermagem; Educação à Distância; Aprendizagem; Aprendizado Ativo.

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## INTRODUCTION

The learning process occurs from the association of previous knowledge, which is organized in the student's cognitive structure, to the knowledge acquired through their needs and potential, individual weaknesses and the reception of new information that generate new meanings. The construction of new knowledge is not an accumulative process of information, but the interaction of the teaching content, the method chosen by the teacher and the mental and physical conditions of the student for the assimilation of theories.<sup>(1,2)</sup>

One of the current ways of building and/or transmitting knowledge is the Active Teaching Methodologies (MAE - Metodologias Ativas de Ensino), where

Received on: 02/15/2021

Approved on: 04/05/2021

the subject is responsible and the protagonist during learning.<sup>(3)</sup>

The MAE makes the educational process dynamic by stimulating the student to participate in an intense and autonomous way during the teaching-learning process. Success in using MAE requires the participation and involvement of everyone, teachers and students. The educator must analyze the social and political context of the student in order to choose the appropriate method to be developed in the context portrayed. Among the methods that currently exist, we can mention: Problem-Based Learning or Projects, game-based learning and gamification, team learning, inverted classroom, design thinking and peer instruction, hybrid study (blended), simulators and technologies based on virtual reality, augmented reality and Learning Analytics, case study, Evidence-Based Practice (EBP), teamwork, portfolio, practice-based learning, research, group discussion, videos and role play.<sup>(3-6)</sup>

The MAE contributed to the increase in courses that use distance education (EAD) in Brazil. Courses offered by the worldwide online computer network (Internet) offer several forms of active teaching methodologies and have been showing good results, however it is necessary for the teacher to be aware of the need for constant motivation of the student in the constant search for his autonomy in the construction of knowledge since the physical distance between teacher and student is a reality in this type of education.<sup>(1,2,4,7-10)</sup>

In 2017, during the Distance Education Congress of the Brazilian Association for Distance Education (ABED - Associação Brasileira de Educação a Distância), the importance and growth of WEM in Brazil was demonstrated, reinforcing the theme of distance learning.<sup>(7,8,11,12)</sup>

According to the 2017 census conducted by ABED<sup>(13)</sup>, in 2008 there were 528.320 courses categorized as totally

distance learning. In 2017, 1.320.025 distance learning courses were made available, 1.119.013 semi-presential courses, 3.839.958 non-corporate free courses and 1.459.813 free corporate courses.



EAD courses facilitate the process of training and updating the individual and aim to improve professional performance in their day-to-day activities.



This year, coronavirus disease (COVID-19) spread rapidly around the world and required countries to take precautionary measures to decrease transmission of this virus. Face-to-face classes were suspended and it was necessary to use digital technologies so that students did not miss the school year. The use of online platforms has allowed traditional classes to become virtual classrooms. Nursing courses were forced to adopt strategies to prepare students for clinical practice.<sup>(14-17)</sup>

EAD courses facilitate the process of training and updating the individual and aim to improve professional performance in their day-to-day activities. Critical thinking and reflection should also be encouraged in the training of students in distance learning courses.

The aim of this study was to verify and discuss the MAE adopted in the education of nurses in distance education courses.

## METHODS

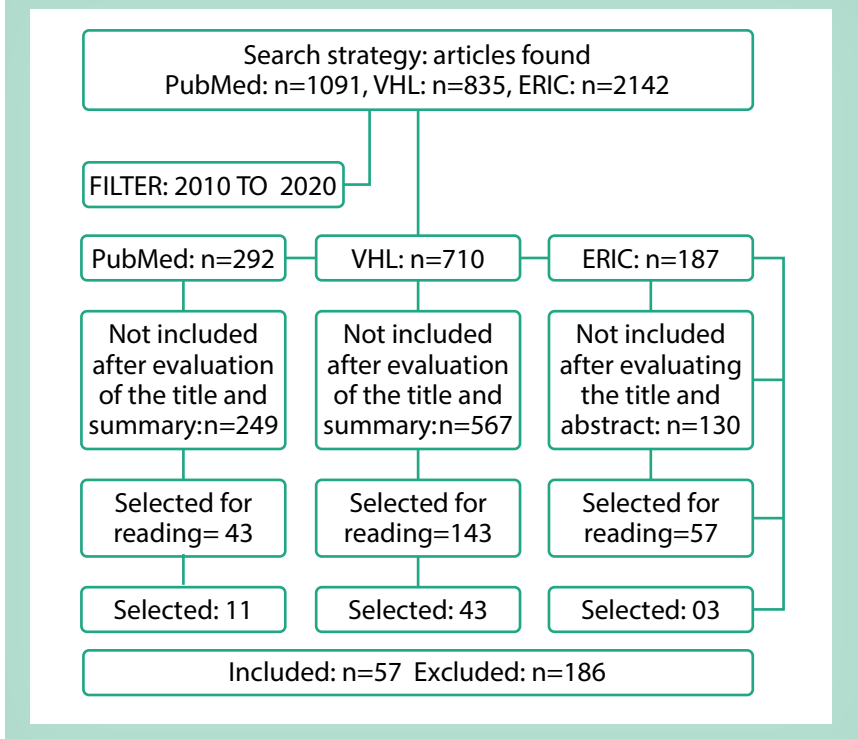
An integrative literature review was carried out to answer the question of which MAE are used in distance education courses in the education of health professionals in order to characterize the current panorama and perspectives of Health Education. The research was approved by the Research Ethics Committee of the Federal University of São Paulo (UNIFESP) according to CAAE 3988211018.

The literature search took place from November 1st to December 19th, 2020 in the following databases: Education Resources Information Center (ERIC), Virtual Health Library (VHL) and Online Medical Literature Search and Analysis System (MEDLINE/PubMed) using the following Health Sciences Descriptors (DeCS) and their combinations: Educação a Distância, Enfermagem and Aprendizado Ativo

The search strategies used were: (tw:(ead or "educação a distância" or educação a distância)) AND (tw:(tecnologia da informação )) AND (tw:( Active teaching-learning methodologies)) AND (tw:( nursing education OR mh: nursing education)) e Mh: "distance education" OR distance education [tw] OR tele education [tw] OR online educations [tw] OR online education [tw].

The inclusion criteria were studies with a publication date between 2010 and 2020, written in Portuguese, English or Spanish, available for free and describing which MAE is employed in

Figure 1 - Strategy for selecting study articles. São Paulo, 2020.



Source: from the author

distance learning nursing courses. The non-inclusion criteria were not reporting on the methodology used and not meeting the inclusion criteria. The exclusion criteria were repeated articles or articles that did not have a methodological tool.

After the selection of the studies, the MAE were identified and then the recording of the results started.

RESULTS

For this study, 33 articles were selected and analyzed. The flowchart for selecting articles can be seen in Figure 1.

It was found that 20 (46,5%) articles dealt with courses using the virtual learning environment Moodle, 10 (23,2%) took and evaluated nursing courses in the e-learning format, 6 (13,9%) described courses based on the methodology of online learning, 5 (11,7%) studies portrayed the hybrid method, and 2 (4,7%) used Web-based learning (Chart 1).

Chart 1. Characterization of the selected articles regarding the active methodologies used. São Paulo, 2020.

Author (reference)	Year/ Country	Title	Active methodology used
Chan et al. <sup>(15)</sup>	China 2020	Online clinical training in the COVID-19 pandemic	Virtual learning environment
Parulla et al. <sup>(16)</sup>	2020	Nursing assessment: elaboration and development of a massive, open and online course	Virtual learning environment
Martins and Queluzi <sup>(17)</sup>	2019 Brazil	Problem situation as a distance learning strategy on pressure injury prevention	Virtual learning environment
Moon and Hyun <sup>(18)</sup>	2019 South Korea	Knowledge, attitude and self-efficacy of nursing students in the combined learning of cardiopulmonary resuscitation: a randomized clinical trial	Hybrid
Freitas et al. <sup>(19)</sup>	2018 Brazil	Evaluation of the online course in continuing education on breastfeeding for nurses	Virtual learning environment
Costa et al. <sup>(20)</sup>	2018 Brazil	Construction and validation of a distance Basic Life Support Course	Virtual learning environment
Detroyer et al. <sup>(21)</sup>	2018 Belgium	Effect of an interactive e-learning tool for delirium on patient and nursing outcomes in a geriatric hospital setting: findings of a before-after study	E-learning
Guy et al. <sup>(22)</sup>	2018 Australia	Optimal anatomy and physiology e-learning resources: student access, learning approaches, and academic outcomes	Hybrid
Muhe et al. <sup>(23)</sup>	2018 Tanzania	Evaluation of distance learning IMCI training program: the case of Tanzania	Hybrid
Warmling et al. <sup>(24)</sup>	2018 Brazil	Approaching knowledge and experiences at a distance: report of the tutoring of a specialization course	Virtual learning environment

Avelino et al. <sup>(12)</sup>	2017 Brazil	Teaching-learning evaluation on the ICNP® using virtual learning environment	Virtual learning environment - Wiki
Chao et al. <sup>(25)</sup>	2017 Taiwan	Development, implementation, and effects of an integrated web-based teaching model in a nursing ethics course	E- learning
Erlandsson et al. <sup>(26)</sup>	2017 Somalia	Evaluation of an online master's programme in Somaliland. A phenomenographic study on the experience of pro-fessional and personal development among midwifery faculty	Online learning
Hampton et al. <sup>(27)</sup>	2017 USA	Preferred methods of learning for nursing students in an on-line degree program	E-learning Videos, PowerPoint and case studies.
Rabeh et al. <sup>(28)</sup>	2017 Brazil	Topical therapy for chronic wounds: contributions of a distance learning unit to the knowledge of nursing students	Virtual learning environment, Quiz
Wewer et al. <sup>(29)</sup>	2017 Denmark	Health care professionals from developing countries report educational benefits after an online diabetes course	Massive open online course (MOOC)
Badiei et al. <sup>(1)</sup>	2016 Iran	Comparing nurses' knowledge retention following electronic continuous education and educational booklet: a con-trolled trial study	E- learning
Pereira and Sena <sup>(30)</sup>	2016 Brazil	Courses offered by the Minas Health Channel: perception of primary care workers	Moodle platform (television)
Whitesman and Mash <sup>(31)</sup>	2016 South Africa	Examining the effects of a mindfulness-based distance learning professional training module on personal and professional functioning: a qualitative study	Online learning
Xu et al. <sup>(32)</sup>	2016 China	E-learning for grass-roots emergency public health personnel: preliminary lessons from a national program in Chi-na.	E-learning
Holanda et al. <sup>(8)</sup>	2015 Brazil	Teaching and learning in a virtual environment: nursing students' attitude	Virtual learning environment: videos, podcast, games, case studies and forum.
Alves et al. <sup>(33)</sup>	2015 Brazil	Virtual interactivity: web forum café in a nursing management course	Virtual learning environment Web cafe
Tronchin et al. <sup>(34)</sup>	2015 Brazil	Development of an online nursing management course: successful experience between Brazil and Portugal	Virtual learning environment
Liaw et al. <sup>(35)</sup>	2015 Singapore	Designing and evaluating an interactive multimedia Web-based simulation for developing nurses' competencies in acute nursing care: randomized controlled trial	Web-based learning (simulation)
Ferreira et al. <sup>(36)</sup>	2015 Brazil	Lights, camera and action in the implementation of central venous catheter dressing	Virtual learning environment (video)
Fricton et al. <sup>(37)</sup>	2015 USA	Preventing chronic pain: a human systems approach-results from a massive open online course	Online Learning
Gardiner et al. <sup>(38)</sup>	2015 USA	Online education for improving communication and documentation of dietary supplements among health profes-sionals practicing in a hospital setting	Online learning
Haugen et al. <sup>(39)</sup>	2015 USA	Harnessing technology to enhance delivery of clinical trials education for nurses: a report from the children's oncol-ogy group	Online learning
Parlakkilic <sup>(40)</sup>	2015 Turkey	Modular rapid e-learning framework (MORELF) in desktop virtualization environment	E-learning
Gonçalves et al. <sup>(41)</sup>	2015 Brazil	The contribution of distance learning to the knowledge of nursing lectures regarding assessment of chronic wounds	Virtual learning environment
Scarborough <sup>(42)</sup>	2015 Mexico	Synchronous videoconferencing in distance education for pre-licensure nursing	E-learning
van de Steeg et al. <sup>(2)</sup>	2014 Netherlands	Can an e-learning course improve nursing care for older people at risk of delirium: a stepped wedge cluster ran-domised trial	E-learning

Kiviniemi <sup>(43)</sup>	2014 USA	Effects of a blended learning approach on student outcomes in a graduate-level public health course	Hybrid
Ramos- Herrera et al. <sup>(44)</sup>	2014 Mexico	Virtual campus of public health: six years of human resources education in Mexico	E-learning
Tung et al. <sup>(45)</sup>	2014 Taiwan	Occupational hazards education for nursing staff through web-based learning	Web-based learning
Veredas et al. <sup>(46)</sup>	2014 Spain	A web-based e-learning application for wound diagnosis and treatment	E-learning (case study)
Grossi and Kobayashi <sup>(47)</sup>	2013 Brazil	Building a virtual environment for distance learning: an in-service educational strategy	Virtual learning environment
Zolfaghari et al. <sup>(48)</sup>	2013 Iran	Developing a blended learning program for nursing and midwifery students in Iran: process and preliminary out-comes	Hybrid
Prado et al. <sup>(49)</sup>	2012	Virtual learning environment in nursing education: experience report	Virtual learning environment
Queiroz et al. <sup>(50)</sup>	2012	Venous ulcers and compression therapy for nurses: development of an online course	Virtual learning environment
Alvarce and Pierin <sup>(51)</sup>	2011	Development of an educational hypermedia for teaching the blood pressure measurement procedure	Virtual learning environment
Silva et al. <sup>(52)</sup>	2011 Brazil	Educational chat in nursing: possibilities of interaction in the virtual environment	Virtual learning environment
Silva et al. <sup>(53)</sup>	2010 Brazil	Virtual learning environment in continuing education in nursing	Virtual learning environment

Source: from the author

The researches reported the effectiveness of teaching through EAD and some authors pointed out the need for new studies with methodological rigor capable of analyzing the courses that use the one or more MAE. It was observed that the methodological tools used in distance learning courses were varied. As shown in the graph in Figure 2, 19 (58,1%) studies used the combination of technological tools for the

application of MAE.

The tools presented in Figure 2 were used in conjunction with the following MAE: problem-based learning, practice-based learning, research, case studies and group discussion.

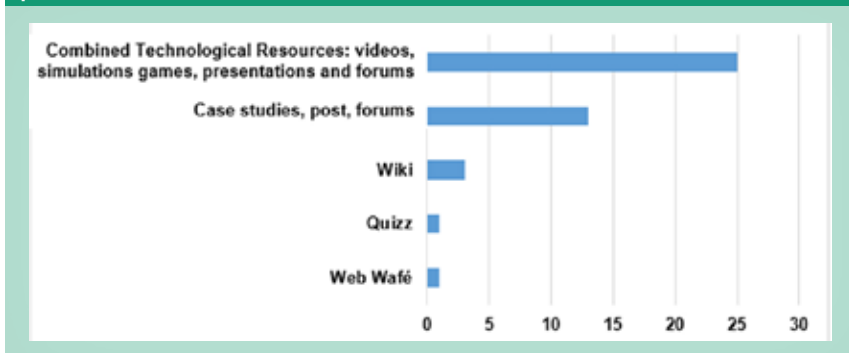
**DISCUSSION**

To Holanda et al.<sup>(7,8)</sup>, Avelino et al.<sup>(12)</sup>, Queiroz et al.<sup>(50)</sup>, Freitas et al.<sup>(19)</sup>,

Alvarce et al.<sup>(51)</sup>, Silva et al.<sup>(21)</sup>, Tronchin et al.<sup>(28)</sup>, Ferreira et al.<sup>(30)</sup> and Santos et al.<sup>(54)</sup>, the use of technologies are allied with the process of continuing education.<sup>(7,8,12,34,36,54)</sup> The virtual environment has hypertexts, links, audio-visual resources and discussion forums that provide freedom, interaction and autonomy, in addition to allowing the student to actively participate in their education and / or training process. The authors also reaffirmed the fundamental role of teachers as mediators in distance learning courses.

Online classes (video classes) and educational videos are a didactic teaching strategy for stimulating and supporting the understanding of students in different contexts, such as: classrooms, laboratories and distance education.<sup>(12,34,36,53,54)</sup> The videos contribute to the professional training of the nursing team by bringing the student closer to the clinical situation not yet experienced, improved cognitive knowledge and technical skills related to the proce-

**Figure 2 - Technological resources used in distance education courses for health professionals. São Paulo, 2020.**



Source: from the author.

ture and are capable of improving the quality of care. Another training model is animation videos that constitute a new and differentiated strategy and enable student learning.

Organized spaces with a didactic-pedagogical purpose created using the virtual learning environment Moodle perform well for the implementation of virtual activities, with the availability of didactic material, sequential or not sequential video classes, academic activities, animations, videos and other technologies.<sup>(12,18,25,28,34,40,47,52,54,55)</sup> The use of video conferences and tele consultancy as technologies to assist health professionals has also been shown to be effective in sharing theoretical doubts and clinical practice. The educational chat allows the development of autonomy in the process of building the knowledge of nursing students through the management and development of responsibility for learning and by providing other tools such as: Web café, forum and wiki (construction of collective texts). The virtual learning environment Moodle is also defined as a tool capable of developing virtual interactivity among students from different regions and realities, enabling learning by exchanging previous experiences and knowledge that expand learning and the acquisition of new knowledge.

Detroyer et al.<sup>(21)</sup> used the terms e-learning and online learning to describe the development of a distance education program for nursing and van de Steeg et al.<sup>(2)</sup> the terms e-learning and web-based learning were considered synonymous, concluding that this educational approach has valuable tools for organizations of health professionals. Similarly, Tung et al.<sup>(45)</sup> used the terms internet-based learning and online learning as synonyms of the methodology applied in the development of a course on occupational risks.

Xu et al.<sup>(32)</sup> used the term e-learning to develop a platform with digital courses. E-learning was recognized as an

educational tool with the advantages of not having time and space limitations, low cost and easy to organize.



The use of video conferences and tele consultancy as technologies to assist health professionals has also been shown to be effective in sharing theoretical doubts and clinical practice.



The term online learning was used to describe the development of a master's course that provided teachers for the transmission of classes in real time, weekly virtual meetings and monitored activities on the teaching platform.<sup>(26)</sup> Massive online and open courses are educational tools for online learning, hosted on platforms and open to people with an interest in the area. The courses have videos, debate forums, among other audiovisual resources.<sup>(37,53)</sup>

Gardiner et al.<sup>(38)</sup> affirms that online education has gained space for being carried out according to individual pre-

ference and provides access to several resources to expand knowledge.

Other authors have developed interactive situational e-learning systems that integrate ethical decisions in a course for nursing professionals in order to assess the effects of training on students' ethical decision-making competence.<sup>(1,25,46,56)</sup> At the end, there was an improvement in the retention of information, improvement in the use of the content taught and in the daily attitudes and skills related to the theme.

Caveião et al.<sup>(5)</sup>, Chan et al.<sup>(15)</sup>, Prado et al.<sup>(49)</sup>, Martins et al.<sup>(17)</sup> and Carter et al.<sup>(57)</sup> discuss the teaching-learning strategies used to develop the leadership of nurses through active teaching methodologies that favor autonomy, arouse curiosity and encourage collective and individual decision-making. MAE problem-based learning was highlighted for promoting self-learning and enabling the application of knowledge acquired in practice. The teacher's role was to organize the discussion and encourage the participation of the entire group, ensuring learning. Chan et al.<sup>(15)</sup> used resources such as briefing and debriefing in virtual simulation to facilitate student learning. It is an effective method for clinical training, as students can interact with virtual patients in a recreation of a real environment.

The hybrid method was used by Muhe et al.<sup>(23)</sup>, Kiviniemi<sup>(43)</sup>, Zolfaghari et al.<sup>(48)</sup> e Moore<sup>(58)</sup>, who mixed classroom and online classes, using interactive resources and video lessons. It is considered that hybrid approaches can be effective in improving learning and performance.

Hampson et al.<sup>(27)</sup> concluded that most participants preferred asynchronous teaching methodologies due to their effectiveness with the use of videos, presentations narrated in PowerPoint and case studies. Participants pointed out videos and/or presentations in PowerPoint, and case studies narrated as the most stimulating and effective methods.

The studies found demonstrate the use of active methodologies combined in the distance course and positive results in learning. Despite the studies found, few address the use of active learning methodology in nursing courses.

## CONCLUSION

The year 2020 was affected by the disease caused by coronavirus (COVID-19), which spread rapidly around the world. The adoption of measures to contain transmission of the disease required countries to seek new alternatives for communication and training of professionals. The use of online platforms has allowed traditional classes to become virtual classrooms and thus the distance learning process has gained greater importance at this time. The discussion on the most effective methodologies to reach the learning process was broadened.

In Brazil, the education process is undergoing didactic changes and more and more the student is encouraged to be the protagonist in the teaching-learning process, with or without support from teachers responsible for structuring and monitoring this process. In this

context, active teaching methodologies have been used in training and/or training



The adoption of measures to contain transmission of the disease required countries to seek new alternatives for communication and training of professionals.



courses for nursing professionals. Although some studies point to the successful use of distance learning methods, further research with methodological rigor on the subject and the development of techniques for measuring the quality of courses offered to nursing professionals is necessary. Even with the challenge of educating distance education with quality, it is worth mentioning that the use of active teaching methodologies in nursing education processes contributes to professionals' access to information and can have a positive impact, improving the quality of care provided to patients.

## Contributions to the area of nursing education

Active Teaching Methodologies (MAE) effectively contribute to the learning process in distance learning courses in nursing education with the same quality as in-person courses. The increase in distance learning courses makes it possible to reach the largest number of professionals, directly impacting the quality of assistance provided. The current global situation with the COVID-19 pandemic has demonstrated the importance of digital technologies for training. 🐼

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