

Active methodologies and technicist teaching in health: the teaching practice

RESUMO | Objetivo: Caracterizar a percepção do docente sobre as metodologias ativas utilizadas na educação profissional da área da saúde, bem como, desenvolver um prospecto de aplicativo para dispositivos móveis com conteúdo voltado ao ensino ativo. Métodos: Trata-se de uma pesquisa de campo-ação, de natureza qualitativa em uma Instituição Escolar Vale do Paraíba, a coleta deu-se em Maio 2019 a amostra foi determinada por conveniência. Resultados: A estratégia que o professor utiliza para desenvolver um conteúdo é o instrumento mais importante para alcançar os objetivos a que se propõe. Entretanto, não existe um método pedagógico universal, e sim uma infinidade de recursos ou ferramentas que o mesmo lança mão para mediar o processo ensino. Conclusão: O papel do professor, enquanto facilitador no processo de ensino-aprendizagem é fundamental no sentido de abrir-se e adequar-se às novas demandas.

Palavras-Chave: Educação Profissionalizante; Educação em Saúde; Estudos de Avaliação como Assunto; Docentes; Design de Software.

ABSTRACT | Objective: To characterize the perception of teachers about active methodologies used in professional education in the health area, as well as to develop an application prospectus for mobile devices with content aimed at active teaching. Methods: This is a field-action research, qualitative in nature in a School Institution Vale do Paraíba, the collection took place in May 2019 and the sample was determined by convenience. Results: The strategy that the teacher uses to develop content is the most important instrument to achieve the goals it proposes. However, there is no universal pedagogical method, but an infinity of resources or tools that it uses to mediate the teaching process. Conclusion: The teacher's role, as a facilitator in the teaching-learning process, is fundamental in the sense of opening up and adapting to new demands.

Keywords: Vocational Education; Health education; Assessment Studies as a Topic; Teachers; Software Design.

RESUMEN | Objetivo: Caracterizar la percepción de los profesores sobre las metodologías activas y las prácticas pedagógicas utilizadas en la formación profesional en los cursos del área de la salud, así como desarrollar inicialmente un prospecto de una aplicación para dispositivos móviles con contenidos centrados en estrategias de enseñanza activa. Métodos: Se trata de una investigación de campo, de carácter cualitativo. Se elaboró un instrumento de recopilación de datos para las entrevistas con los docentes de una institución privada de enseñanza técnica, muestra determinada por conveniencia. Para elaborar el prospecto de aplicación se utilizó la metodología del Design Thinking. Resultados: La estrategia que el profesor utiliza para desarrollar un contenido es la herramienta más importante para lograr sus objetivos. Sin embargo, no existe un método pedagógico universal, sino una multitud de recursos o herramientas que el profesor utiliza para estimular el aprendizaje del alumno. Conclusión: El papel del profesor, como facilitador en el proceso de enseñanza-aprendizaje, es fundamental para adaptarse a las nuevas exigencias, para estar abierto a nuevas prácticas pedagógicas, para aceptar los retos que imprime la educación de hoy y del futuro, de enseñar a aprender y de aprender a enseñar.

Palabras claves: Educación profesional; Educación sanitaria; Estudios de evaluación como tema; Profesores; Diseño de software.

Raquel Martins Ferraz

Student of the Stricto Sensu Graduate Program in Design, Technology and Innovation – Professional Master's Degree at the Teresa D'Ávila University Center.
ORCID: 0000-0003-2675-804X

Meline Rossetto Kron-Rodrigues

Professor of the Postgraduate Program in Nursing - Masters and Doctorate at Universidade Univeritas (UNG) Guarulhos
ORCID: 0000-0003-2174-268X

Henrique Martins Galvão

Professor at the Stricto Sensu Graduate Program in Design, Technology and Innovation – Professional Master's Degree at the Teresa D'Ávila University Center – UNIFATEA
ORCID: 0000-0002-8017-6537

Cláudia Lysia de Oliveira Araújo

Professor at the Stricto Sensu Graduate Program in Design, Technology and Innovation – Professional Master's Degree at the Teresa D'Ávila University Center – UNIFATEA.
ORCID: 0000-0002-0366-1475

INTRODUCTION

Education in Brazil is going through a time of growth and constant transformation in recent decades. In face of new demands and high technology, the profile of professional training, both in higher education and at the technical level, makes us rethink our traditional and classic way of teaching. The professor's challenge is to be a facilitator of training that favors the development of individual autonomy, but prepared for the collective. To achieve this purpose, the macro vision must permeate the micro, and between these it is necessary to move, in the construction of knowledge.

Received: 14/07/2021

Approved: 20/07/2021

In view of this scenario and seeking to break with the knowledge transmission paradigm, different methodologies are increasingly being tried out, based on changes in the performance profiles of students and professors. Recent studies highlight active methodologies that incorporate mobile technologies as great possibilities for differentiated movements in classrooms, bringing new meanings to the teaching and learning process. The concept of active learning and teaching is linked to that of active methodologies. In them, students work to build their knowledge. It can be said that such methodologies emerged as a counterpart to mechanical learning and it is interesting for professors to create conditions for students to carry out their studies in an active way. ⁽¹⁾

Active Teaching and Learning Methodologies (ATLMs) gain space as they place the student as the protagonist in the search for knowledge, the professor will play the role of facilitator and instigator of the teaching-learning process.

Researchers in a recent study present a survey on ATLMs in which it is possible to verify different tools and possibilities, from the most conversational to the most innovative, such as software with Active teaching strategies aimed at helping professors, they just need to be open to explore these fields as facilitators of the teaching learning process. ⁽²⁾

There are several types of active methodologies such as Problem Based Learning (PBL) or Learning based on problems or projects that requires the student to process various learning, such as: proactive teamwork, discussions and interdisciplinarity. When simulating situations close to reality, several mechanisms are triggered, such as logical reasoning, decision making, teamwork, leadership, scenario analysis, testing and hypotheses; ⁽³⁾; discussion of real cases, team-based learning, Team-Based Learning, role plays, simulations, construction of physical models,



Researchers in a recent study present a survey on ATLMs in which it is possible to verify different tools and possibilities, from the most conversational to the most innovative, such as software with Active teaching strategies aimed at helping professors, they just need to be open to explore these fields as facilitators of the teaching learning process.



computational systems and software, and gamification. ^(4,5)

However, all these strategies only gain the prerogative of being active when they place the student as the protagonist of the process and the professor as its facilitator, that is, the exchange is mutual. There is a collaborative cycle, criticality, reflection, motivation and challenge of both for the teaching-learning process to literally happen.

Classical education focused on the educator, where the good student was considered the holder of the greatest theoretical knowledge, becomes obsolete as new demands require skills related to social interaction, the use of digital technologies and creative responses, are increasingly valued.

Bring to the educational context the app mobile technologie has happened in cause of its convenience, technological innovation and for being an instrument present at people's cotidiane. Those factors give this tool a great potential for its use for teaching and learning process support. Obviously, some care measures must be done, considering the app usage inside mobile gadgets at teaching and learning, and between them, outstanding resource evaluation needs in what concerns its quality and content accuracy.

Based on these initial considerations, how is the professor's knowledge of active teaching-learning methodologies characterized? What are the main strategies used, how do they receive new technologies among them the multimedia resource applications?

In this context, reflecting our traditional and Cartesian way of teaching, resorting to the many methodological changes to provide tools to support the work of professors in the health area, active teaching-learning methodologies gain part in the scenario.

Given the above, the objective was to characterize the perception of professors about active methodologies and pedagogical practices used in vocatio-

nal education in health care courses, as well as initially developing an application prospectus for mobile devices with content aimed at active teaching strategies.

METHODS

This research was developed in two stages initially, a qualitative meta-synthesis was carried out through a literature review, following the steps: guiding question, definition of descriptors and data search, selection and data collection, critical evaluation of the included studies, data analysis and interpretation and conclusion thereof. The selected databases were Scientific Electronic Library Online (SciELO), Latin America and the Caribbean in Health Sciences Literature (LILACS) and BDENF (Nursing Database) and bibliographies, books and theses in the health area, using as descriptors: “educação Profissionalizante”, “educação em saúde”, “pessoal da educação”. For the second stage, emphasis was placed on action research where through the methodology of Design Thinking that allows immersion in the context of the situation or problem to be studied to seek knowledge or solution or both, it was possible to raise the problem, know the reality and produce new knowledge.⁽⁶⁾

Thus, Design Thinking is a process for solving complex problems, collaboratively developed and centered on the human. His approach is based on an assumption that considers the object itself, and is conceived through it. Thus, designer thinkers use abductive thinking, which consists of questions resulting from the understanding of phenomena from the information collected during their observation of the problem, so that the solution fits into itself and is not derived from the problem at hand.⁽⁷⁾

In the meantime, the approach used was that of Viana et al (2012) which comprises 3 phases: In the immersion

phase, the use of Design Thinking enabled the involvement with professors knowing their profiles, practices and active methodologies used through observation and application of the questionnaires, at this time it was possible to know, that is, to immerse themselves in the teaching universe. Already in the ideation phase based on the responses of professors several ideas and contributions. In prototyping, we thought about building a screen prospect for an APP. This involved a constructivist proposal and intentional actions for planning, developing and applying specific didactic situations, incorporating mechanisms that favor contextualization.⁽⁸⁾

The researched subjects constituted the sample, for convenience, for the application of the data collection instrument. For this, they met the inclusion criteria, such as: being a CLT professor at the researched institution and being in the area of health and well-being; besides having specific knowledge about active teaching-learning methodologies (object of this research) and special experiences in their practice, as well as the use of applications in their daily lives; and agreeing and signing the Informed Consent Form.

For data collection, carried out in May 2019, a semi-structured questionnaire was designed and applied to professors to research the knowledge and impressions they had regarding the use of both ATLMs and applications, as tools and strategies to aid in teaching practice.

To meet the standards of field research, the project was submitted to the Committee of the Teresa D'Ávila University Center, in accordance with the precepts required by Resolution No. 466/12 of the National Health Council (CNS), and after its approval, under Opinion No. 3.286.428, the application phase of the questionnaires to the judges was started.⁽¹⁰⁾

This research was proposed within

the scope of the Professional Masters, whose principle is to resolve, through scientific study, products and services centered on the user. The initial proposal was to characterize the professors of professional courses in health courses, raise their knowledge and, as a final product, create screens as a prospect of an App to access a multimedia application on a mobile platform, called Click Active, which will make available a database with strategies and tools to help professors in the teaching-learning process, and the App in its entirety will be a future project.

The elaborated product will serve as a guiding mark and can be a reference to guide the teaching work. Another important factor to be highlighted is the low cost of maintaining the system and its capacity to organize, process, store and make information available. This will facilitate the access and interaction of the app's faculty and interface. Design Thinking (DT) was chosen for the methodological path in the construction of the App, as it advocates phases for the creation of products and services, it is a constructivist proposal and consists of an intentional action of planning, development and application of specific didactic situations, mechanisms that incorporate and favor human-centered contextualization.⁽⁹⁾

RESULTS

The research had a number of 15 judges, and two of the participants did not return the questionnaire, so 13 judges were analyzed. The questionnaire consists of four open qualitative questions, which were sent by e-mail and transcribed in full. As for the professors, they were all active in professional technical courses in the field of health, at a School Institution in Vale do Paraíba-SP.

Related to the profile of the interviewees, four professors were male and 11 female. As for training, we have

six nursing professors, three radiology professors, one esthetics professor, one pharmacy professor, one clinical analysis professor and one professor of psychology. A question that was believed to influence the answers to the questionnaire would be the length of experience in teaching, as technological innovations have been changing throughout history. In this context, the answers vary between 2 to 15 years of experience.

When asked what teaching strategies they use in the classroom, the following stand out:

I show and explain the theoretical and technical part and immediately associate it with a practical experience, where this is necessary, often decisive. Thus, they realize the importance of mastering theory and technique in order to act with discernment, responsibility and effectiveness (Professor 1).

Lectures and dialogue, case studies, practical classes, seminars, verbalization techniques and multimedia (Professor 2).

Lectures with illustrations and PowerPoint, videos and the Internet allow the continuous learning of students (Professor 4).

In classes I initially use the dialogued expository strategy, where I expose the material already prepared in a handout, previously delivered to the students. Then I try to raise clinical cases related to the topic studied, associating theoretical content with practice whenever possible (Professor 5).

There is no specific teaching strategy, as the class develops a method, the one I use the most is the dialogued and dynamic class,

Figure 1. Initial Draft of the App logo



Source: Personal archive, 2019.

Figure 2. Graphical representation of the App's home screen (Click Ativo:Active Education and Methodology)



Source: Personal archive, 2019.

because students participate and learn better, there is a better performance (Professor 6).

Nowadays, there is a great need for professors, from different levels of education, to develop professional skills to prepare students for a critical social education. It is therefore necessary to replace traditional forms of teaching with active learning methodologies, and that these are used efficiently in everyday educational practice. In this sense, there is a need for a new positioning of professors by choosing “the

activities that will promote the sharing of knowledge with the student”.^(11,13)

It can be seen from the responses that each professor has a strategy, the strategies that the professor uses to develop content are the most important instruments to achieve the goals they propose. However, there is no universal pedagogical method, but an infinity of resources or tools that the professor uses to encourage the student to learn, and it is up to him to read the students for active teaching.

When questioning the professors about their perception of which strate-

Figure 3. App contributions screen



Source: Personal archive, 2019.

gy was more efficient in technical education, they all mentioned the practice, highlighting:

Practical classes and case studies, because it enables the development of problematization in the classroom, which arouses the students' curiosity and interest, thus favoring their specific skills and competences (professor 1).

I believe that technical education requires a greater amount of practical classes and experience from professors. The subjects must be elaborated and treated in a real way, that is, how the student will face when in internship or graduated (Professor 3).

When asked about the contribution of an App as an effective strategy in the classroom to achieve learning, the result was unanimous, all professors agree, as it is attractive to digital native students, who are always in contact with these tools, and can bring new didactics and facilitate learning, as noted below:

Of course, all help is very welcome, everything that can add up, enriching teaching and learning is

great. But we must always motivate them, showing our own pleasure in teaching working in the nursing field. And an App with a database would be very practical (Professor 1).

It's a way to connect them, as many students without it stay on their cell phones and do not participate in classes (Professor 2).

After immersion in the teaching universe, it was possible to idealize and start drafts for the App prototyping.

DISCUSSION

Thinking in a prospective scenario and given the importance of the theme and rapid evolution in the technological development of mobile devices, we believe 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 on its effectiveness.

The accelerated scientific and technological development in the health sector has created new ways to build knowledge about the daily activities of nursing services. Advances in computer technology are expected to improve

organizational processes at all levels in the coming years, providing operational and strategic benefits to institutions and nursing practice.⁽¹⁶⁾

The first screen thought was a logo for the App, a priori a simple design was drafted, but one that conveyed the message that with one click the user would have access to active teaching strategies.

With the help of a graphic designer, the logo was prospected. Opposite primary colors were chosen and, therefore, the harmonic orange color, highlighting and calling the user's attention, this color awakens and encourages. The blue color is cool, conveys concentration, tranquility and is related to studies. The name established for the App was Active Click, this option was designed for ease of pronunciation, memorization and location on the world wide web, in addition to essentially meaning what it actually performs in the tool. Regarding the creation of the logo, the issues related to the symbolic meanings of the ATLM were again valued.

The development and usability process of an APP involves many details, in this context colors, fonts and images were thought, all these aspects directly interfere in the experience and user interface. We opted for a clean, attractive and minimalist mobile App layout.

This screen of the App (Figure 3) is considered to be the richest of all, as it is there that the database is supported, here it is possible for the user to leave their comments and impressions about the App and attach files such as photos, dynamics, games or possible contributions, creating a network of knowledge and significant exchanges regarding the teaching-learning process.

It is possible to observe that the teacher, who was responsible for passing the content on to the student, loses this function, making the student learn to reflect, question and criticize. In addition to the education app itself, a study carried out in November 2020 - that

is, after the changes that the pandemic brought to the area of education - describe the use of the WhatsApp App as a pedagogical support in the teaching-learning process. Certainly this fact is a revolution, considering that until a few months ago, messaging apps were just for personal affairs and leisure. Nowadays, it appears that there was a need to approach the student who, even close to the teacher, was far away, only on the screens.⁽¹²⁾

There has been talk for a long time about the modernization of the teaching-learning process, of the concept for subsequent implementation of active methodologies, however, it is inferred that the given valuation, appreciation and motivation, whether of students or teachers, was the obligation of the social isolation and the implementation of Emergency Remote Education, whether in schools, technical courses and Higher Education Institutions (IES - Instituições de Ensino Superior).^(13,14)

It is important to emphasize that the teacher has not lost his importance in the classroom, on the contrary, he is responsible for being the bridge between the student and knowledge, using the tools and strategies that are possible, as an App guarantees a large part of the adhesion, motivation and interest

of students, in addition to serving as a database for those involved, however, there is a cost for this, which not all institutions are prepared for this evolution in teaching.⁽¹⁵⁾

CONCLUSION

Education is considered an instrument of perpetuation and, perhaps, the only way to transform the collective conscience, therefore, its purposes must go beyond the formality of literacy, it must aim at the integral formation of the human being, as a citizen. The steps taken open perspectives to believe that teaching in the health area and the available technology can unveil significant new ways of learning. It is considered that this study is a driving force for new investments in the training of health professionals and in innovative technology study groups, so that other professionals can develop tools that help the teaching-learning process, in addition to opening a range of opportunities for its application in other educational processes. The evaluation of the application's effectiveness as a pedagogical tool and its applicability in daily school are highlighted as essential points for the continuity of this research. To achieve these

purposes, professional and educational training should not be centered on instructional figures, but this teaching can and should be constructed by the student and facilitated by the professor.

This study characterized the profile of professors in professional technical courses in the field of health. After applying qualitative questions, it was possible to recognize the strategies and practices used by them and verify that there are still gaps in the knowledge of ATLMs and their applicability as endless resources. As part of the work, it was possible to propose the App screens prospect aimed at a database with resources and strategies for health area professors in order to promote student-centered teaching and learning strategies. As it is only a prospectus, the App's validity and reliability have not yet been tested, but its validation and application to professors in a teaching environment is considered to support active teaching methods. This App can be useful as a resource for classes and as a reference database in the preparation of professors, providing them with tools.

References

- Gouvêa EP, Mayumi A, Shitsuka DM, Shitsuka R. Metodologia ativa: estudo de caso sobre o estágio profissional em um curso de tecnologia em redes. *Educação, Gestão e Sociedade*. 2016 ago; 6(23): 1-12.
- Martins Ferraz R, Rossetto Kron-Rodrigues M, Martins Galvão H, de Oliveira Araújo CL. Metodologias ativas de ensino e aprendizagem: o ensino de hoje na saúde. *Saúde Coletiva (Barueri)* [Internet]. 6º de abril de 2021 citado 20 de julho de 2021.
- Wood EJ. Problem-Based Learning: Exploiting Knowledge of how People Learn to Promote Effective Learning. *Bioscience Education*. 2004; 3(1): 1-12. <https://doi.org/10.3108/beej.2004.03000006>.
- Pedreira de Freitas, Maria Isabel, Valentim Carmona, Elenice, Estudo de caso como estratégia de ensino do Processo de Enfermagem e do uso de linguagem padronizada. *Revista Brasileira de Enfermagem* [Internet]. 2011; 64(6): 1157-1160. Recuperado de: <https://www.redalyc.org/articulo.oa?id=267022538025>
- Loureiro, m. M.; Alencar, e. S.; rosa e silva, c. E. M. T.; Cortez, I. U. A. S.; castro, a. S. O uso da metodologia ativa tbi como método de ensino na aula de monitoria. *Brazilian Journal of development*, v. 6, n. 7, p. 42740-42747, 2020.
- Higgins JPT; Greens (editors) *Cochrane handbook for systematic reviews of intervention* London: The COCHRANE COLLABORATION 2011: Disponível em: <https://training.cochrane.org/handbook>. Acessado em 20 de Julho de 2021.
- Vianna, M. et al *Design Thinking: Inovação em negócios*. Rio de Janeiro: MJV Press, 2012.
- Cunha Jb, Dutra RAA, Salomé GM, Ferreira LM. Sistema computacional aplicado à tecnologia móvel para avaliação e tratamento de feridas. *Rev enferm UFPE on line*. 2018 mai;12(5):1263-72.
- Brown T. *Design Thinking – Uma Metodologia Poderosa Para Decretar o Fim das Velhas Coisas*. Rio de Janeiro: Alta Books; 2017.
- Conselho Nacional de Saúde (BR). Resolução n.º 466, de 12 de dezembro de 2012. Aprova as diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Brasília (DF): Ministério da Saúde; 2012.
- Castanha ET, Monteiro JJ- Cittadin A, Giassi D, Guimarães ML. Metodologias ativas de aprendizagem e a promoção da autonomia dos estudantes de ciências contábeis. In: *II Congresso de Contabilidade da UFRGS, Porto Alegre*, 2017.
- Mackmill MB, Lopes JLB, Moreira MIG. O uso do WhatsApp como recurso de apoio pedagógico no processo de ensino e de aprendizagem na educação de jovens e adultos. Instituto Federal Sul-rio-grandense, Câmpus Pelotas – Visconde da Graça, RS, 2020.
- Santana RM, Santana MAM, Silva WA. Reflexão teórica sobre a participação das tecnologias digitais da informação e comunicação na educação à distância (EaD) e ensino remoto emergencial (ERE). *Rev Mult Pey Keyo Científico*. 2020;6(4):154-72.
- Chagas JM, Chagas RLCP, Silva Filho RL. As mudanças nas IES trazidas pela Pandemia 2020. Instituto Lobo. 2020;35.
- Miranda RV, Moret AS, Silva JC, Perpetua Simão B. Ensino Híbrido: Novas Habilidades Docentes Mediadas pelos Recursos Tecnológicos. *EaD Em Foco*. 2020; 10(1).
- Cruz, N. S. et al. Enfermagem, competência técnica de universitários em informática. *Revista da Escola de Enfermagem da USP, São Paulo*, v. 45, p. 1595-1599, 2011.