ACTIVE METHODOLOGIES MEDIATED BY DIGITAL INFORMATION AND COMMUNICATION TECHNOLOGIES IN A POSTGRADUATE PROGRAM IN EDUCATION IN THE POST-PANDEMIC

METODOLOGIAS ATIVAS MEDIADAS POR TECNOLOGIAS DIGITAIS DA INFORMAÇÃO E COMUNICAÇÃO EM PROGRAMA DE PÓS-GRADUAÇÃO EM EDUCAÇÃO NO PÓS-PANDEMIA

METODOLOGÍAS ACTIVAS MEDIADAS POR TECNOLOGÍAS DIGITALES DE LA INFORMACIÓN Y LA COMUNICACIÓN EN UN PROGRAMA DE POSGRADO EN EDUCACIÓN EN EL PERIODO POSTPANDEMIA

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ABSTRACT: The objective was to understand the nuances that permeate the use of active methodologies mediated by Digital Information and Communication Technologies (DICT) in the current context for teaching and learning in the stricto sensu postgraduate program in Education after the Covid-19 pandemic. This is a case study with 47 doctoral and master's students from Fortaleza, Ceará. Data were collected by online questionnaire and the IRaMuTeQ software was used to process them, prioritizing descriptive statistics, descending hierarchical classification and similarity analysis. Four thematic axes were constituted: potentialities of active methodologies through DICTs; training for teaching mediated by active methodologies; active methodologies in the face of social demands; and experiences of implementing active methodologies mediated by DICTs. It is concluded that teacher training, student engagement and adaptation to post-pandemic social demands do not dispense with the critical integration of DICTs in active methodologies in higher education.

KEYWORDS: Digital technologies. Teacher training. Active methods. Postgraduate programs.

RESUMO: *Objetivou-se compreender nuances que perpassam o uso das metodologias ativas mediadas por Tecnologias Digitais de Informação e Comunicação (TDIC) no contexto hodierno posto para o ensino e a aprendizagem na pós-graduação stricto sensu em Educação após a pandemia de Covid-19. Trata-se de um estudo de caso com 47 doutorandos e mestrandos de Fortaleza, Ceará. Os dados foram coletados por questionário on-line e utilizou-se o programa IRaMuTeQ para processá-los, priorizando-se estatística descritiva, classificação hierárquica descente e análise de similitude. Constituiu-se quatro eixos temáticos: potencialidades das metodologias ativas por meio das TDIC; formação para docência mediada por metodologias ativas; metodologias ativas ante as demandas sociais; e experiências de implementação das metodologias ativas mediadas por TDIC. Conclui-se que a formação docente, o engajamento dos alunos e a adaptação às demandas sociais pós-pandemia não prescindem da integração crítica das TDIC nas metodologias ativas do ensino superior.*

PALAVRAS-CHAVE: *Tecnologias digitais. Formação docente. Métodos ativos. Pós-graduação.*

RESUMEN: *El objetivo fue comprender los matices que permean el uso de metodologías activas mediadas por Tecnologías Digitales de Información y Comunicación (TIDC) en el contexto actual de enseñanza y aprendizaje en el programa de posgrado stricto sensu en Educación después de la pandemia del Covid-19. Se trata de un estudio de caso con 47 estudiantes de doctorado y maestría de Fortaleza, Ceará. Los datos se recogieron mediante cuestionario online y se utilizó el programa IRaMuTeQ para procesarlos, priorizando la estadística descriptiva, la clasificación jerárquica descendente y el análisis de similitud. Se constituyeron cuatro ejes temáticos: potencialidades de las metodologías activas a través de las TDIC; formación para la enseñanza mediada por metodologías activas; metodologías activas frente a las demandas sociales; y experiencias de implementación de metodologías activas mediadas por TDIC. Se concluye que la formación del profesorado, el compromiso del alumnado y la adaptación a las demandas sociales postpandemicas no prescinden de la integración crítica de las TDIC en las metodologías activas en la enseñanza superior.*

PALABRAS CLAVE: *Tecnologías digitales. Formación del profesorado. Métodos activos. Programas de postgrado.*

Introduction

The educational reality at universities has undergone several transformations since the declaration of the COVID-19 pandemic in March 2020 by the World Health Organization (WHO, 2020). During the 2020-2021 academic years, health measures were imposed that limited in-person teaching, affecting many countries around the world. According to UNESCO (2020), more than 85% of the student population was affected by the social distancing measures imposed, around 63 million teachers stopped working in the classroom and 59% of university institutions suffered some impact on their activities.

With physical isolation, the traditionally face-to-face teaching model was adapted to a model that allowed online or remote teaching. This situation generated unrest in higher education, both in the university's pedagogical management and in the teaching and learning processes of teachers and students. Among the concerns discussed are teacher training, teaching methodologies, technological infrastructure, consequences for mental health, the quality of teaching without face-to-face contact, academic performance, teacher and student satisfaction, among others (Moran, 2021).

Given the challenge of the pandemic, which forced the implementation of remote teaching in universities, there was a need for teacher training in the use and accessibility of digital educational technologies for teachers and students in order to mitigate the effects of the change from face-to-face teaching to online teaching. In this context, it has become essential that teachers receive training that allows them to acquire digital skills to promote teaching-learning processes and educational quality, even though many have been excluded from training and self-taught and have to learn how to handle DICT in the educational process.

The effort of the team of teachers to transform face-to-face teaching into remote teaching meant a structural change, which reverberated in post-pandemic times, sometimes altering class planning, especially with the inclusion of resources from DICT and the expansion of the use of active methodologies. These resources are essential in higher education in Brazil, including after the pandemic period. This is because they facilitate the carrying out of collaborative activities between students and teachers, in addition to fostering greater extrinsic and intrinsic motivation among students, which made teachers want to keep them in the mediation of their classes (Nascimento; Fialho, 2020).

Regarding active methodologies, they are broad and do not establish a specific strategy or model for their development (Bacich; Moran, 2018), as an example we can mention gamification, *wiki, maker* culture, case studies, flipped classroom etc. In fact, *Flipped*

Classroom, or inverted classroom, allowed to promote teaching innovation and the advancement of digital skills of teachers and students (Michels; Danilevicz; Aragón, 2022), since, according to Moran (2021), This could be the key to implementing the use of technologies in the classroom and really developing active methodologies in a structured way. There are still interesting experiences in which *wikis* were used to improve academic writing and collaboration skills (Tomazelli, 2021), digital games to solve practical cases (Carvalho, 2021), in addition to resources such as *Kahoot* and *Mentimeter* (Santos, 2020; Parada *et al*., 2020) or digital activities through Google Forms to promote the teaching and learning process.

The use of DICT in active learning is present in different higher education courses belonging to various areas of knowledge; however, the distribution is uneven (Fialho; Neves, 2022; Nascimento, 2019; Neves *et al*., 2021). In fact, it is known that the health crisis caused by COVID-19 has raised problems related to digital inclusion and highlighted new challenges related to the democratization of access to adequate equipment and network providers and digital competence, as documented in several Brazilian studies (Gomes; Zen; D`ávila, 2022; Neves; Machado; Fialho, 2022) and other countries (Özüdoğru, 2021). However, there is a consensus among these researchers regarding the need to provide societies with social justice so that they can benefit from technology that is sufficiently adequate to qualify teaching and education at all levels and stages, regardless of the students' economic conditions.

Based on these extraordinary considerations, the question was: how are DICT used in higher education to mediate active methodologies in post-pandemic times in postgraduate programs in education? In order to respond to this concern, a case study was developed with the aim of understanding the nuances that permeate the use of active methodologies mediated by DICT in the current context of teaching and learning in stricto sensu postgraduate studies in Education.

The study is relevant in the contemporary educational scenario, as it contributes to expanding the understanding of how DICT are used to mediate active methodologies in the post-pandemic context. Furthermore, it contributes to improving the teaching-learning process by addressing the potential of this interrelationship, training for teaching mediated by active methodologies considering social demands and current experiences of implementing active methodologies mediated by DICT. These reflections can enhance more efficient educational strategies for the future of education.

Methodology

This is a qualitative, exploratory-descriptive, case study study, with 47 university students regularly enrolled in the master's and doctorate course of the Postgraduate Program in Education (PPGE) at the State University of Ceará (UECE), in Brazil. The qualitative approach was selected because, as stated by Ludke and André (1986), it offers the possibility of understanding in depth the complexity and richness of the phenomena investigated. Through this approach, it is possible to explore the perceptions, meanings, experiences and contexts of the subjects involved in the study, seeking a holistic and contextualized understanding.

The case study was chosen due to its ability to provide a detailed and in-depth analysis of a specific phenomenon within its real context, in such a way that it offers the opportunity to examine in depth the essential aspects of the phenomenon in question, taking into account the different actors involved, their perspectives and their contexts (André, 2005).

The UECE PPGE, where the investigation took place, proved to be appropriate for research as it is the only stricto sensu program in Brazil (with master's and doctorate degrees) with a single research axis, teacher training, prioritizing studies in this thematic aspect. Located in the northeast region of the country, PPGE is a reference in Ceará due to its widespread presence in the state, training teachers who work in basic and higher education in several municipalities, striving for the internalization of education.

All students regularly enrolled in the UECE PPGE who experienced the period of social isolation resulting from the Covid-19 pandemic and the remote teaching implemented in the aforementioned postgraduate course were invited to participate, by sending an institutional email (sent by the secretariat) and reinforcement by requests via WhatsApp, however, 47 agreed to participate in the research, indicating agreement with the informed consent form and answering the questionnaire in full.

The online questionnaire, consisting of 17 mixed questions, was made available via Google Forms. The first six, objective, inquired about the profile of the participants and their professional experiences. Then, five, multiple choice, dealt with the practices and technological resources used by their teachers in master's and doctoral courses. And the last six, open, raised their conceptions about the interface between active methodologies and DICT in the teaching-learning process and teacher training.

The answers to the last five questions were grouped for each participant, coded and subjected to lexicographic textual analysis with the help of the R *pour Interface software. Les Analysis Multidimensionnelles de Textes et de Questionnaires* (IRaMuTeQ), version 0.7 alpha

2. In accordance with Camargo and Justo (2013), this program is free and, with statistical rigor, evaluates qualitative data, supports the understanding of connections and vocabulary meanings, favoring, therefore, greater accuracy in authorial analyzes and interpretations. The coding guaranteed the anonymity of the participants who were identified by the item "e" in reference to the "student" category, plus "master's student" or "doctoral student".

The study met the ethical requirements required by the Research Ethics Council (CEP) of Brazil. The project was approved under n. 4,740,147/2021 and all participants invited to collaborate expressed prior consent, which explained the possibility of withdrawing at any time, the form of participation, the objective and the possible risks and benefits of the research. In fact, the study was endorsed by the UECE PPGE Coordination, which granted consent. The data obtained from the research, guaranteeing the anonymity of the informants, are preserved in an open data repository, at (https://doi.org/10.5281/zenodo.10116364), and can be accessed whenever necessary.

Results and discussion

The study made it feasible to verify that, of the 47 *stricto sensu graduate students*, 39 were women and 8 were men, with an average age of 41 years, of which 33 were pursuing a doctorate and 14 a master's degree. Only one had no experience with teaching; the others reconciled post-graduation with professional activity: ten were elementary school teachers; six in high school; three in higher education; and one in early childhood education. The average length of professional experience as a teacher was 13 years.

Regarding the technological equipment used most frequently by PPGE-UECE teachers to facilitate classes, master's and doctoral students responded that the computer (n=18), the projector (n=17) and the television (n=10) are the most used equipment.

When asked about the use of technological equipment by PPGE students in learning during postgraduate studies, 39 students used computers (*laptops* and desktop computers) and three used smartphones, two studied on televisions. It is worth mentioning that there is an association of equipment by the other respondents, who used more than one resource in their daily lives.

Despite the use of this equipment by postgraduate students and their teachers, 33 respondents considered that the active methodologies mediated by DICTs are not a reality in

the pedagogical practices that take place in their master's and doctorate degrees, while 14 responded affirmatively.

The comment of a student who questioned that just using a computer or projector does not guarantee good facilitation in pedagogical actions stands out. Carvalho (2021), Baranauskas and Valente (2020), in this sense, draw attention to the fact that the simple presence of computers and projectors in teaching practices does not guarantee an improvement in the quality of education. The authors emphasize that adequate training is necessary so that digital technologies are effectively integrated into the teaching and learning process and careful teaching pedagogical planning. Therefore, the role of the teacher continues to be fundamental, as he is the one who must know, analyze and use such resources in a creative and meaningful way, adapting them to the educational objectives and needs of students. The incorporation of these technologies requires a critical and reflective approach, focused on student engagement and the development of digital skills.

Thematic evidence on active methodologies mediated by DICT

The discursive responses grouped, coded and submitted to IRaMuTeQ formed 47 texts characterized by the variables of interest: doctorate, master's degree, male and female. With processing, 7,451 lexical forms emerged, on average 158.53 per text, of which 1,233 were distinct words and 633 with a unique frequency, called hapax.

The general monothematic corpus, using the Descending Hierarchical Classification (CHD), was divided into 216 text segments (ST), of which 160 (74.07%) were used in five classes visually highlighted by different colors and connected to each other in figure 1, which, in line with the research, was called**:** "CHD dendrogram active methodologies mediated by DICT".

CHD revealed four partitions until the classes stabilized. In a first division of the *corpus*, CHD denoted class 5 (pink). In the second segmentation, class 1 (red) originated. In the third segmentation, class 4 (blue) emerged and, finally, classes 2 (gray) and 3 (green) emerged at the same level (Figure 1).

Figure 1 - Dendrogram of CHD active methodologies mediated by DICT

Source: Research data processed by IraMuTeQ (2023).

In CHD, words are ordered by decreasing relative importance, to which, among other metrics, the values of " chi -square (X^2)" and "P" are assigned. The X^2 indicates the association and the "P" indicates the level of significance of the word with the respective class (Camargo; Justo, 2018). Thus, in a higher position are the words most strongly related and most significant in elucidating the four thematic axes that permeate the qualitative data of the study, discussed below.

Axis 1 - Potentialities of active methodologies mediated by DICT

Class 1, with 26 ST (16.25%), presented as the most significant words, with P< 0.0001, and most strongly associated with the class: "student" (X^2 51.5), "engagement" (X^2 37.73), "allow" (X^2 25.95), "learning" (X^2 21.14), "dynamic (X^2 21.14), "*feedback*" (^{2} 15.76), "increase" ($^X 2$ 15.76), "program" ($X^{2\ 15.76}$), "immediate" (collaborative) their own training as *stricto sensu* postgraduate students, as well as for the recipients of their pedagogical practices, their current or future students, according to the excerpts: "the use of active methodologies in higher education offers numerous advantages, including greater student engagement, collaborative learning and access to diverse resources" (PhD student E34). "In addition, it positions students as active agents in the educational process, increases motivation and engagement, making learning more dynamic" (PhD student E21), [...] "favoring immediate feedback" [Master student E28, our translation).

This evidence is consistent with the results of the study carried out by Daher *et al.* (2022), in two Chilean universities, which, by combining active methodologies and digital technologies focused on guidance and motivation, verified greater student engagement in the joint construction of horizontal learning. In fact, active methodologies are capable of stimulating the creative complicity of knowledge. To this end, the resolution of real problems must be considered, because, in everyday educational life, mental processes that generate hypotheses, comparison, analysis and evaluation can promote significant learning (Cerutti, 2021).

Axis 2 - Training for teaching mediated by active methodologies

In correspondence with the direct connection of classes 2 and 3, both were grouped into a single thematic axis. Class 2, with 41 ST (25.62%) highlighted the words "important" (X^2 56.68), "use" (X^2 20.21), "pedagogical" (X^2 16.92) and the answers from E6 and E45. Class 3, with 37 ST (23.12%), emphasized "reality" (X^2 *20.14)*, "perceiving" addressed the thematic axis: "training for teaching mediated by active methodologies", in which the participants reflected on the teaching praxis developed by their teachers during and after the mandatory social isolation to contain the spread of Covid-19, confronting training needs alluding to the skills necessary for the qualified management of DICT applied to active methodologies.

They put it this way: "the use of active methodologies is becoming increasingly necessary, [...] especially postgraduate studies cannot be exempt from this process" (PhD student E45, our translation), because "they are important tools for a more attractive teaching practice and contextualized with reality" (Master's student E06, our translation).

The expression "that [active methodologies through DICT] can be tried out by us on class days, so that we can feel confident in applying them" (Master's student E25, our translation) represents the desire of postgraduate students to acquire the basic skills for employment qualified of the methodologies in question when inserted in teaching work. This position is common to doctoral student E42, mentioned below:

> I think that interactivity and creativity are important factors in teaching, especially when it comes to higher education, as training is (or should be) aimed at enabling the acquisition of new possibilities and flexibility for the development of learning, for the immersion in new realities arising through the application of methodologies that can favor creative, inclusive and comprehensive processes (PhD student E42, our translation).

In addition to the award of Master's Student E25, the fragment above reminds us of the function of higher education educational institutions: to provide learning embodied in today's realities and capable of fostering creativity and inclusion. Corroborate Romero-García, Buzón -García and Paz-Lugo (2020), researchers from Spain, digital skills have become transversal to different social domains, therefore teaching cannot be conceived apart from this reality, mainly to enable teachers to solve problems by digital means. In fact, Cerutti (2021) appropriately states: for teachers to be able to implement active methodologies in the teaching-learning process, training institutions must integrate them into the curricula from initial training.

In addition to the indispensability of making teacher training compatible with technological advances, in this class 3, the word “same” was connected to “methodologies”, “social isolation” and “pandemic”. From the accurate analysis of its typical text segments, it was noticed that, despite emergency remote teaching during the Covid-19 pandemic having intensified the use of DICT, after the return of in-person classes, this use was reduced, or even discontinued, as they said: “in general, I see the situation as the same before the pandemic. The practices seem the same as always, with small and isolated changes” (PhD student E23, our translation). “Unfortunately no, [teachers] went back to doing everything exactly as before, scrubbing all experiences and knowledge during the pandemic, little is done differently” (PhD student E32, our translation).

However, as they document the stagnation in the use of DICT in the postgraduate program studied, they suggest a course correction by encouraging the implementation of active methodologies associated with DICT and raising awareness about teacher and student co-participation in the educational process. Namely: “their use [active methodologies] should be more encouraged” (PhD E32, our translation), because “talking about active methodologies and relating them to technology means thinking critically about the reality in which both teacher and student are inserted, connected and walking in the same rhythm” (Doctoral Student E39, our translation). Indeed, this understanding of postgraduate students is consistent with that of Bacich and Moran (2018) when they state that active methodologies and DICT were part of the continued training of university professors from different fields of knowledge, favoring self-education and the communion of knowledge.

Axis 3 - Active methodologies in the face of social demands

Class 4, with 28 ST (17.5%), highlighted the words “use” (X^2 28.58), “environment” (X^2 26.23), “need” (X^2 24.33), “society” (X^2 23.59), “knowledge” (X^2 20.34), “information” (X^2 19.34), “research” (active in the face of social demands”. In this class, those investigated revisit the issue of training gaps and the importance of higher education institutions adapting to current innovations, articulating them with the function of higher education in relation to the needs of society. So they wrote:

> The university, as a place for science, research and critical reflection, needs to be innovative and contemporary, therefore, encouraging the development of the ability to absorb content in an autonomous and participatory way, an incentive to learn how to learn (Master's Student E16, our translation).

They justify the aforementioned opinion by the potential of active methodologies to promote research, communication and knowledge. As doctoral student E02 said: “active methodologies facilitate research and demonstrate that we can, through new and varied applications, expand our knowledge and seek differentiated communication”. Doctoral student E45 adds: “higher education, especially postgraduate studies, cannot be exempt from this process”, but master’s student E16 warns: “universities have a long way to go in this direction”.

The parsimony in the applicability of DICT in the postgraduate studies analyzed is not a reason for discouragement, however it requires a shared effort to overcome barriers and build bridges to overcome them, as occurred in the study by Sánchez-Rivas *et al*. (2023), who, faced with the scarcity of technological resources in the training of university students in primary education in Málaga, Spain, applied active methodologies through mobile phones and promoted more effective studies and reading.

Inspiring role models are documented in higher education. In a University Center in São Paulo, Brazil, in classes in a Virtual Learning Environment (VLE) during social isolation, Araújo, Progetti, and Santos (2021) found, despite limited resources, teachers mobilized and promoted significant transformations in the way of teaching and learning, considering students' responses to teaching efforts as positive. According to Gómez-Hurtado *et al*. (2020), and at a university in Spain, in the transition from face-to-face to online teaching, they experienced many challenges, however, teaching through DICT promoted multidirectional collaborative networks between teachers and students.

Axis 4 - Experiences in implementing active methodologies mediated by DICT

Class 5, with 28 ST (17.5%), highlighted the words "environment" (X^2 29.39), "discipline" (X^2 26.23), "virtual" (X^2 24.33), "theme" (X^2 19.34), "remote" (X^2 19.34), "exposure" (X^2 19.34), "period" (X^2 18.71) and the responses of E03, E24 and E47, suggesting the thematic axis: "experiences of implementing active methodologies mediated by DICT", which added some experiences during and after social isolation, including virtual learning environments, as they stated: "we use the flipped classroom, as it is a method that I really like, because I take ownership of the subject before class and, during discussions, I am not passive [...] we dialogue, we debate [...]. This is very rich" (Master's student E03). "We use WhatsApp or applications like Meet" (Master's student E47, our translation).

In addition to these most influential experiences, which achieved greater X^2, other mentions were revealed: the flipped classroom was also referred to by E02, E26 and E42; master's student E46 added that "faculty have used virtual learning environments in the cloud, or quick messaging applications to share materials before the face-to-face meeting"; and doctoral student E42 certified: "during the pandemic period, in the subject of teacher training, guidelines and practices, we carried out activities called thematic conversation circles (RCD)".

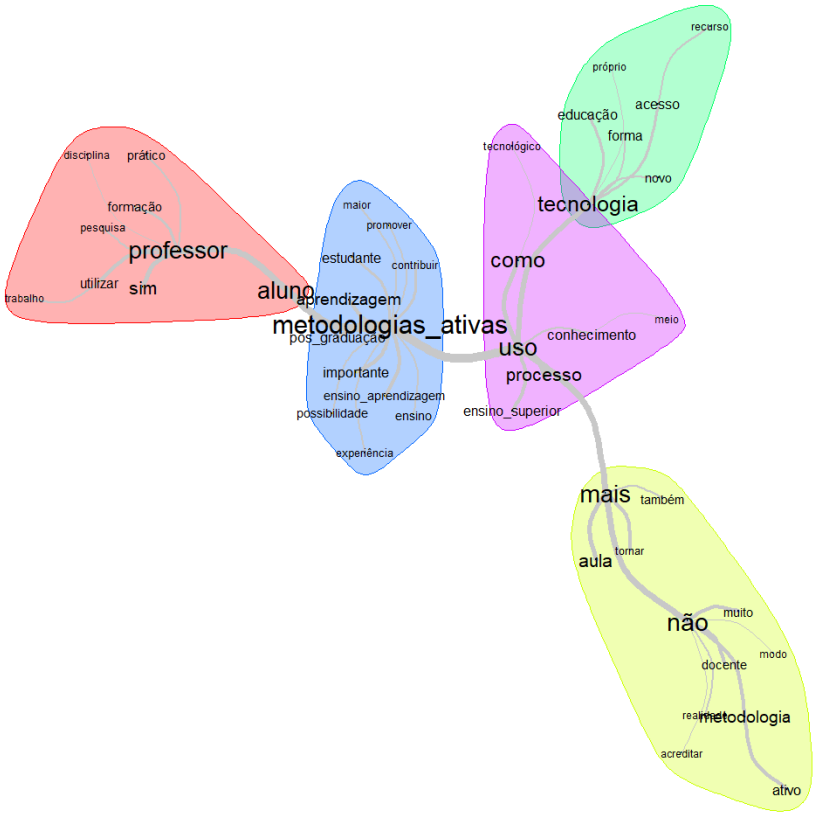
Even so, according to the data obtained, the experiences with the implementation of active methodologies through DICT in the areas investigated are considered to be small, but there are varied possibilities for these implementations and they are seminal in achieving quality education. In Asia, Dahalan, Alias, and Shaharom (2023) captured the growing interest in gamification that uses emerging technologies and can improve academic performance and contribute to achieving Sustainable Development Goal number 4 (quality education).

The synthesis of evidence from classes - active methodologies mediated by DICT.

The similarity analysis, based on a tree, figure 2, illustrates the relationships between the most influential words in the responses to the data collection instrument, in which the most recurrent words are presented in larger dimensions and the most intensely related words are linked reciprocally by more caliber branches (Camargo; Justo, 2018).

To make figure 2 more understandable and with the most relevant words, it was parameterized that only words with a frequency greater than or equal to 15 made up the image visually highlighted in communities and halos. Thus, of the 345 active shapes presented by the *software*, the 47 most recurrent and most associated were grouped into five colored clouds in the following maximum similarity tree:

Figure 2 - Similarity analysis of active methodologies mediated by DICT



Source: Data from research being prepared by IRaMuTeQ (2023).

The similarity analysis, when synthesizing the evidence of the CHD classes through the terms “active methodologies” (blue), “teacher” (salmon), “use” (lilac), “technologies” (green) and “no more” (yellow), organizes the perception of the doctoral and master’s students

investigated about the active methodologies made possible through DICT in the training context and professional practice.

It should be noted that, currently, teacher training, initial or in-service, is no longer conceived separated from active methodologies in postgraduate studies, as they constitute important tools that contribute to learning. The large branches that depart from the central areola (blue) to the other sectors of the tree group student and teacher in the same community (salmon), corroborating the importance of the communion of both in the teaching and learning process, as it is capable of breaking the unidirectional ties of traditional education incompatible with creative criticality.

The theoretical and practical aspects of the implementation of active technologies anchored in DICT are summarized in the pink core, in which higher education presents itself as a *locus* relevant to the acquisition, improvement and application of educational technological knowledge. It is also noted that this thematic grouping is in close connection with the green core, in which both notably share the form "technology", however, it conditions technological education to "access" to "resources" (active forms in the green core).

In this way, those investigated, in addition to witnessing their own experience, from an inclusive perspective, are concerned with the necessary adjustments for people with disabilities. As master's student E24 stated: "some technologies are essential for the inclusion of people with disabilities, and some of them have interesting features for the public" (our translation). In contrast to ideas, it must be stated that, although the majority of research participants focus on the potential of active methodologies when associated with DICT, the positioning of doctoral student E8 is emblematic, because it warns about possible limitations to the use of DICT due to of digital exclusion, as he warned: "active methodologies certainly have the potential to do this [improve the teaching-learning process], but given the material reality of the vast majority of higher education courses, there are so many limitations to the use of DICT, which they can also represent an exclusion factor" (our translation).

In the profusion of data obtained by the study, the participants did not limit themselves to taking a position on their own training, but contextualized their views with the specificities of the students and the challenges that permeate education in the present century, as doctoral student E31 wrote: "It is democratic, by enabling access to various materials, as long as the teaching and student groups are aware of how to make good use of them, without following fads that today call for the dismantling of face-to-face classrooms" (E31 doctoral student, our translation).

After all, the yellow nucleus highlights the reflections on the impertinence of training gaps and the insufficiency of DICT provisions specific to active methodologies. In this way, it encourages teachers to believe in the potential of themselves and these methodologies to promote change, making classes more attractive and students equally protagonists of quality education.

Conclusion

The objective was to understand nuances that permeate the use of active methodologies mediated by DICT in the contemporary context for teaching and learning in stricto sensu postgraduate studies in Education. It appears that the mere presence of technologies in the educational environment is not enough to guarantee quality education because, although participants regularly use equipment such as computers, projectors and mobile devices, this use is not always effective in promoting meaningful learning.

The discussions also highlight considerable challenges. Resistance to change on the part of some teachers and the lack of technological preparation are significant obstacles to the effective implementation of active methodologies mediated by DICT. The importance of teacher training emerges as a fundamental issue, indicating the need to train teachers for the conscious and reflective integration of DICT into teaching practices. This highlights the centrality of the teacher's role as an active agent in the selection, adaptation and appropriate application of technologies in the classroom.

Another relevant point discussed in the results is the potential of active methodologies when combined with DICT. The research points to the benefits of the student-centered approach, highlighting engagement, active participation and motivation as tangible implications. Participants emphasize that active methodologies give students the opportunity to become protagonists of their own learning process, promoting a collective construction of knowledge.

Furthermore, the postgraduate students' reflections direct attention to the relevance of adapting pedagogical practices to the demands of society and contemporary reality. Higher education is urged to be innovative and promote autonomous and participatory learning, in line with the needs of students and the transformations of the globalized world. In this sense, the research suggests that the combination of active methodologies with DICT can be an effective way to meet these demands and prepare students for the challenges of the information society.

In summary, the study emphasizes the need for a critical and reflective approach in integrating DICT into pedagogical practices in higher education. Teacher training, adapting methodologies to social demands, promoting student engagement and raising awareness about the challenges and potential of active approaches mediated by DICT emerge as crucial themes for improving the quality of education. The research reinforces the importance of education connected to the transformations of the contemporary world and points to promising paths in promoting more participatory learning aligned with the demands of today's society.

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