


**ANALYSIS OF OBSTACLES AND PEDAGOGICAL STRATEGIES FOR
INCLUSIVE EDUCATION OF MIDDLE-AGED AND ELDERLY STUDENTS IN
DISTANCE LEARNING HIGHER EDUCATION**

**ANÁLISE DOS OBSTÁCULOS E ESTRATÉGIAS PEDAGÓGICAS PARA A
EDUCAÇÃO INCLUSIVA DE ALUNOS DE MEIA-IDADE E IDOSOS NO ENSINO
SUPERIOR À DISTÂNCIA**

**ANÁLISIS DE OBSTÁCULOS Y ESTRATEGIAS PEDAGÓGICAS PARA LA
EDUCACIÓN INCLUSIVA DE ESTUDIANTES DE MEDIANA EDAD Y MAYORES
EN LA EDUCACIÓN SUPERIOR A DISTANCIA**

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ABSTRACT

Introduction: Professionals who began their professional careers in the 1980s and 1990s face a continuous process of labor market transformation, marked by the rapid obsolescence of skills and exclusion from traditional sectors. Resuming studies, especially in higher education, has become a necessity to adapt to new professional demands. Objective: To identify, through an integrative literature review, the main challenges and strategies for the integration of individuals over 45 years of age into higher education through distance learning, with an emphasis on digital inclusion. Methodology: Integrative literature review. The study protocol was previously registered on the PROSPERO (International Prospective Register of Systematic Reviews) platform under number CRD420251055456. Available at <https://www.crd.york.ac.uk/PROSPERO/view/CRD420251055456>. Searches were conducted in PubMed, SciELO, and Google Scholar, selecting studies published between 2015 and 2025. Inclusion criteria included research on distance learning higher education, aging, and digital inclusion. After screening and eligibility analysis, six studies were included, with qualitative thematic analysis. Results: Balancing studies, work, and family is a recurring challenge. Distance learning emerges as a viable alternative, expanding access, but it does not eliminate barriers. The lack of digital skills, the lack of ongoing pedagogical support, and the lack of adaptive platforms hinder retention and the successful completion of online courses. The literature highlights the need for investment in public policies focused on digital literacy and continuing education. Conclusion: The analyzed studies showed that educational

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inclusion in distance learning for people over 45 requires specific academic and methodological support policies, focusing on digital literacy and personalized teaching strategies. This expands opportunities for access, retention, and academic success for people resuming or continuing their studies in higher education remotely.

Keywords: Higher Education. Online Learning. Seniors and Technology.

RESUMO

Introdução: Profissionais que iniciaram suas trajetórias laborais nas décadas de 1980 e 1990 enfrentam um processo contínuo de transformação do mercado de trabalho, marcado pela rápida obsolescência de habilidades e exclusão de setores tradicionais. A retomada dos estudos, especialmente no ensino superior, tornou-se uma necessidade para adaptação às novas exigências profissionais. **Objetivo:** Identificar, por meio de revisão integrativa da literatura, os principais desafios e estratégias para a inserção de indivíduos com mais de 45 anos no ensino superior na modalidade EaD, com ênfase na inclusão digital. **Metodologia:** Revisão integrativa da literatura. O protocolo do estudo foi registrado previamente na plataforma PROSPERO (International Prospective Register of Systematic Reviews) sob o número CRD420251055456. Disponível em <https://www.crd.york.ac.uk/PROSPERO/view/CRD420251055456>. Foi realizada buscas nas bases PubMed, SciELO e Google Scholar, com seleção de estudos publicados entre 2015 e 2025. Os critérios de inclusão abrangeram pesquisas sobre ensino superior EaD, envelhecimento e inclusão digital. Após triagem e análise de elegibilidade, foram incluídos 6 estudos, com análise qualitativa temática. **Resultados:** A conciliação entre estudos, trabalho e família é um desafio recorrente. A educação a distância surge como alternativa viável, ampliando o acesso, mas não elimina as barreiras. O déficit de habilidades digitais, a ausência de suporte pedagógico contínuo e a falta de plataformas adaptativas dificultam a permanência e o aproveitamento dos cursos online. A literatura aponta a necessidade de investimentos em políticas públicas voltadas à alfabetização digital e à formação continuada. **Conclusão:** Os estudos analisados evidenciaram que a inclusão educacional no EaD de pessoas com mais de 45 anos requer políticas específicas de suporte acadêmico e metodológico, com foco em alfabetização digital e estratégias de ensino personalizadas, ampliando as oportunidades de acesso, permanência e sucesso acadêmico de pessoas em processo de retomada ou continuidade de estudos no ensino superior à distância.

Palavras-chave: Ensino Superior. Aprendizagem Online. Idosos e Tecnologia.

RESUMEN

Introducción: Los profesionales que iniciaron su carrera profesional en las décadas de 1980 y 1990 se enfrentan a un proceso continuo de transformación del mercado laboral, marcado por la rápida obsolescencia de las competencias y la exclusión de los sectores tradicionales. Reanudar los estudios, especialmente en la educación superior, se ha convertido en una necesidad para adaptarse a las nuevas demandas profesionales. **Objetivo:** Identificar, mediante una revisión bibliográfica integradora, los principales retos y estrategias para la integración de las personas mayores de 45 años a la educación superior a distancia, con énfasis en la inclusión digital. **Metodología:** Revisión bibliográfica integradora. El protocolo del estudio se registró previamente en la plataforma PROSPERO (Registro Prospectivo Internacional de Revisiones Sistemáticas) con el número CRD420251055456. Disponible en <https://www.crd.york.ac.uk/PROSPERO/view/CRD420251055456>. Se realizaron búsquedas en PubMed, SciELO y Google Académico, seleccionando estudios publicados entre 2015 y 2025. Los criterios de inclusión incluyeron investigaciones sobre educación superior a

distancia, envejecimiento e inclusión digital. Tras la selección y el análisis de elegibilidad, se incluyeron seis estudios, con un análisis temático cualitativo. Resultados: Conciliar estudios, trabajo y familia es un desafío recurrente. La educación a distancia surge como una alternativa viable que amplía el acceso, pero no elimina las barreras. La falta de habilidades digitales, la falta de apoyo pedagógico continuo y la falta de plataformas adaptativas dificultan la retención y la finalización exitosa de los cursos en línea. La literatura destaca la necesidad de invertir en políticas públicas centradas en la alfabetización digital y la educación continua. Conclusión: Los estudios analizados mostraron que la inclusión educativa en la educación a distancia para personas mayores de 45 años requiere políticas específicas de apoyo académico y metodológico, centradas en la alfabetización digital y estrategias de enseñanza personalizadas. Esto amplía las oportunidades de acceso, retención y éxito académico para las personas que reanudan o continúan sus estudios de educación superior a distancia.

Palabras clave: Educación Superior. Aprendizaje en Línea. Personas Mayores y Tecnología.

1 INTRODUCTION

The increase in longevity, driven by technological advances and improved living conditions, has directly contributed to the expansion of the elderly population. According to De Souza Costa and Mercadante (2013), this prolongation of existence has a positive impact on both the quality of life and access to knowledge, evidencing the need to adapt to the new demands of this age group.

Currently, we are experiencing a period of resignification of several paradigms, one of the most notable being the way aging is perceived. For a long time, society associated old age with limitation, inactivity and dependence. However, there is a growing number of people over 60 years old starting new relationships, starting businesses, learning new skills, traveling alone and positioning themselves with an active voice on social networks. This phenomenon is corroborated by studies that highlight the expansion of the social, cultural, and economic participation of the elderly in contemporary times, driven by active population aging and greater longevity (Escorsim *et al.*, 2019; Glidden *et al.*, 2019). However, as Glidden points out *et al.* (2019), aging also brings important challenges that cannot be ignored, such as physical, cognitive, emotional, and social changes that can affect autonomy, self-esteem, and even hinder the ability to adapt to new social and technological demands. These changes lead many individuals to reevaluate their life journeys and rethink the interruption of studies, especially in the face of the difficulties faced in the face of technological advances in the labor market and social life.

According to the 2022 Demographic Census, released by the Brazilian Institute of Geography and Statistics (IBGE), only 18.4% of Brazilians over the age of 25 have completed higher education. Compared to previous censuses, there was a significant advance: in 2000, only 6.8% of the population in this age group had completed higher education; in 2010, the percentage had risen to 11.3%. However, despite the advances in relation to previous censuses, even so, four out of five Brazilians remain without a degree. According to IBGE researcher Bruno Perez, a significant part of this population without higher education is made up of older people, who faced greater difficulties in accessing education in their youth, which still impacts current indicators (Agência Brasil, 2025).

At the same time, the professional trajectory of people over 45 years of age is marked by obstacles. The rapid obsolescence of their work skills due to technological advances and changes in the labour market limits opportunities for professional reintegration. In addition, successive pension reforms and the insufficient value of benefits mean that many need to

remain economically active for longer (Pazos; Ferreira, 2024). In this context, resuming studies becomes a necessary strategy for updating and professional qualification, as well as an alternative for career transitions (Macedo; Oliveira, 2023; Silva Gomes; Batista Pamplona, 2015).

The search for higher education, therefore, is not only presented as an option, but as a necessity to ensure employability and social insertion. However, reconciling face-to-face studies with work, family and other responsibilities is not always feasible (Macedo; Oliveira, 2023; Silva Gomes; Batista Pamplona, 2015). In this sense, Distance Education (DE) emerges as an alternative, offering flexibility, autonomy and the possibility of social inclusion, also favoring the exchange of intergenerational experiences (Ivenicki, 2024; Zonta; Zanella, 2022).

The advancement of distance education contributes to democratizing access to higher education and serving different profiles of students who, for different reasons, are unable to attend face-to-face courses (Hansen *et al.*, 2020). In view of this scenario, this research seeks to reflect on the difficulties faced and the pedagogical strategies that favor the inclusion of middle-aged and elderly students in distance higher education, proposing a critical and humanized analysis of how teaching practice in distance education can be transformed to meet the specificities of this public and promote equity in access to knowledge, favoring continuous and accessible learning.

2 OBJECTIVE

This study aims to identify, through an integrative literature review, the challenges faced by people over 45 years of age in distance higher education, considering the main obstacles related to technological adaptation and interaction in the digital environment and to analyze pedagogical strategies that promote greater inclusion, accessibility and engagement in the virtual learning process.

3 METHODOLOGY

A narrative review was carried out, with the analysis of studies and an integrative approach to the available knowledge on the subject. The study protocol was previously registered on the PROSPERO (International Prospective Register of Systematic Reviews) platform under number CRD420251055456. Available at <https://www.crd.york.ac.uk/PROSPERO/view/CRD420251055456>.

The search for articles was conducted in the PubMed, SciELO and Google Scholar databases, using the following terms in English: ("adult learners" OR "older students" OR "lifelong learning") AND ("distance education" OR "online learning" OR "higher education") AND ("adaptive learning" OR "educational technology"). The following filters were applied: publications from the last 10 years, free full text, clinical trials, randomized controlled trials, age group of adults (19 years and older) and elderly (60 years or older). In PubMed, 11 records related to the topic were identified. In SciELO, 3 studies were selected, and in Google Scholar 8. In addition, 9 additional articles were included after analyzing the bibliographic references of the studies found. Thus, a total of 31 articles were analyzed for this review, of which 6 were selected to compose the final sample.

The inclusion criteria considered studies published between 2015 and 2025, which addressed the challenges of distance education for people over 45 years old, as well as the impact of the use of new technologies in educational processes aimed at this population.

The exclusion criteria considered studies published before 2015, which addressed the challenges of distance education for people under 45 years of age, or which addressed the challenges of face-to-face higher education for people over 45 years of age. Only studies in Portuguese, English and Spanish were included, which addressed the theme directly or indirectly.

4 DEVELOPMENT

When we talk about Higher Education in distance education format for middle-aged and elderly people, the real challenge is not only in guaranteeing enrollment, but in ensuring concrete conditions for permanence and learning. This public has different needs in relation to younger people, which requires adapted pedagogical practices and inclusive educational policies (Lima and Alonso, 2019).

4.1 BARRIERS AND CHALLENGES

Despite meeting a growing demand for flexibility, this modality also highlights the structural inequalities that cross Brazilian society. As in old age, in which social acceptance and well-being are deeply conditioned by social class, access to higher education, especially in the distance education modality for older people, depends on factors such as income, access to technology, and family support (Silva Gomes and Batista Pamplona, 2015; Zonta and Zanella, 2022).

Among the main obstacles, the difficulties in adapting to the most modern teaching formats, the technical language of the platforms and the fast pace of virtual activities stand out, in addition to socioeconomic conditions that limit access to quality equipment and internet. Feelings of frustration and fear of difficulties in using digital technologies are also frequently reported, which can compromise adaptation to distance education and lead to abandonment of courses (Charness and Boot, 2022). The main challenges faced by students over 45 years of age in distance education and the pedagogical strategies that can contribute to their permanence are summarized in Table 1.

Table 1

Identified Challenges and Pedagogical Strategies in Distance Education for people over 45 years of age

Challenge Identified	Recommended Pedagogical Strategy	Reference
Low familiarity with technologies	Active tutoring; explanatory video lessons with step by step	(Cachioni, Ordonez <i>et al.</i> , 2015)
Difficulty memorizing	Reinforcement through periodic summaries and reviews	(Slodkowski <i>et al.</i> , 2024)
Fear or insecurity in the face of the virtual environment	Initial reception and creation of support groups with colleagues and tutors	(Machado <i>et al.</i> , 2021)
Slower learning pace	Flexibility of deadlines and activities with extended time	(Bernardo, 2022)
Demotivation due to previous educational experiences	Valuing life experiences and encouraging protagonism in learning	(Souza, 2021)

Source: Prepared by the author.

4.2 THE ROLE OF TEACHING

Teaching in distance education needs to be prepared to meet these specificities, going beyond the technological domain. Didactic sensitivity, empathy and acceptance are fundamental, especially with students who return after long periods away from academic life. Strategies such as active tutoring, use of simple language, video classes with scheduled breaks, multimodal resources, and appreciation of life experiences contribute to the permanence and success of these students (Silva and Santos, 2020; Barros and Batista, 2019).

4.3 ARTIFICIAL INTELLIGENCE AS SUPPORT

Artificial intelligence (AI) emerges as a promising tool in supporting learning. Adaptive systems allow you to adjust pace and content to the student's profile, offering personalized tutoring, complementary materials and continuous feedback. This is especially useful for older students, who may require more time to process new content, in addition to assisting teachers in building inclusive environments (Sant. *et al.*, 2023; By Oliveira Figueiredo *et al.*, 2023; Tavares *et al.*, 2024a).

Technological advancement has made it possible to implement new tools in higher education in distance education, in order to expand the accessibility and personalization of learning. Table 2 presents some technologies applicable to inclusive distance education teaching, highlighting how they can favor middle-aged and elderly students.

Table 2

Technological Potentials Applicable to Inclusive Distance Education with Middle-Aged and Elderly People

Technology	Application in Distance Education Teaching	Reference
AI-powered adaptive platforms	Personalization of content according to performance and student profile	(Bernardo, 2022)
Read-aloud tools	Support for reading and inclusion of elderly people with low vision	(Borges and Mendes, 2018)
WhatsApp or Telegram	Accessible and user-friendly communication channel for sending reminders and materials	(Souza, 2021)
Video lessons with subtitles and pauses	Greater accessibility and control of the learning pace	(Machado <i>et al.</i> , 2021)
Gamified virtual environments	Stimulating engagement through challenges and symbolic rewards	(Slodkowski <i>et al.</i> , 2024)

Source: Prepared by the author.

4.4 PUBLIC POLICIES AND INCLUSION PROGRAMS

The strengthening of distance education for middle-aged and elderly people also depends on public policies. Law No. 13,535/2017 recognizes the importance of lifelong education, but still does not clearly address the entry of older adults into regular higher education. The Statute of the Elderly (Brasil, 2003) also establishes the duty of the government to guarantee educational opportunities and access to technologies. Experiences such as the IPGG programs in São Paulo and the Open University for the Third Age (UnATI/UERJ) show that digital training initiatives and the offer of free courses can reduce

barriers and promote social inclusion (Bielschowsky, 2018; Oswaldo Cruz Foundation, 2021; UERJ, 2023).

4.5 DIGITAL INCLUSION AS SOCIAL JUSTICE

Distance education has great potential to expand access to education, especially for people over 45 years of age who face mobility restrictions or family and professional demands (Lima and Silva, 2020). However, real access is only achieved when accompanied by pedagogical support, accessible platforms and adaptive methodologies. Digital inclusion, in this context, is not just a technical issue, but an imperative of social justice: ensuring that no one is left behind in contemporary educational and technological transformations (Ivenicki, 2024). Teaching in distance education, aimed at middle-aged and elderly people, requires an approach that goes beyond simple technological mediation. Teachers who work in this context need to develop not only digital skills, but also didactic sensitivity, empathy, and understanding of the emotional specificities of this public, which often returns to academic life after long periods away (Machado; Behar, 2015; Saints; Jorge; Winkler, 2021).

The insecurity in the face of virtual platforms, the anxiety related to the use of digital devices and the need for greater pedagogical support reinforce the importance of humanized educational practices, which welcome students and recognize their unique trajectories (Tavares *et al.*, 2024a; File; Alonso, 2019). In this sense, educational policy also needs to advance. Although article 25 of Law No. 13,535/2017 establishes the offer of extension courses for the elderly, regular admission to higher education still lacks clearer regulations (Brasil, 2017). The Statute of the Elderly (Brasil, 2003) already recognizes education as a right, but the realization of this right depends on practical measures that guarantee both technological accessibility and adequate pedagogical support.

Another relevant point is the confrontation of age prejudice, still present even in virtual spaces. Stereotypes that associate university students with youth and hyperconnectivity reinforce symbolic barriers that can keep older people away from the academic environment (Tavares *et al.*, 2024b). To overcome this scenario, the role of the teacher is central in the creation of an inclusive environment, in which the older student is valued, not only for his ability to learn, but also for his life experiences, which enrich the collective construction of knowledge (Ferrugini *et al.*, 2013).

The adoption of technologies such as artificial intelligence shows promise in this process. Adaptive tools can adjust the content to each student's pace, suggest

complementary materials, and provide personalized feedback, contributing to reducing inequalities in the learning process (De Oliveira Figueiredo *et al.*, 2023; Valencia-Londoño *et al.*, 2025). Combined with sensitive and inclusive pedagogical methodologies, these technologies expand the possibilities of permanence and engagement of middle-aged and elderly people in distance education.

Finally, experiences such as UnATI/UERJ and IPGG's digital inclusion programs demonstrate that institutional initiatives aimed at technological training are fundamental to break structural barriers and promote social justice through education (Bielschowsky, 2018; Oswaldo Cruz Foundation, 2021; UERJ, 2023). Lifelong learning only becomes effective when accompanied by consistent public policies, adapted pedagogical practices, and inclusive virtual environments. Thus, although the current scenario points to an increasingly active old age that is integrated with social and economic dynamics, it is necessary to create effectively inclusive conditions in relation to distance education higher education, that educational policies invest in digital training, pedagogical support and the development of adaptive platforms. We cannot accept that someone is prevented from studying in distance education because they cannot keep up with technological transformations. When we allow adults and the elderly to be abandoned in this process, we are perpetuating historical barriers of exclusion.

5 FINAL CONSIDERATIONS

The analysis showed that the low familiarity with digital technologies, the difficulties of interaction in virtual environments and the differentiated pace of learning negatively impact the educational experience of people over 45 years of age in the distance learning modality. Strategies such as active tutoring, explanatory video classes, flexible deadlines, and the creation of welcoming and inclusive virtual environments proved to be relevant to promote engagement, reduce insecurities, and favor a more positive relationship with the learning process.

In order for distance education to consolidate itself as a viable and inclusive alternative for this public, it is necessary that institutional policies and practices consider its specificities, with a focus on accessibility, continuous pedagogical support, and teacher training sensitive to the needs of this age group. In this way, it will be possible to overcome barriers and expand the opportunities for access, permanence and academic success of people in the process of resuming or continuing studies in distance higher education.

REFERENCES

- Agência Brasil. (2025, February 26). Brasileiros adultos com ensino superior completo chegam a 18,4%. Agência Brasil. <https://agenciabrasil.ebc.com.br/geral/noticia/2025-02/brasileiros-adultos-com-ensino-superior-completo-chegam-184>
- Areosa, S. V. C., & et al. (2016). Envelhecimento ativo: Um panorama do ingresso de idosos na universidade. *Reflexão e Ação*, 24(3), 212–229.
- Barros, M. E. D., & Batista, A. R. (2019). Educação a distância: Oportunidades e barreiras para os idosos. *Revista Educação e Contemporaneidade*, 28(57), 228–247.
- Bernardo, L. D. (2022). As pessoas idosas e as novas tecnologias: Desafios para a construção de soluções que promovam a inclusão digital. *Revista Brasileira de Geriatria e Gerontologia*, 25(4), Article e230142. <https://doi.org/10.1590/1981-22562022025.230142.pt>
- Bielschowsky, C. E. (2018). Qualidade na educação superior a distância no Brasil: Onde estamos, para onde vamos? *EaD em Foco*, 8(1), Article 709. <https://eademfoco.cecierj.edu.br/index.php/Revista/article/view/709>
- Borges, W. F., & Mendes, E. G. (2018). Usabilidade de aplicativos de tecnologia assistiva por pessoas com baixa visão. *Revista Brasileira de Educação Especial*, 24(4), 483–500. <https://doi.org/10.1590/S1413-65382418000400003>
- Brasil. (2017). Lei nº 13.535, de 15 de dezembro de 2017. Altera o art. 25 da Lei nº 10.741, de 1º de outubro de 2003 (Estatuto do Idoso), para garantir aos idosos a oferta de cursos e programas de extensão pelas instituições de educação superior. https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/L13535.htm
- Cachioni, M., Ordonez, T. N., Batistoni, S. S. T., & Lima-Silva, T. B. (2015). Metodologias e estratégias pedagógicas utilizadas por educadores de uma Universidade Aberta à Terceira Idade. *Educação & Realidade*, 40(1), 81–103. <https://doi.org/10.1590/2175-623645741>
- Charness, N., & Boot, W. R. (2022). A grand challenge for psychology: Reducing the age-related digital divide. *Current Directions in Psychological Science*, 31(2), 187–193. <https://doi.org/10.1177/09637214211068144>
- De Oliveira Figueiredo, L., & et al. (2023). Desafios e impactos do uso da inteligência artificial na educação. *Educação Online*, 18(44), Article e18234408. <https://doi.org/10.18234408>
- De Souza Costa, M. C. N., & Mercadante, E. F. (2013). O idoso residente na ILPI (Instituição de Longa Permanência do Idoso) e o que isso representa para o sujeito idoso. *Revista Kairós-Gerontologia*, 1, 209–222.
- Escorsim, S. M. (2021). O envelhecimento no Brasil: Aspectos sociais, políticos e demográficos em análise. *Serviço Social & Sociedade*, 142, 427–446. <https://doi.org/10.1590/0101-6628.258>

- Ferrugini, L., & et al. (2013). Educação a distância como política de inclusão: Um estudo exploratório nos polos do Sistema Universidade Aberta do Brasil em Minas Gerais. *Revista Gestão Universitária na América Latina-GUAL*, 6(2), 1–21.
- Glidden, R. F., & et al. (2019). A participação de idosos em grupos de terceira idade e sua relação com satisfação com suporte social e otimismo. *Boletim-Academia Paulista de Psicologia*, 39(97), 261–275.
- Hansen, R. J., & et al. (2020). Enhancing older adult access to lifelong learning institutes through technology-based instruction: A brief report. *Gerontology & Geriatrics Education*, 41(3), 342–351. <https://doi.org/10.1080/02701960.2019.1618852>
- Ivenicki, A. (2024). Digital learning and higher education in Brazil: A multicultural analysis. *Journal of Comparative and International Higher Education*, 16(2), 127–135.
- Lima, D. C. B. P., & Alonso, K. M. (2019). Qualidade e educação a distância: Do referencial teórico à sua proposição. *EccoS–Revista Científica*, 51, Article e15250. <https://doi.org/10.5585/eccos.n51.15250>
- Macedo, E. C., & Oliveira, M. J. G. (2023). Os desafios das pessoas idosas na contratação e recolocação profissional. *Revista Interface Tecnológica*, 20(2), 434–445.
- Machado, L. R., & Behar, P. A. (2015). Educação a distância e cybersênior: Um foco nas estratégias pedagógicas. *Educação & Realidade*, 40(1), 129–148. <https://doi.org/10.1590/2175-623650054>
- Machado, L. R., & et al. (2021). Estratégias pedagógicas na educação a distância: Um olhar a partir de diferentes contextos. *Revista Portuguesa de Educação*, 34(2), 183–199. <https://doi.org/10.21814/rpe.21111>
- Pazos, P. de F. B., & Ferreira, A. P. (2024). Pessoa idosa, mercado de trabalho, idadismo e a saúde do trabalhador: Revisão de escopo. *Revista Brasileira de Geriatria e Gerontologia*, 27, Article e240004. <https://doi.org/10.1590/1981-22562024027.240004.pt>
- Silveira Sonego, A. H., Silva da Silva, J., & Behar, P. A. (2021). Estratégias pedagógicas no ensino remoto: Possibilidades para diminuir a exclusão digital. *RENOTE*, 19(1), 62–72. <https://doi.org/10.22456/1679-1916.118391>
- Sant, F. P., & et al. (2023). Uma utilização do ChatGPT no ensino. *Com a Palavra, o Professor*, 8(20), 74–86.
- Santos, S. E. F., Jorge, E. M. F., & Winkler, I. (2021). Inteligência artificial e virtualização em ambientes virtuais de ensino e aprendizagem: Desafios e perspectivas tecnológicas. *ETD Educação Temática Digital*, 23(1), 2–19. <https://doi.org/10.20396/etd.v23i1.8655956>
- Silva Gomes, P., & Batista Pamplona, J. (2015). Envelhecimento populacional, mercado de trabalho e política pública de emprego no Brasil. *Revista Economia & Gestão*, 15(41).

- Silva, R. M., & Santos, D. C. (2020). Estratégias pedagógicas para o ensino remoto de idosos: Desafios e possibilidades. *Revista Ibero-Americana de Estudos em Educação*, 15(esp.), 1081–1099. <https://doi.org/10.21723/riaee.v15iesp2.13824>
- Slodkowski, B. K., & et al. (2024). Competências socioafetivas em EAD: A construção de filmes stop motion por idosos. *ETD: Educação Temática Digital*, 26, Article 55. <https://doi.org/10.20396/etd.v26i0.8676978>
- Souza, R. A. de. (2021). Educação a distância: A oportunidade de inclusão dos idosos. *Revista Educação, Artes e Inclusão*, 17, Article e0005. <https://doi.org/10.5965/19843178172021e0005>
- Rodrigues, O. S., & Rodrigues, K. S. (2023). A inteligência artificial na educação: Os desafios do ChatGPT. *Texto Livre*, 16, Article e45997. <https://doi.org/10.35699/1983-3652.2023.45997>
- Tavares, M. S., & et al. (2024a). Desafios e potenciais do uso da inteligência artificial na educação intergeracional. In C. A. F. da Silva (Ed.), *Didática e educação física em tempos de inteligência artificial* (pp. 92–103). Editora Equalitas.
- Tavares, M. S., & et al. (2024b). A inserção social do idoso: Reflexões sobre a inclusão, saúde e bem-estar. *Cuadernos de Educación y Desarrollo*, 16(2), Article e3496. <https://doi.org/10.55905/cuadv16n2-113>
- Valencia-Londoño, P. A., Cardona-Rodas, H., & Jiménez-Builes, J. A. (2025). Artificial intelligence in education: Advancing educational digital inclusion for adults older with diverse neuromuscular conditions. *Frontiers in Education*, 10, Article 1464030. <https://doi.org/10.3389/feduc.2025.1464030>
- Zonta, G. A., & Zanella, A. V. (2022). Sentidos da vivência universitária para estudantes com mais de 40 anos. *Psicologia: Estudo*, 27, Article e48550. <https://doi.org/10.4025/psicolestud.v27i0.48550>