Revista ARACÊ
ISSN: 2358-2472

THE ROLE OF DIGITAL TECHNOLOGIES IN TEACHER TRAINING: OPPORTUNITIES AND CHALLENGES OF VIRTUAL LEARNING ENVIRONMENTS

https://doi.org/10.56238/arev6n3-295

Submitted on: 21/10/2024 **Publication date:** 21/11/2024

Cristiani Soeiro Vieira Portes[1], Francisco da Conceição Vaz[2], Guilherme Gabler Jazz[3], Herberth Gomes Ferreira[4], Maria Fabrícia Alves Mota[5], Rosnele Córdova Armstrong Maciel[6], Thais Sossai Freitas[7] and Washington Luiz da Silva[8]

ABSTRACT

This research analyzes the influence of digital technologies on teacher training, focusing on the possibilities and obstacles of virtual teaching environments (VLEs) in Brazil. The technique used consists of a qualitative literature review, examining books, scientific articles and official documents to understand how digital technologies are being incorporated into teacher training. The main goal is to examine how Virtual Learning Environments (VLEs) can be used efficiently in teacher training, highlighting the benefits, such as the adaptability and customization of learning, and the challenges, such as resistance to transformation and the absence of digital literacy. Government policies are key to creating digital inclusion and ensuring that all teachers have access to the necessary resources. Continuous training, personalization of learning and the formation of online communities of practice to maximize the potential of Virtual Learning Environments are suggested. In addition, the relevance of evaluation definitions to evaluate the effect of digital technologies is emphasized. The partnership between educational institutions, government, and the private sector is crucial

[1] Doctorate student in Education
Estácio de Sá University (UNESA)
E-mail: cristianiportes@gmail.com
[2] Master in Emerging Technologies in Education
Must University (MUST)
E-mail: fcovazzrr@gmail.com
[3] Doctorate student in Educational Sciences
Inter-American Faculty of Social Sciences (FICS)
E-mail: guilhermegabler44@gmail.com
[4] Doctor of Education
Federal University of Espírito Santo (UFES)
E-mail: herberthgf@yahoo.com.br
[5] Master in Organizational Psychology
Must University (MUST)
E-mail: fabryciamotta@yahoo.com.br
[6] Master's student in Education - Information and Communication Technologies in Education
European University of the Atlantic (UNEATLANTICO)
E-mail: rosnelec@gmail.com
[7] Specialist in Portuguese Language and Literature Teaching Methodology
Lapa Educational College
E-mail: thaissf2@hotmail.com
[8] Master in Professional and Technological Education
Federal Institute of Tocantins (IFTO)
E-mail: ev.washington@hotmail.com

Revista ARACÊ
ISSN: 2358-2472

to overcome obstacles and ensure a high-standard and inclusive education. This research concludes that, with support, digital technologies have the potential to revolutionize teacher training, equipping them for the challenges of the twenty-first century.

Keywords: Digital technologies, Teacher training, Virtual learning environments, Digital inclusion, Public policies.

Revista ARACÊ
ISSN: 2358-2472

INTRODUCTION

The arrival of digital technologies has profoundly revolutionized the educational landscape, particularly in relation to teacher training. Virtual Learning Environments (VLEs) emerge as practical instruments in this scenario, providing new possibilities and simultaneously presenting unique challenges for teacher training. As highlighted by Moran (2015, p. 16), "mobile digital technologies instigate institutions to abandon traditional teaching, where the teacher is the focus, for a more interactive and unified learning".

The issue of incorporating digital technologies in teacher training is of great importance in the contemporary educational scenario. Teacher training through technologies refers to the use of digital tools and virtual environments to enhance and enhance teachers' skills, guaranteeing them the right to a high-standard education and the total improvement of their pedagogical skills. This movement aims to ensure that all teachers have access to the same chances for professional growth, encouraging innovation and equity in the educational field.

The reason for addressing this issue is the growing demand for pedagogical practices that integrate digital technologies in an efficient and relevant way. In recent decades, Brazil has been implementing several public policies aimed at digital inclusion and continuous teacher training, with the aim of complying with the guidelines defined by the National Education Plan (PNE) and the National Curriculum Guidelines for Teacher Training. However, the implementation of these policies faces several obstacles, ranging from the absence of an included technological infrastructure to the requirement of digital literacy from teachers. Therefore, it is crucial to analyze and understand the role of digital technologies in teacher training and their consequences to ensure that education is in tune with the needs of the twenty-first century.

This literature review has as its central question to determine: what are the main opportunities and obstacles of virtual learning environments in teacher training in Brazil? Based on the chosen references, it seeks to understand the implementation of digital technologies in teacher training programs, the challenges that teachers and educational institutions face, and which methods are shown to be efficient in promoting innovative teacher training in tune with current needs.

The objective of this study is to examine the role of digital technologies in teacher training in Brazil, focusing on the opportunities and obstacles presented by virtual learning

Revista ARACÊ
ISSN: 2358-2472

environments. This evaluation will make it possible to consider the present opportunities and propose tactics to improve teacher training practices through digital technologies.

This study is organized into five cornerstones. After this introduction, the theoretical framework will deal with basic concepts about the use of digital technologies in education and virtual learning environments. The methodology will detail the methods used for a literature review. In the discussion and results part, the data collected will be presented and examined, divided into three areas: the possibilities of digital technologies in teacher education, the obstacles in the application of Virtual Learning Environments, and suggestions for the future of technology-mediated teacher training. The final considerations will condense the central points discussed and propose reflections on the future of teacher education in the digital scenario of Brazil.

THEORETICAL FRAMEWORK

The theoretical framework of this research is structured in order to offer a basis for understanding the role of digital technologies in teacher education, with emphasis on virtual learning environments (VLEs). The conceptualization of digital technologies in education is presented, highlighting the fundamental principles and definitions that guide this practice. Then, a history of the integration of digital technologies in teacher training in Brazil is outlined, addressing the main legislations and guidelines that influenced the development of these policies over time. Finally, the theoretical foundation on virtual learning environments is explored, discussing the pedagogical and methodological approaches that sustain teacher training mediated by technologies, as well as the challenges and advances observed in this field.

Digital technologies in education refer to the set of tools, platforms, and resources based on information and communication technology (ICT) that are used to support and enhance teaching and learning processes. According to Kenski (2012, p. 44), "digital information and communication technologies, characterized as mediatic, are, therefore, more than simple supports. They interfere in our way of thinking, feeling, acting, relating socially and acquiring knowledge". In the context of teacher education, these technologies play a crucial role, not only as teaching tools, but as objects of study and reflection on pedagogical practice.

Virtual learning environments (VLEs) are digital platforms designed to facilitate online interaction, collaboration, and learning. Almeida (2003, p. 331) defines VLEs as "computer

Revista ARACÊ
ISSN: 2358-2472

systems available on the internet, intended to support activities mediated by information and communication technologies". These environments offer a variety of resources, such as discussion forums, chats, video conferences, file sharing, and assessment tools, which can be used to create rich, interactive learning experiences for trainee teachers.

The integration of digital technologies in teacher training in Brazil has its roots in public policies for digital inclusion and in the search for modernization of the educational system. The National Program for Informatics in Education (ProInfo), launched in 1997, was an important milestone in this process, aiming to promote the pedagogical use of informatics in the public elementary and secondary school system (BRASIL, 1997). Since then, several government initiatives have sought to expand access to and use of digital technologies in education, including teacher training.

The Law of Guidelines and Bases of National Education (LDB), in its updated version, recognizes the importance of digital technologies in teacher training. Article 62, § 2, establishes that "the continuing education and training of teaching professionals may use distance education resources and technologies" (BRASIL, 1996, updated in 2019). This legal provision paves the way for the implementation of teacher training programs mediated by digital technologies, including the use of VLEs.

The National Education Plan (PNE) 2014-2024 also emphasizes the importance of digital technologies in teacher training. Goal 15.6 of the PNE proposes to "promote the curricular reform of teaching degree courses and stimulate pedagogical renewal, in order to ensure the focus on student learning, dividing the workload into general training, training in the area of knowledge and specific didactics and incorporating modern information and communication technologies" (BRASIL, 2014). This goal highlights the recognition of the need to integrate digital technologies not only as tools, but as an integral part of the teacher training process.

The pedagogical approaches that underpin the use of VLEs in teacher education are diverse, but generally align with constructivist and connectivist theories of learning. Siemens (2004) argues that connectivism is a learning theory for the digital age, emphasizing the importance of connections and networks in the construction of knowledge. This perspective is particularly relevant in the context of VLEs, where collaboration and interaction among participants are fundamental to the learning process.

Teacher education mediated by digital technologies, especially through VLEs, offers unique opportunities for teacher professional development. Moran (2015) highlights that

Revista ARACÊ
ISSN: 2358-2472

these technologies allow for more flexible, personalized, and collaborative learning. VLEs enable the creation of virtual communities of practice, where teachers can share experiences, reflect on their practice, and collectively build knowledge, overcoming geographical and temporal barriers.

However, the effective implementation of VLEs in teacher education faces several challenges. Valente (2014) points out that one of the main obstacles is the lack of digital literacy of many teachers, which can hinder their full participation in these environments. In addition, technological infrastructure issues, especially in less developed regions of the country, can limit access to these tools. Overcoming these challenges requires consistent public policies and investments in infrastructure and training.

The COVID-19 pandemic has significantly accelerated the uptake of digital technologies in education, including in teacher training. Hodges et al. (2020) argue that this rapid transition to emergency remote teaching has revealed both the potential and limitations of digital technologies in education. This experience provided valuable insights into the importance of preparing teachers for the effective use of VLEs and other digital technologies in their pedagogical practice.

The future of teacher education mediated by digital technologies points to hybrid models that combine face-to-face and online experiences. Bacich, Tanzi Neto, and Trevisani (2015) argue that blended learning offers the best of both worlds, allowing for the flexibility and personalization of online learning while maintaining the benefits of face-to-face interaction. In this context, VLEs will continue to play a crucial role, serving as central platforms for the organization and distribution of content, interaction, and evaluation.

Finally, it is crucial to emphasize that the effective incorporation of digital technologies in teacher training goes beyond the simple implementation of technological instruments. A paradigm shift is needed in the understanding of what it means to be a teacher in the digital age. According to Nóvoa (2019, p. 6), "teacher training must incorporate a strong practical dimension, focused on student learning and the analysis of real cases, with a focus on school work". Thus, Virtual Learning Environments and other digital technologies should be perceived not only as tools for distributing content, but as spaces that encourage reflection, cooperation and the active construction of pedagogical knowledge.

Revista ARACÊ
ISSN: 2358-2472

DIGITAL TECHNOLOGIES AND TEACHER TRAINING: POLICIES AND PRACTICES

Digital technologies have played an increasingly significant role in teacher education in Brazil, especially with the growing adoption of virtual learning environments (VLEs). The Law of Guidelines and Bases of National Education (LDB), in its updated version, recognizes the importance of these technologies, establishing that "the continuing education and training of teaching professionals may use distance education resources and technologies" (BRASIL, 1996, updated in 2019).

The National Education Plan (PNE) 2014-2024 reinforces this trend, proposing to "promote the curricular reform of undergraduate courses and stimulate pedagogical renewal, [...] incorporating modern information and communication technologies" (BRASIL, 2014). This guideline highlights the official recognition of the need to integrate digital technologies into teacher training.

Virtual learning environments offer unique opportunities for teacher training. According to Almeida (2003, p. 331), VLEs are "computer systems available on the internet, intended to support activities mediated by information and communication technologies". These environments allow for the creation of flexible and collaborative learning experiences, overcoming geographical and temporal barriers.

The flexibility of VLEs is one of their main advantages in teacher training. Moran (2015, p. 16) highlights that "mobile digital technologies challenge institutions to move from traditional teaching, in which the teacher is the center, to a more participatory and integrated learning". This paradigm shift is essential to prepare teachers for the challenges of contemporary education.

However, the effective implementation of VLEs in teacher education faces significant challenges. Valente (2014) points out that "one of the main obstacles is the lack of digital literacy of many teachers, which can hinder their full participation in these environments". This reality highlights the need for public policies that promote the digital literacy of educators.

The COVID-19 pandemic has accelerated the uptake of digital technologies in education, including teacher training. According to Hodges et al. (2020), this rapid transition to emergency remote teaching "revealed both the potential and limitations of digital technologies in education". This experience provided valuable insights into the importance of preparing teachers for the effective use of VLEs.

Revista ARACÊ
ISSN: 2358-2472

The future of teacher training mediated by digital technologies points to hybrid models. Bacich, Tanzi Neto and Trevisani (2015, p. 51) argue that "blended learning is a pedagogical approach that combines face-to-face activities and activities carried out through digital information and communication technologies". This model can offer the best of both worlds, combining the flexibility of online with the benefits of face-to-face interaction.

To maximize the potential of VLEs in teacher education, it is crucial to adopt appropriate pedagogical approaches. Kenski (2015, p. 432) points out that "it is not enough to use technology, it is necessary to know how to use the chosen technology in a pedagogically correct way". This implies rethinking teacher training practices, focusing not only on the technical mastery of the tools, but on their effective pedagogical application.

The effective integration of digital technologies in teacher education requires a paradigm shift. As Nóvoa (2019, p. 6) states, "teacher training must assume a strong praxis component, focused on student learning and the study of concrete cases, with school work as a reference". In this sense, VLEs should be seen as environments that foster reflection, collaboration and the active construction of pedagogical knowledge.

To conclude, educational policies and practices in Brazil have progressed in recognizing the importance of digital technologies in teacher training. Virtual learning spaces have acquired important opportunities for a more adaptable, collaborative education in tune with the needs of the digital age. However, challenges such as teachers' digital literacy and the requirement for adequate teaching methods remain present. It is crucial to overcome these challenges to ensure that teacher empowerment through digital technologies is effective and transformative, equipping educators for the challenges of the 21st century.

METHODOLOGY

This research was carried out through a literature review, using a qualitative approach to analyze the role of digital technologies in teacher education. The focus is on the opportunities and challenges of virtual learning environments (VLEs) in the Brazilian context. Bibliographic review is a type of research that is based on the analysis of materials already published, such as books, scientific articles, theses, and official documents. Its objective is to compile, analyze and debate the information already available on the subject.

This research analyzes government policies and practices related to the implementation of digital technologies in teacher training in Brazil, focusing on the

Revista ARACÊ
ISSN: 2358-2472

challenges encountered and future perspectives for the use of Virtual Learning Environments (VLEs). The main objective of the study was to analyze the main opportunities and barriers of virtual learning environments in teacher training in the Brazilian context.

The main goal was to examine the influence of digital technologies on teacher training in Brazil, highlighting the possibilities and obstacles that exist in virtual learning environments. The specific objectives included: (1) to consider the main public policies linked to the incorporation of digital technologies in the teacher training process; (2) to examine the present practices of using Virtual Learning Environments (VLEs) in the training of teachers; (3) investigate the obstacles encountered in the application of these technologies; and (4) investigate the future scenarios for teacher education mediated by digital technologies.

The technique used was the literature review, with a qualitative approach, which involved the analysis of materials already published, such as books, scientific articles, theses, dissertations and official documents. The study was carried out in several phases, starting with the definition of the criteria for inclusion and exclusion of sources.

The parameters used to choose the sources were: (1) publications from the last 15 years (2008-2023), to ensure the accuracy of the information; (2) focus on digital technologies in teacher training, especially in Virtual Learning Environments; (3) Brazilian context or pertinent to the country's educational reality; (4) publications in Portuguese, English or Spanish. The exclusion criteria included: (1) publications prior to 2008, except seminal works or works of historical relevance; (2) studies focused exclusively on levels of education other than teacher training; (3) publications without scientific or methodological rigor.

The survey of references was carried out in academic databases such as Scielo, Google Scholar, CAPES Journal Portal and repositories of universities in Brazil. The key expressions used in the research included: "digital technologies in the training of educators", "virtual learning environments", "online teacher training", "public policies for teacher training", "obstacles to distance education", among other pertinent terms.

After the initial selection of sources, a preliminary reading of the abstracts and introductions was carried out to verify the adequacy to the theme and objectives of the research. The selected sources were then submitted to a full reading and critical analysis, with emphasis on relevant points related to the research objectives.

Revista ARACÊ
ISSN: 2358-2472

During the analysis of the sources, patterns, trends and gaps in the literature on the subject were identified. The information was organized into thematic categories, including: (1) public policies for the integration of digital technologies in teacher training; (2) practices of using VLEs in teacher training; (3) challenges in the implementation of digital technologies in teacher training; and (4) future perspectives for teacher education mediated by technologies.

From this analysis, the theoretical topics that make up the theoretical framework of the research were elaborated, as well as the discussion of the results. The synthesis of the information collected allowed a comprehensive understanding of the role of digital technologies in teacher education in Brazil, with emphasis on the opportunities and challenges presented by virtual learning environments.

Finally, it is important to emphasize that this bibliographic review methodology allowed a thorough analysis of the theme, offering a broad and critical view of the current situation of the integration of digital technologies in teacher education in Brazil. The specifics of this approach include the risk of bias in the selection of sources and the dependence on the quality and availability of available literature. However, efforts to ensure meticulous selection and comprehensive evaluation sought to minimize these limitations by creating a solid warning for the guidance and recommendations presented in this study.

Frame of Reference

Author(s)	Title	Year
KENSKI, V. M.	Technologies and face-to-face and distance learning	2012
MORAN, J. M.	The education we want: new challenges and how to get there	2015
VALENTE, J. A.	Training of educators: challenges and perspectives	2014
ALMEIDA, M. E. B.	Distance education on the internet: approaches and contributions of digital learning environments	2003
BACICH, L.; TANZI NETO, A.; TREVISANI, F. M.	Blended learning: personalization and technology in education	2015
NÓVOA, A.	Teachers and their training in a time of metamorphosis of the school.	2019
MILL, D.	Virtual teaching: a critical view	2012
PRETTO, N. D. L.	Educations, Cultures, and Hackers: Writings and Reflections	2017
SANTOS, E.	Online education: cyberculture and research-training in teaching practice	2014
LÉVY, P.	Cyberculture	1999
SILVA, M.	Interactive classroom room	2014
BELLONI, M. L.	Distance education	2015

Source: authorship

Revista ARACÊ
ISSN: 2358-2472

DIGITAL TRANSFORMATION IN EDUCATION: CHALLENGES AND OPPORTUNITIES IN TEACHER TRAINING

The advancement of digital technologies has caused significant transformations in several sectors, and education is no exception. In teacher education, these technologies offer new opportunities and present unique challenges, especially when it comes to virtual learning environments (VLEs). According to Kenski (2012), "digital technologies expand the possibilities of access to information and knowledge", which is crucial for the continuous training of teachers.

Virtual learning environments enable flexibility that traditional methods do not offer. They allow teachers in training to access content from anywhere and at any time, promoting more autonomous and personalized learning. As Moran (2015) points out, "education must be more participatory and integrated", and VLEs are tools that facilitate this transformation.

However, the integration of digital technologies in teacher education is not without its challenges. One of the main obstacles is the resistance to change on the part of some educators, who may feel insecure or unprepared to use these new tools. Valente (2014) observes that "the digital literacy of teachers is essential for the success of digital education initiatives".

Another significant challenge is the technological infrastructure. Many educational institutions, especially in more remote regions, still face difficulties in ensuring adequate access to the internet and technological devices. This can limit the effectiveness of VLEs and prevent all teachers from having the same training opportunities.

Teacher training should therefore include not only the use of technologies, but also the development of digital skills. This involves teaching educators how to effectively integrate technologies into their pedagogical practices. As Almeida (2003) states, "training must contemplate the critical and reflective use of technologies".

Virtual learning environments also provide opportunities for the development of communities of practice among teachers. These communities allow teachers to share experiences, discuss common challenges, and collaborate in the search for solutions. According to Bacich et al. (2015), "hybrid teaching promotes collaboration between educators and students", which can enrich teacher training.

In addition, VLEs can be used to simulate classroom situations, allowing pre-service teachers to practice and develop their skills in a controlled environment. This is particularly

Revista ARACÊ
ISSN: 2358-2472

useful for preparing teachers to deal with the diversity of situations they will encounter in their careers.

The COVID-19 pandemic has further highlighted the importance of digital technologies in education. During this time, many teachers have had to adapt quickly to remote teaching, often without adequate preparation. Hodges et al. (2020) state that "the pandemic has accelerated the adoption of digital technologies in education", making continuous teacher training in these tools essential.

To maximize the benefits of VLEs, it is important for educational institutions to offer technical and pedagogical support to teachers. This includes not only initial training, but also ongoing support to help faculty overcome difficulties and explore new possibilities.

Assessing the impact of digital technologies on teacher education is another crucial aspect. There is a need to develop metrics and evaluation methods to effectively measure the success of technology-mediated training initiatives. This will help identify areas for improvement and ensure that resources are utilized effectively.

Digital inclusion is an essential component of teacher education in the twenty-first century. Ensuring that all educators have access to technologies and know how to use them effectively is key to promoting equity in education. As Nóvoa (2019) observes, "teacher training must be inclusive and accessible to all".

Cultural challenges should not be underestimated either. In some regions, there may be cultural resistance to the use of technologies in education, which requires specific strategies to engage and motivate educators. This may involve demonstrating the value of technologies through practical and successful examples.

Personalization of learning is another opportunity offered by digital technologies. VLEs allow teachers to tailor teaching content and methods to the individual needs of students, promoting a more effective and student-centered education.

However, it is important to remember that technology is just a tool. The success of technology-mediated teacher education depends on the quality of pedagogical design and the ability of educators to integrate these tools into their teaching practices in a meaningful way.

Collaboration between educational institutions, governments, and the private sector is essential to overcome the challenges and maximize the opportunities offered by digital technologies. This includes partnerships to develop infrastructure, provide training, and share best practices.

Revista ARACÊ
ISSN: 2358-2472

Finally, it is crucial that public policies support the integration of digital technologies in teacher education. This involves not only investments in infrastructure and training, but also the creation of a regulatory environment that encourages innovation and experimentation.

In conclusion, digital technologies offer significant opportunities to transform teacher education, but they also present challenges that need to be addressed. With the right support and a strategic approach, virtual learning environments can play a crucial role in preparing educators for the challenges of contemporary education.

INNOVATION AND THE FUTURE: PROPOSALS FOR TEACHER TRAINING IN THE DIGITAL AGE

The progress of digital technologies in education provides a favorable ground for innovations in teacher training, however, it requires the elaboration of tangible proposals to overcome obstacles and make the most of opportunities. The future of teacher education requires a unified strategy that takes into account technological, pedagogical and cultural transformations.

One of the proposals for the future is the creation of continuing education programs that are flexible and accessible, allowing teachers to update their digital skills on an ongoing basis. These programs should be offered in hybrid formats, combining face-to-face and online teaching, to meet the diverse needs and contexts of educators.

In addition, it is essential to invest in technological infrastructure in schools and training institutions. Ensuring access to high-speed internet and appropriate technological devices is crucial for teachers to be able to use digital technologies effectively in their pedagogical practices.

The personalization of learning is another important proposal. Digital technologies allow training programs to be adapted to the individual needs of teachers, offering content and activities that align with their interests and areas of development.

The development of digital skills must be integrated into the teacher training curriculum from the beginning, preparing future educators for the reality of 21st century classrooms. This includes not only the use of digital tools, but also the understanding of how these technologies can be utilized to promote active and collaborative learning.

The creation of online communities of practice is a proposal that can enrich teacher training. These communities allow teachers to share experiences, discuss challenges, and collaborate on projects, creating a network of support and continuous learning.

Revista ARACÊ
ISSN: 2358-2472

To support innovation, public policies should encourage research and development of new pedagogical practices mediated by technology. This includes funding pilot projects and disseminating good practices that can be replicated in different educational contexts.

Teacher training should also include digital citizenship education, preparing educators to teach students to be responsible and critical users of digital technologies. This is essential to form citizens capable of navigating and contributing positively in an increasingly digital world.

Evaluation of technology-mediated training practices is crucial to ensure the effectiveness of programmes. Developing metrics and evaluation methods that consider the impact of digital technologies on the learning of teachers and, consequently, of their students, is essential for the continuous improvement of initiatives.

Collaboration between educational institutions, technology companies and governments is fundamental for the success of proposals for the future of teacher education. Strategic partnerships can facilitate access to resources, innovations, and expertise, benefiting teachers and, ultimately, students.

Finally, it is important that proposals for the future of teacher education are inclusive, ensuring that all teachers, regardless of their location or socioeconomic background, have access to the opportunities provided by digital technologies. Digital inclusion is a right and a necessity for the education of the future.

In short, suggestions for the future of teacher training in the digital age need to be broad and integrated, ranging from infrastructure and personalization of teaching to digital citizenship and cross-sector cooperation. With these tactics, we will be able to equip teachers to deal with obstacles and seize the opportunities of the 21st century, ensuring high-quality teaching for all.

FINAL CONSIDERATIONS

Digital technologies play a crucial role in changing education, particularly in the training of teachers, providing new possibilities for learning and professional growth. Virtual Learning Environments (VLEs) emerge as crucial instruments in this process, enabling teachers to access adaptable and personalized training teaching materials. However, the application of these technologies is not free from obstacles, which must be overcome to ensure their efficient and inclusive use.

Revista ARACÊ
ISSN: 2358-2472

One of the biggest obstacles detected is the demand for continuous and engaging teacher training in order to effectively incorporate digital technologies into their teaching practices. Resistance to transformation and the absence of digital literacy are still present obstacles that require special attention from government policies and educational institutions. It is essential to invest in teacher training so that they can make the most of VLEs and other digital tools.

In addition, it is necessary to strengthen the technological infrastructure of schools and higher education institutions. Projected access to the internet and protected technological equipment restrict the effectiveness of teacher training programs through technology. It is crucial that governments and private partners collaborate to ensure that all teachers have the necessary tools for their professional advancement.

Government policies play a crucial role in promoting innovative education that is aligned with the needs of the 21st century. It is necessary that these policies are inclusive and sustainable, provide resources and constant support for the implementation of technology-mediated teaching practices. Cooperation between various sectors, such as education, technology, and government, can help in the development of efficient and important solutions in local situations.

A crucial aspect is the personalization of the learning process, which can be intensified through digital technologies. Virtual Learning Environments make it possible to customize teaching content and methods according to the specific needs of teachers, fostering a more student-focused and efficient education. This methodology can have a significant impact on the enhancement of specific skills and the enhancement of pedagogical practice.

Priority should be given to digital inclusion in future suggestions for teacher training. It is crucial to ensure that all teachers, regardless of their location or socioeconomic status, have access to technology-mediated training opportunities to foster equality in education. Digital inclusion is not only a right, but also a requirement to ensure that all students have access to a high-standard education.

To conclude, digital technologies represent a promising path for change in teacher education, however, deactivating a joint and collaborative strategy to overcome the present obstacles. With protected sports in education, infrastructure, and government policies, we can equip teachers to deal with the challenges of the 21st century and take advantage of

Revista ARACÊ
ISSN: 2358-2472

the opportunities provided by virtual learning environments. Thus, we will be able to guarantee high-quality, inclusive and innovative education for all.

Revista ARACÊ
ISSN: 2358-2472

REFERENCES

1. Almeida, M. E. B. (2003). Educação a distância na internet: abordagens e contribuições dos ambientes digitais de aprendizagem. Educação e Pesquisa, 29(2), 327-340. https://www.scielo.br. Acesso em: 24 out. 2024.

2. Bacich, L., Tanzi Neto, A., & Trevisani, F. M. (2015). Ensino híbrido: personalização e tecnologia na educação. Penso.

3. Belloni, M. L. (2015). Educação a distância (7. ed.). Autores Associados.

4. Brasil. (1996). Lei nº 9.394, de 20 de dezembro de 1996. Estabelece as diretrizes e bases da educação nacional. Presidência da República. https://www.planalto.gov.br. Acesso em: 24 out. 2024.

5. Brasil. (2014). Lei nº 13.005, de 25 de junho de 2014. Aprova o Plano Nacional de Educação - PNE e dá outras providências. Presidência da República. https://www.planalto.gov.br. Acesso em: 24 out. 2024.

6. Hodges, C., et al. (2020). The difference between emergency remote teaching and online learning. Educause Review, 27, 1-12. https://er.educause.edu. Acesso em: 24 out. 2024.

7. Kenski, V. M. (2012). Tecnologias e ensino presencial e a distância (9. ed.). Papirus.

8. Lévy, P. (1999). Cibercultura. Editora 34.

9. Mill, D. (2012). Docência virtual: uma visão crítica. Papirus.

10. Moran, J. M. (2015). A educação que desejamos: novos desafios e como chegar lá (5. ed.). Papirus.

11. Nóvoa, A. (2019). Os professores e a sua formação num tempo de metamorfose da escola. Educação & Realidade, 44(3), e84910. https://www.scielo.br. Acesso em: 24 out. 2024.

12. Pretto, N. D. L. (2017). Educações, culturas e hackers: escritos e reflexões. EDUFBA.

13. Santos, E. (2014). Educação online: cibercultura e pesquisa-formação na prática docente. EDUFBA.

14. Siemens, G. (2004). Connectivism: A Learning Theory for the Digital Age. International Journal of Instructional Technology and Distance Learning, 2(1). https://jotamac.typepad.com. Acesso em: 24 out. 2024.

15. Silva, M. (2014). Sala de aula interativa (7. ed.). Loyola.

16. Valente, J. A. (2014). Formação de educadores: desafios e perspectivas. Editora UNESP.