Original Article

EaD em foco
Revista Científica em Educação a Distância
10 anos

# Knowledge construction in Distance Education: Uncovering the Potential of the Distance Education (DE) in Brazil

## *Construção do Conhecimento na Educação a Distância: Descortinando as Potencialidades da EaD no Brasil*

ISSN 2177-8110
DOI: 10.18264/eadf.v10i1.799

**Francisco Ariclene Oliveira**[1*]
**Ana Maria Sampaio dos Santos**[2]
[1] Universidade Federal do Ceará (UFC). Rua Papi Junior, 1234
Fortaleza, CE – Brasil.
*franciscoariclene@hotmail.com
[2] Faculdade M-Educar (FAMED).
Av. Parque Sul, 601 – Croatá, CE – Brasil

## Abstract

This work is about the potentialities of the Distance Education (DE) modality in the process of knowledge construction. To achieve this purpose, we will present findings and reflections in the literature about the teaching and learning process with the use of multiple technological resources, especially in the teaching enabled with resources of DE. Thus, the objective of this research was to reflect about the potential of the Distance Education modality as a strategic tool for knowledge construction in Brazil. This is an integrative review, outlined in four stages - problem identification, literature search, evaluation and analysis of information -, carried out by searching the databases Scientific Electronic Library Online and Google Scholar, using the keywords: 'Distance Education', 'Educational Technologies' and 'Distance Education in Brazil'. The research was conducted in December of 2019. The results show that DE, as a teaching strategy, favors access to knowledge for a greater number of individuals who see this tool as an alternative and opportunity to aggregate knowledge. In general, it is believed that this modality of education has increased its collaboration in the process of democratization of the teaching and acquisition of the most varied knowledge for those who are distant from the teaching institutions and/or that cannot study at pre-defined times.

**Keywords**: Information and communication technologies. Virtual teaching and learning environment. Democratization of education. Self-learning. Autonomy.



*Received* 05/ 09/ 2019
*Accepted* 22/ 01/ 2020
*Published* 20/ 02/ 2020

**HOW TO CITE THIS ARTICLE**
**ABNT:** OLIVEIRA, F. A.; DOS SANTOS, A. M. S. Construção do Conhecimento na Educação a Distância: Descortinando as Potencialidades da EaD no Brasil.**EaD em Foco**, V10, e799. 2020. doi: https://doi.org/10.18264/eadf.v10i1799

## *Construção do Conhecimento na Educação a Distância: Descortinando as Potencialidades da EaD no Brasil*


### *Resumo*

*Este trabalho versa sobre as potencialidades da modalidade de Educação a Distância (EaD) no processo de construção do conhecimento. Para alcançar tal propósito, serão apresentados achados e reflexões na literatura sobre o processo de ensino e aprendizagem com o uso de múltiplos recursos tecnológicos, principalmente no ensino viabilizado com recursos de EaD. Assim, objetivou-se, nesta pesquisa, refletir sobre as potencialidades da modalidade de Educação a Distância como ferramenta estratégica de construção do conhecimento no Brasil. Trata-se de uma revisão integrativa, delineada em quatro etapas - identificação do problema, busca na literatura, avaliação e análise das informações -, realizada a partir de busca nas bases de dados* Scientific Electronic Library Onlin *e* Google Scholar, *utilizando-se as palavras-chave: 'Ensino a Distância', 'Tecnologias Educacionais' e 'Educação a Distância no Brasil'. A busca deu-se em dezembro de 2019. Os resultados apontam que a EaD, como estratégia de ensino, favorece o acesso ao conhecimento para um maior número de indivíduos, que veem essa ferramenta como alternativa e oportunidade de agregar conhecimento. De modo geral, acredita-se que essa modalidade de educação vem aumentando sua colaboração no processo de democratização do ensino e na aquisição dos mais variados saberes e conhecimentos para aqueles que se encontram distantes das instituições de ensino presencial e/ou que não podem estudar em horários pré-definidos.*



**Palavras-chave:** *Tecnologias da informação e comunicação. Ambiente virtual de ensino e aprendizagem. Democratização do ensino. Autoaprendizagem. Autonomia.*


## 1. Introduction

This work discusses the potentialities of the Distance Education modality (DE) in the knowledge construction process in Brazil. To achieve this purpose, findings and reflections in the literature on the teaching and learning process with the use of multiple technological resources will be presented, mainly in teaching made possible with DE resources, in national and international experiences. The considerations that will be highlighted are intended to help understand the potential of DE as a tool for building knowledge.

For Niskier (2000), the origin of the expression DE refers to one of the precursors in the study of the subject, at the German university of Tübingen, the Swedish educator Börje Holmberg. According to Niskier, instead of referring to "correspondence study", the Germans used the terms Fernstudium (Distance Education) or Fernunterricht (Distance Teaching). The author also points out that Europe came to know the referred term through Desmond Keegan and Charles Wedemeyer.

One of the exponents of DE research in Spain, Aretio (1997), describes that, although there are different names for the modality, the term 'Distance Education' (DE) is currently generally accepted. Corroborating the dissemination and validation of the term DE, a world organization that brings together DE institutions, called since its foundation in 1938 as the International Council for Correspondence Education (ICCE), changed its name at the 12th World Conference, in 1982, for the International Council for Distance

Education (ICDE), adopting the DE terminology, which contemplates the evolution of teaching through technological media (HACK, 2011).

From this perspective, it is understood that Distance Education is an education modality in which teachers and students are in different places during all or most of the time they learn or teach (MOORE; KEARSLEY, 2007; CARLINI; TARCIA, 2010). It also emphasizes that the acronym DE is used both for Distance Education and Distance Learning (BELLONI, 2009).

The literature presents a diversity of definitions for the term DE; however, in this work, we chose to adopt the nuances advocated in the definition of Distance Education in Brazil officially postulated in Decree No. 9057, of May 25, 2017 (BRASIL, 2017, p. 1):

> Art. 1 For the purposes of this Decree, distance education is considered to be the educational modality in which the didactic-pedagogical mediation in the teaching and learning processes occurs with the use of means and information and communication technologies, with qualified personnel, with policies access, with compatible monitoring and evaluation, among others, and develop educational activities by students and education professionals who are in different places and times.

In this sense, the understanding of DE is influenced by the understanding of distance (GOUVÊA; OLIVEIRA, 2006; TORI, 2010). Thus, distance must necessarily be understood as a geospatial separation between those involved in the educational process, be they students or teachers. It is quite common, in videoconferencing classes, for students to be together, but in a different place from the teacher. On the other hand, when the study takes place over the internet, it is common for students and professors to be in different places and access the course and the materials and didactic resources at different times. These two contexts show that there are different possibilities of distancing between students and teachers in this interactive learning process.

It is observed that, although DE has spread as a strategic learning tool, several misunderstandings are still noticeable about the possible forms of distances, generating, as a consequence, criticism and even prejudice in relation to teaching in the DE modality. However, it is opportune to make two considerations to clarify the subject. First, distance - or spatial separation - does not necessarily imply temporal (chronological) divergence. For Vilaça (2010), students and teachers can be in different places participating synchronously in the same activity with a pedagogical purpose, such as, for example, in activities mediated by *chat*.

Secondly, as highlighted by Valente and Mattar (2007, p. 19-20), physical distance between participants "does not imply human distancing". The same authors also state that "DE, therefore, enables the manipulation of space and time in favor of Education". In this perspective, Tori (2010) reports that DE truly favors overcoming the limitation of distances, especially considering the potential of the internet, highlighting the use of interactive technologies that allow mitigating geospatial distances in teaching and learning situations.

This work is justified by the fact that the distance education modality has a high social relevance, since this teaching proposal is capable of favoring the construction of knowledge. Its potential is evident in bringing the learning opportunity to those who have been excluded from the traditional educational process because they live far from these institutions or because of unavailability of time in traditional class schedules. Thus, the objective of this research was to reflect on the potential of the Distance Education (DE) modality as a strategic tool for building knowledge in Brazil.

## 2. Methodology

The operationalization of this work took place through the assumptions of the integrative review (IR) as a selection method for carrying out the study. The choice of this design is justified by the fact that this type of research produces important contributions to the strengthening of evidence-based research (EBR). It should be noted that, for the preparation of the article, four steps were taken, namely: identification of the problem, search in the literature, evaluation and analysis of information (WHITTEMORE; KNAFL, 2005).

Thus, the first stage was characterized by the clear and precise identification of the topic of interest. For this, the following guiding question was used: what are the potentialities and how does the construction of knowledge in the modality of Distance Education in Brazil take place?

In the second stage, with the purpose of answering the question above, the data collection procedure was carried out, using the following open access research sources: The Scientific Electronic Library Online (SciELO), which works as a digital library, and the Google Scholar search system, whose purpose is to identify academic works, school literature, university journals and various articles. The survey of articles in these databases was carried out using the following keywords related to the theme: 'Distance Learning', 'Educational Technologies' and 'Distance Education in Brazil'.

The search in the investigated databases took place in December 2019, having been carried out by the authors of the work, characterized by a peer review in order to guarantee a more careful review process. The two researchers searched the databases separately and, at the end, they compared the results.

As a criterion for the selection of works, the inclusion of scientific articles with abstracts available in full and that included the keywords used in the search was established. As exclusion criteria, the following were discarded: works that did not include at least one of the keywords; the monographs; editorials and repeated articles.

In the data collection, 1,040 articles were found through access to Google Scholar, and 42 articles through SciELO, totaling 1,082 articles in the advanced search, operated in the two research tools selected in this study. Publications were evaluated based on exploratory reading of titles and abstracts, considering the inclusion and exclusion criteria. At this stage – pre-analysis – 1,020 articles were excluded. In the following filter process – exploratory analysis, 38 articles were excluded for not meeting the inclusion and exclusion criteria and for not favoring the research objective. Soon, 24 pre-selected articles remained, which were read in full. Of these, only 9 were recovered, in this final stage, to compose a sample for this review (Chart 1).

With a view to expanding the analysis of the theme, the authors also added to the discussion the reading of books by specialists and researchers on the subject (Table 1). Thus, 20 works were gathered that served as the basis for analysis, with 9 articles corresponding to the object of study and 11 books that addressed DE.

**Chart 1**: Distribution of selected studies according to authors, title, journal, objective, considerations/conclusions.

| N | Authors | Title | Journal | Objective | Considerations / Conclusions |
|---|---|---|---|---|---|
| 1 | ARETIO, L. G. | La enseñanza abierta a distancia como respuesta eficaz para la formación laboral | Materiales para la Educación de Adultos | Discuss Open Distance Education as an effective response to professional training. | Through this teaching-learning methodology, the worker-student acquires attitudes, interests, values that facilitate the precise mechanisms to govern himself, which will lead him to assume the responsibility of a permanent learning. |
| 2 | VILAÇA, M. L. C. | Educação a Distância e Tecnologias: conceitos, termos e um pouco de história | Revista Magistro | To objectively discuss some key concepts in Distance Education and in use of devices and technological resources in Education. | The quality of education depends on a wide variety of factors. In other words, it is possible to be “traditional” in DE in the same way as it is possible to be “innovative” in so-called “traditional” teaching. |
| 3 | TAYLOR, J. | Fifth generation distance education | e-Journal of Instructional Science and Technology (e-JIST) | Describe about the Fifth Generation of Distance Education. | The fifth generation of distance education has the potential to make a quantum leap in economies of scale and associated cost-effectiveness. |
| 4 | HACK, J. R.; NEGRI, F. | Escola e tecnologia: a capacitação docente como referencial para a mudança | Ciênc. cogn | Lead to a reflection on the use of media in public elementary and high schools. | Teachers need constant support to deal with ICT and continuous training, using Distance Education strategies can be a viable alternative. |
| 5 | GRANETTO MOREIRA, J. C.; DAL MOLIN, B H. | Território e Desterritorialização: A EaD na Universidade Estadual do Oeste do Paraná. | EaD em Foco | Present the Center for Distance Education of the State University of Western Paraná, located in the city of Cascavel/PR, discussing the route for its implementation. | It is necessary to think that both distance and face-to-face education constitute other and new territories; for this, the need for a deterritorilization of this education emerges, using exit vectors, through lines of flight. |
| 6 | MENDES, V. | A expansão do ensino a distância no Brasil: democratização do acesso? | Plataforma Eletrônica da ANPAE. | Carry out a survey of the distance learning offer in Brazil in the 2000s, identifying the type of institution and region with the greatest availability of vacancies. | The “democratization” of education constitutes an important mechanism of political legitimacy for the groups that play a leading role in the elaboration of these policies as thousands of people start to reach higher education. |

| | | | | | |
|---|---|---|---|---|---|
| 7 | KARPINSKI, J. A.; DEL MOURO, N. F.; CASTRO, M.; LARA, L. F. | Fatores críticos para o sucesso de um curso em EAD: a percepção dos acadêmicos. | Avaliação: Revista da Avaliação da Educação Superior | Identify what are the critical factors for the success of offering a specialization course in the DE modality, from the perspective of academics. | The results indicate that four factors are essential for the success of the HEI in the Distance Learning modality, which can be classified as: Didactic/Pedagogical Environment and Organization (AODP); Reputation of the Course and Institution (RCI); Qualification - teacher-tutors (CPT) and Course structure (EC). |
| 8 | BATISTA, W. B. | Educação a distância e o refinamento da exclusão social | Revista Conect@ on-line de Educação a Distância | Discuss distance education and the refinement of social exclusion. | Educational packages and programs are marketed on a planetary scale. Under this bias, distance education, under private control, instead of socializing access to public education, refines social exclusion. |
| 9 | MORAN, J. M | O que é educação a distância | Plataforma Eletrônica da USP | Characterize what distance education is. | Distance education is not a “fast-food” in which the student helps himself to something ready-made. It is a practice that allows a balance between individual needs and abilities and those of the group - in person and virtually. |

**Table 1**: Description of selected works according to authors and title.

| N | Authors | Title |
|---|---|---|
| 1 | TORI, R. | Educação sem distância: as tecnologias interativas na redução de distâncias em ensino e aprendizagem |
| 2 | VALENTE, C.; MATTAR, J. | Second Life e Web 2.0 na Educação: o potencial revolucionário das novas tecnologias |
| 3 | DEMO, P. | Pesquisa e construção de conhecimento: metodologia científica no caminho de Habermas |
| 4 | HACK, J. R. | Introdução à educação a distância |
| 5 | VYGOTSKY, L. S.; LURIA, A. R.; LEONTIEV, A. | Linguagem, desenvolvimento e aprendizagem |
| 6 | FREIRE, P. | Educação e mudança |
| 7 | RUMBLE, G. | A tecnologia da educação a distância em cenários do terceiro mundo. In: PRETI, O. (Org.). Educação a distância: construindo significados |
| 8 | SILVA, M. | EAD on-line, cibercultura e interatividade. In: ALVES, L.; NOVA, C. (Org.). Educação a distância: uma nova concepção de aprendizado e interatividade |
| 9 | PETERS, O. | Didática do ensino a distância |

| | | |
|---|---|---|
| 10 | BELLONI, M. L. | Educação a Distância |
| 11 | SCHETTINO-SOUZA, M. | Educação superior a distância: experiências e contribuições. |

With the researched works in hand, a detailed reading was carried out and the third stage of this review was carried out, which consisted of a general evaluation of the works included, in order to produce an initial grouping of the studies regarding the research design, as well as the formation of three thematic categories: contextualizing DE and its potential in the learning process; understanding the knowledge construction process in DE; the struggle to expand the offer of undergraduate courses in the DE modality. The fourth stage took place through the extraction and discussion of data from the studies.

## 3. Results and Discussion

### 3.1. Contextualizing DE and its potential in the learning process

To contextualize DE, it is necessary to take into account its intense and dynamic teaching approach. In this sense, it is important to describe distance education as a technological system of bidirectional communication, with the capacity to cover the collective range of interlocutors, which consolidates itself as an alternative proposal to replace personal interaction in the classroom between teacher and student as the preferred means of teaching through systematic and joint action of various didactic resources, with the support of an organization and tutoring that provide independent and flexible learning. As proposed, this teaching modality marks its main difference to traditional teaching by the fact that it circumvents factors such as dependence and direct and systematic supervision of the educator. However, an attempt is made to fill in the absence of these factors in distance learning teaching with the provision of systems and platforms administered and managed by a support team formed by several actors/professionals, who provide assistance and are in charge of developing the materials (printed, audiovisual, computerized), elaborate, produce and distribute and guide the student's learning through various existing forms of tutoring, favoring a fluid two-way communication (ARETIO, 1997).

From the analysis of the studies used in this work, it was possible to observe that the known DE models all have the same purpose: to facilitate access to knowledge for a greater number of individuals, privileging, for this, learning paths that bring knowledge closer together. of the students involved in this system (TORI, 2010; VALENTE; MATTAR, 2007; VILAÇA, 2010). In this sense, it would be a way of favoring and making access to knowledge more flexible, facilitating the contextualization and diversification of interactions typical of this education model.

It can also be considered, in other words, that DE would be a model of teaching and learning that allows the student, who does not have the conditions to attend an educational institution on a daily basis, the opportunity to acquire the contents that are proposed to students of education in person. In this way, it is understood that DE is a modality that makes it possible to overcome geotemporal distances by giving students the opportunity to organize their time and space to study.

In this perspective, one of the precursors of research in DE, Pedro Demo, emphasizes the importance of this type of education; for this, it makes a distinction between the terms Teaching and Distance Education:

> Distance education will be a natural part of the future of the school and university. It will still be worth using the mail, but it seems definite that the electronic medium will dominate the scene. To talk about distance education, it is necessary to overcome mere teaching and mere illustration.

> Perhaps it was a case of distinguishing moments, without dichotomy. Distance learning is a proposal to socialize information, transmitting it in the most skillful way possible. Distance education, in turn, requires learning to learn, elaboration and consequent evaluation. You can even confer a diploma or certificate, providing face-to-face evaluation moments (DEMO, 1994, p. 60).

In this study, it was decided to defend a broader definition of Distance Education than Distance Learning, given that the DE model conceived implies not only the transmission of content, but also a continuous process of construction and evaluation of the acquired knowledge. Given this meaning, DE will be approached as a modality of carrying out the process of building knowledge in a critical, creative and contextualized way, at a time when the face-to-face meeting of the teacher/tutor and the student does not occur, thus favoring, educational communication through various technological tools.

From this perspective, the definition of DE is considered as an educational process that overcomes the geospatial limitation, in which the student and the teacher are involved by tools, sometimes synchronous, sometimes asynchronous. It is understood that in this teaching model there is constant interactivity with the subjects involved, permanently maintaining dialogic communication in this knowledge construction process. Thus, as can happen in traditional teaching, it is possible to teach at a distance and consider the student a mere receiver of educational messages. In view of this, it corroborates the understanding of Aretio (1997, p. 47) that, for education to exist, full two-way communication must be established, with the possibility of feedback between teacher/tutor and student, when he states that "the possibility is consubstantial to the optimization process that entails educational work".

In the analysis of Hack's study (2011), it was possible to observe the nuances of DE as an educational practice that seeks to bring knowledge closer to the learner, emphasizing, in this process, a strong influence of the constructivist approach. It can be inferred, from this fact, that knowledge is constructed by the student in each of the situations in which he is using or experiencing. It is emphasized, therefore, that one of the essential aspects of constructivism is the fact that reality can be approached from different perspectives to favor the student's appropriation of such reality, according to the various perspectives from which it can be considered. In this way, the processes and results of a constructivist practice are different from one learner and from one context to another, given that learning occurs through the interaction that the student establishes between the various elements of the environment in which he is inserted.

In this context of DE, it is also opportune to add the meanings defended by Vygotsky, Luria and Leontief (1998), which assumed that social interaction is fundamental for the individual's learning and development. In this sense, with regard to DE, it is considered that the teacher/tutor has an essential role in the educational communication that is designated in the distance teaching and learning process, since he contributes to the learner by formulating problems, raising questions or encourage the formation of study groups. Thus, it is understood that the educator becomes a living memory of an educational practice that favors and facilitates dialogue between cultures and generations.

It is emphasized in this discussion that, by mediating the construction of knowledge with the use of multiple technological tools without often being able to visualize, hear the words or identify the immediate reactions of the interlocutor, the teacher/tutor needs to enhance the educational processes to promote dialog, complicity and affectivity between the learning constructs involved. These ways of dealing with the construction of knowledge and its consequences require different methods and actions, since they are new to many people. Therefore, although many teachers understand the importance of the means of communication and the various technologies in contemporary social history, it is still necessary to enhance certain mediations that occur with the use of different technologies in the context of DE (HACK, 2011).

In this study, several notes could be scored, but the purpose of this subtitle was to present a brief contextualization of the potentialities and characterization of DE, which would serve as a prologue to the reflections that we sought to raise. Therefore, our understanding of DE starts from a vision of education as a cultural process of knowledge construction, with the use of different technologies and also as a "practice of freedom"." (FREIRE, 2013).

## **3.2**. Understanding the knowledge construction process in DE

With regard to the resources used in distance learning, currently, there are several technologies dedicated to DE, which are increasingly being used in an integrated manner. Printed materials, audiovisual resources and virtual environments have freed people from the daily and face-to-face requirement of attending a classroom, since education has reached wherever the student wants to study and at the time that is most convenient for him/her. In this sense, Rumble (2000) emphasizes that the pressure for the adoption of multiple technologies in the process of building knowledge at a distance arises from three factors closely linked to the necessary communication between interlocutors, namely: first, to provide interactive dialogue as quickly as possible; second, create opportunities for dialogue and interactivity; third, increasing the speed of distance educational communication.

In view of this context, it is also necessary to consider the foundations of interactivity which, according to Silva (2003, p. 58), can be found in their complexity in information technology, cyberspace, communication theory and other spaces. Thus, the same author states that it is possible to identify three approaches to interactivity to consider: 1) participation-intervention, in which participating is not just answering "yes" or "no", but means modifying the message; 2) bidirectionality-hybridization, which understands the communication process as joint production and co-creation between sender and receiver; 3) interchangeability-potentiality, which points to communication in multiple articulatory networks of connections, with freedom of exchange, association and meaning.

Considering the interactivity process, it is observed that the DE modality provides its users with a differentiated communication scenario that gains centrality, and what Silva (2003) reports as the transition from the logic of distribution, based on transmission, to the logic of communication, based on interactivity. This phenomenon that occurs in the transition provokes the search for different strategies from those used in the beginning by technologies, such as radio and television, in their planning and organization, which generally pointed to unidirectional transmission, not dialogic.

It is known that the search for technologies that favor dialogue between those involved in DE went through some phases, which we highlight below, as we consider that they facilitate the dynamics of this process:

1st phase – According to Rumble (2000), this is the period in which the communication process between the parties took place via printed or handwritten material. This phase was distinguished mainly by the term education by correspondence and had a relatively cheap printing industry, but it could only develop after the cheapness of postal services, mainly from 1840, when rail transport brought reliability and agility to mail. This first phase of DE received an increase in the 20th century with the use of road and air transport, as well as the revolution caused by the computerization of the printing industry. We believe that, for the future, the increase in printing technologies, in users' homes, and the creation of devices that facilitate screen reading can serve as a stimulus for the replacement of certain printed products;

2nd phase – This is the phase in which the communication process has its main support in radio and television broadcasting technology. This phase began with capturing and transmitting live readings via radio and television, in the classroom where the teacher was, to groups of students in distant classrooms. In some cases, there were telephone lines available for the student to communicate with the teacher during class time. The second phase was driven when terrestrial transmission networks began to be replaced or

supported by satellite transmission systems. Satellite radio and television broadcasts provided broader geographic coverage and brought the possibility of creating international DE systems. (RUMBLE, 2000);

3rd phase – In the perspective of Rumble (2000), the communication process begins to use multimedia technologies, such as text, audio and video in an integrated and simultaneous way. In short, it brings together the first and second phases of DE, and audiovisual transmission tends to be used as a means of supporting printed material. There are face-to-face contacts, but teaching is predominantly via the media. DE's third phase systems evolve according to the evolution of information technology and rely on a range of technologies – from the cheapest to the most expensive. The use of technologies is generally flexible, and what can be done with one technology can also be achieved using another medium.;

4th phase – The fourth phase of DE is characterized by the fact that communication is mediated by computer, being marked by the use of web conferencing, electronic mail, access to databases, research in electronic libraries, use of virtual environments, among other things. This phase of distance learning gained momentum in the 1990s, with initially high costs for its adoption, as it required the purchase of a computer, specific software and internet connection. In the year 2010, the speed of the network to process transactions was still a big problem in certain places, but, arguably, the fourth phase of DE is famously worldwide in scope. (RUMBLE, 2000);

5th phase – This is the moment when DE begins to use communication processes involving agents and intelligent response systems, based on research in the field of artificial intelligence (TAYLOR, 2001). The fifth phase of DE requires the use of sophisticated equipment and efficient transmission lines to function properly, but the dissemination and cheapness of this technology occurred over time. The use of interactive tools in DE provides the student with better interaction with virtual characters that answer their questions in a personalized and contextualized way, acting as a virtual tutor that aims to facilitate the learning process in a dynamic and attractive way.

It is also emphasized, in this discussion, the following consideration raised in the execution of the study, in which we understand that agents and intelligent response systems approach users by calling them by name and identify which paths they took in the virtual environment before the doubt establish yourself. In this way, a comparison process is used to identify the strategy that will lead the student to resolve the impasse for which he is seeking a solution. Virtual facilitators can be accessed whenever necessary, even creating approach routines through which the individual can determine the moments when he does not want to be questioned by the virtual agent (HACK, 2011).

It is worth noting here that the order of the DE evolution phases, presented above, establishes the transformations based on the technologies used in the process of constructing distance knowledge. Considering that access to multiple technologies occurs gradually, not rigidly following a pattern and in line with each context, the possibility that all phases of DE coexist is real. Thus, at times, situations may arise in which a multimedia course is developed for some local realities, while, in other situations, the same course needs to be carried out only with emphasis on printed material.

Given this context, it was seen that the adoption of different technological tools allows the process of building knowledge at a distance to be unique and personalized. However, for this to happen properly, it is necessary that the multiple technological means are adapted to each context, favoring teachers and students to use them optimally in the teaching and learning process. It is believed that, if the study environment of distance students is adequately provided with the necessary technologies and a fast connection for educational communication, distance will only be a physical limitation, since students, tutors, teachers, that is, the entire virtual academic community will be connected, thus establishing an effective dialogical communication process.

In view of this, it is ensured that innovative technologies can bring more and more immediate mediation possibilities of information, but, at the same time, add complexity to the process, given the existence of difficulties to be overcome for the use of multiple technologies as potentializers. of the knowledge construction process. From this perspective, Peters (2001) reports that it will take a few more years for learning resources to reach the domain of technological possibilities in DE, allowing the overcoming of still existing obstacles.

As explained in the context of DE, the internet is considered the most practical way to access information and communication, as it integrates telephony, radio broadcasting, television systems, print media, in addition to enabling the expression of those who, years ago, they only received the communication issued by the media (HACK; NEGRI, 2010). However, because it is a field in which technological evolution is constant, the way of teaching and learning at a distance can reach unlimited contours and dimensions - which, in our view, if well used, such characteristics make the learning process more attractive and efficient for the student of this modality, while for the teacher, he has the possibility of expanding the place of choice and management of new didactic-pedagogical practices.

It should be noted that, due to their technical characteristics, digital technologies offer increasing possibilities for mediatized interaction between the subjects involved in the teaching and learning process, in addition to allowing interactivity with materials of good and poor quality, in a wide variety. In this sense, Belloni (2009) points out that mediatized interaction techniques have great advantages in managing the process of building knowledge at a distance, as they allow combining the flexibility of human interaction with autonomy of time and space.

Despite the popularization of various technological resources, Hack (2011) points out that the use of equipment such as the computer represents exponential leaps in the management of the educational process; however, the human being needs to feel subject to transformations, since technology is just a spark for Humanity to delineate changes that aim to improve the quality of life of all people.

It is worth emphasizing that, when discussing the role of multiple technologies and also the many attempts to experiment with them, their use is put into play as a potential for building knowledge through DE. However, in this regard, we emphasize the importance of critical thinking and creative perception for the development of a harmonious understanding of the transformations arising from the process of building knowledge at a distance with the use of multiple technological tools.

## **3.3**. The struggle to expand the offer of undergraduate courses in the Distance Learning modality

Faced with the relevance of DE as a tool to mediate knowledge, it is considered that two arguments are recurrent in the defense of distance graduation courses and have served as a justification for the expansion of this sector in Brazil, which are: the possibility of democratizing access to higher education and the need to adopt new technologies in training processes. From this perspective, Moreira and Dal Molin (2019) corroborate that Distance Education, in recent years, has grown vigorously in Brazil, reaching a significant number of those who now have access to Higher Education. In this way, the expansion of DE is fulfilling its mission to favor, through digital platforms, those who, for various reasons - socioeconomic, time or geographical distance - would not have access to knowledge and academic training.

It should be noted that the struggle to expand access to higher education in Brazil is not recent and is at the focus of the demands of segments that claim for the qualification of education in the country. However, this fight is not only for the expansion of vacancies, but also for the possibility of access to the knowledge produced in the various fields of knowledge. Since this possibility presupposes the completion of graduation courses in institutions that have qualified professors; develop teaching, research and extension work; that

presents a pedagogical project suited to regional demands and needs; didactic-financial autonomy; Democratic management; good physical and administrative structure; among other aspects (MENDES, 2011).

With regard to the democratization of access, advocates of distance training claim that DE is a viable possibility, possible to reach the most socio-educationally excluded quality federal public higher education (SCHETTINO-SOUZA, 2005). From this perspective, the concern with the entry of socioeconomically disadvantaged strata to the university is valid, however, it is necessary to assess whether the growth in the distance education offer in Brazil meets the assumption of serving regions less provided with undergraduate courses.

Faced with this reality, it is observed that the accentuated growth in distance learning is not accompanied by discussions and reflections that point out meanings and possible consequences of these training processes and their challenges in the teaching and learning process. In this sense, aiming to ensure an effective teaching modality in the production of knowledge, it is recommended that the institutions that offer training activities in DE be duly supervised, focusing, above all, on the credentials of their teachers/tutors, as it happens with the professionals of the face-to-face courses. Thus, this is seen as the main challenge, given that the quality of higher education courses is directly linked to the qualification of the teachers involved (KARPINSKI *et al*., 2017).

In assessing the distance education offer, it is essential to pay attention to the private sector, as this teaching modality has become an important instrument for educational institutions to expand in the market, including with the use of public resources. In relation to this, Batista (2002) approximates his expression as a manifestation of our reflections, when he states that the discourse in favor of the democratization of education, opportunities for access to the educational system and social justice masks the meaning of private investments.

It is opportune to bring up another important point in the scope of DE teaching, which is the qualification of teaching with the adoption of new technologies in education, as highlighted by Mendes (2011, p. 8).

> The other discourse present in distance learning is that of teaching qualification with the use of new technologies in education. One of the main arguments used to defend the expansion of the supply of distance courses is the possibility of adopting new technologies in higher education, provided by this teaching modality. The face-to-face forms of contact between the different subjects who participate in an educational institution are replaced by virtual forms of interaction. To these forms are added the qualities of modern, fast, agile and, consequently, efficient in the formative processes.

Faced with this reality, the simple use of technologies is presented as sufficient for the qualification of work in the educational field. In this sense, it is observed that, in order to value distance learning, the technical efficiency of learning resources has been adopted as a quality parameter, so that the various instruments and modern technological tools aimed at teaching have been adopted to confer value symbolic to distance education (BATISTA, 2002).

With regard to the challenge of disseminating the distance education process, Moran (2013), a staunch supporter of EaD, points out that a large part of the population still does not have access to technological resources, which can democratize access to knowledge. Thus, it is extremely important to provide everyone with access to technologies, significant information and the mediation of effectively qualified teachers for their innovative use, aiming to provide the experience and learning opportunity to those who want to study, but cannot, for some reason, factor, attending a physical institution.

## 4. Conclusion

Throughout the construction of this work, we sought to show that teaching promoted through Distance Education can be considered a powerful tool in the knowledge construction process, since the use of ICTs favors the overcoming of obstacles in the conquest of knowledge. knowledge.

As explained above, technological tools can be important tools to support didactic activities developed in any sphere of education. Effectively, nowadays, it is not possible to disregard the range of equipment, software and resources available to teachers to adopt in their classes. In particular, using the internet is a routine practice, when looking for quick information or the complementarity of a theme for the development of a certain content to be addressed in class.

It is also noteworthy that, from the aspects pointed out in the study, it was evident that those involved in the DE system need to define a constant dialogue through the Virtual Teaching and Learning Environment (VLE) and other technologies that enable two-way communication between the parties, given that, with the use of an increasingly wide variety of resources with multiple media, the acquisition of knowledge is no longer done exclusively through reading texts, to become experiments also with multiple perceptions and sensitivities.

It was also discussed that the forms presented in the teaching-learning study are democratized through DE, since the breaking of geospatial boundaries is favored by technology, by the interaction and communication between users of this educational modality. In this way, educational processes are sought through communication means that allow exchange, dialogue and change in learning and, for this, interactivity, distance learning, space-time flexibility, collaborative networks, greater autonomy, integration of media and languages become essential features of distance learning. It is known that this process is possible because the individual assumes the responsibility for his/her own learning, supported by some material and human elements planned, monitored and evaluated, so that he/she has the possibility of developing autonomy, enhancing the self-learning process.

In view of all the reflections presented here in relation to DE, it was not the purpose of this study to describe that there is only one teaching model to be followed. We understand that the plurality of experiences and diversity of experiences of each author, of each study and research carried out reveal the different meanings that their practices assume in each place. However, the particularity of each experience constructed in different spaces does not mean forgetting fundamental assumptions in educational practice: the interaction between the subjects who participate directly in the pedagogical processes; quality in education; effective access to knowledge; the full possibility of updating everyone who attends the school, regardless of the level of education they are in.

In general, it is believed that this type of education has been increasing its collaboration in the expansion of the democratization of teaching and in the acquisition of the most varied knowledge and expertise, mainly because it constitutes a tool capable of reaching a large number of subjects simultaneously, in addition to reach individuals who are far from the places where knowledge exchanges are carried out and/or who cannot study at pre-defined times.

## References

ARETIO, L. G. La enseñanza abierta a distancia como respuesta eficaz para la formación laboral. **Materiales para la Educación de Adultos**, Madrid, n. 8-9, p. 15-20, 1997.

BATISTA, W. B. Educação a distância e o refinamento da exclusão social. **Revista Conect@ *on-line* de Educação a Distância**, v. 4, s/p, 2002. Available at: http://www.saladeaulainterativa.pro.br/texto_0022.htm. Access in: Feb 2019.

BELLONI, M. L. **Educação a Distância**. 5. ed. Campinas: Autores Associados, 2009.

BRASIL. Decreto nº 9.057, de 25 de maio de 2017. Regulamenta o art. 80 da Lei nº 9.394, de 20 de dezembro de 1996, que estabelece as diretrizes e bases da educação nacional. Brasília: **Diário Oficial União**, 2017.

CARLINI, A. L.; TARCIA, R. M. L. **Contribuições didáticas para o uso das tecnologias de educação a distância no ensino presencial**. IN: CARLINI, A. L. e TARCIA, R. M. L. 20% a distância e agora?: orientações práticas para o uso da tecnologia de educação a distância no ensino presencial. São Paulo: Pearson Education do Brasil, 2010.

DEMO, P. **Pesquisa e construção de conhecimento:** metodologia científica no caminho de Habermas. Rio de Janeiro: Tempo Brasileiro, 1994.

FREIRE, P. **Educação e mudança**. Rio de Janeiro: Paz e Terra, 2013.

GRANETTO MOREIRA, J. C.; DAL MOLIN, B H. Território e Desterritorialização: A EaD na Universidade Estadual do Oeste do Paraná. **EaD em Foco**, v. 9, n. 1, p. 775, 2019.

GOUVÊA, G.; OLIVEIRA, C. I. **Educação a Distância na Formação de Professores:** Viabilidades, potencialidades e limites. Rio de Janeiro: Vieira & Lent, 2006.

HACK, J. R. **Introdução à educação a distância**. Florianópolis: UFSC, 2011.

HACK, J. R.; NEGRI, F. Escola e tecnologia: a capacitação docente como referencial para a mudança. **Ciênc. cogn.**, Rio de Janeiro, v. 15, n. 1, p. 89-99, abr. 2010. Available at: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1806-58212010000100009&lng=pt&nrm=is . Access in: Jan 2019.

MENDES, V. **A expansão do ensino a distância no Brasil:** democratização do acesso? In: 25º Simpósio Brasileiro e 2º Congresso Ibero-Americano de Política e Administração da Educação. São Paulo: ANPAE, 2011. Available at: http://www.anpae.org.br/simposio2011/cdrom2011/PDFs/trabalhosCompletos/comunicacoesRelatos/0526.pdf Access in: Jan 2019.

MORAN, J. M. **O que é educação a distância.** 2013. Available at: http://www2.eca.usp.br/moran/wp-content/uploads/2013/12/dist.pdf. Access in: Jan 2019.

MOORE, M.; KEARSLEY, G. **Educação a Distância:** uma visão integrada. São Paulo: Thomson, 2007.

NISKIER, A. **Educação à distância a tecnologia da esperança:** políticas e estratégias para a implantação de um sistema nacional de educação aberta e à distância. 2. ed. São Paulo: Loyola, 2000.

KARPINSKI, J. A.; DEL MOURO, N. F.; CASTRO, M.; LARA, L. F. **Fatores críticos para o sucesso de um curso em EAD:** a percepção dos acadêmicos. Avaliação, Campinas; Sorocaba, SP, v. 22, n. 2, p. 440-457, jul. 2017.

PETERS, O. **Didática do ensino a distância.** São Leopoldo: UNISINOS, 2001.

RUMBLE, G. **A tecnologia da educação a distância em cenários do terceiro mundo.** In: PRETI, O. (Org.). Educação a distância: construindo significados. Cuiabá: NEAD/IE - UFMT; Brasília: Plano, 2000.

SCHETTINO-SOUZA, M. **Educação superior a distância:** experiências e contribuições. Belo Horizonte: UFOP, 2005.

SILVA, M. **EAD *on-line*, cibercultura e interatividade.** In: ALVES, L.; NOVA, C. (Org.). Educação a distância: uma nova concepção de aprendizado e interatividade. São Paulo: Futura, 2003.

TAYLOR, J. Fifth generation distance education. **e-Journal of Instructional Science and Technology** *(e-JIST)*, v. 4, n. 1, p. 1-14, 2001.

TORI, R. **Educação sem distância:** as tecnologias interativas na redução de distâncias em ensino e aprendizagem. São Paulo: Editora Senac São Paulo, 2010.

VALENTE, C.; MATTAR, J. **Second Life e Web 2.0 na Educação:** o potencial revolucionário das novas tecnologias. São Paulo: Novatec, 2007.

VILAÇA, M. L. C. Educação a Distância e Tecnologias: conceitos, termos e um pouco de história. **Revista** Magistro. v. 1, n.2, p. 89-101, 2010.

VYGOTSKY, L. S.; LURIA, A. R.; LEONTIEV, A. **Linguagem, desenvolvimento e aprendizagem**. São Paulo: Ícone, 1988.

WHITTEMORE, R.; KNAFL, K. The integrative review: update methodology. **Journal of Advanced Nursing**, v. 52, n. 5, p. 546-553, 2005.