

DIGITAL LEARNING OBJECTS: AN INITIAL CONVERSATION

OBJETOS DE APRENDIZAJE DIGITALES: UNA CONVERSACIÓN INICIAL

OBJETOS DIGITAIS DE APRENDIZAGEM: UMA CONVERSA INICIAL

Fabiana Pereira de Sousa ¹
Karina Figueiredo Gaya ²
Luana Maria Silva de Oliveira ³
Wevelly Thaisa Ribeiro Perotes ⁴

Manuscript received on: March 28, 2023.

Approved on: July 16, 2023.

Published on: November 22, 2023.

Abstract

This article aims at reflecting on the learning theories relevant to this research supported by authors such as Piaget (1982) and Vygotsky (1989). Briefly present the characteristics of digital learning objects, based on the ideas of Leffa and Irala (2014), among others. And contextualize the technological movement in the pandemic context from Lévy (2010) and Gaya (2022). This initial conversation concerns the first phase of the Teacher Plus project and it is relevant to build the second stage of the research project, as well as to support the construction of the repository of digital learning objects for the English language course at UFPA-campus of *Bragança*.

Keywords: Teaching-learning; Digital learning objects; English language.

Resumen

Este artículo tiene como objetivo reflexionar sobre las teorías de aprendizaje relevantes para esta investigación, respaldadas por autores como Piaget (1982) y Vygotsky (1989). También presenta brevemente las características de los objetos digitales de aprendizaje, basadas en las ideas de Leffa e Irala (2014), entre otros. Además, contextualiza el movimiento tecnológico en el contexto pandémico según Lévy (2010) y Gaya (2022). Esta conversación inicial se refiere a la primera fase del proyecto Teacher Plus y es relevante para la construcción de la segunda etapa del proyecto de investigación, así como para fundamentar la creación del repositorio de objetos digitales de aprendizaje del curso de inglés en el campus de la UFPA-Bragança.

¹ Specializing in Literature Theory and Text Production at Faculdade Focus. Graduated in Letters – English from the Federal University of Pará. Member of the Research Group on Teaching and Training English Teachers.

ORCID: <https://orcid.org/0000-0003-3084-4215> Contact: fabianasousa1349@gmail.com

² Doctorate in Linguistic Studies and Literary Studies from the Federal University of Pará. Professor at the Federal University of Pará. Member of the research group Functional-Descriptive Studies of Parkatêjê and Other Minority Languages.

ORCID: <https://orcid.org/0000-0001-9086-2277> Contact: karinagaya@ufpa.br

³ Undergraduate in English Language at Federal University of Pará.

ORCID: <https://orcid.org/0009-0007-6424-8194> Contact: luana.oliveira@braganca.ufpa.br

⁴ Specializing in Brazilian Literature at Faculdade Focus. Graduated in Letters – English from the Federal University of Pará.

ORCID: <https://orcid.org/0000-0001-6717-4548> Contact: wevellyperotes@gmail.com

Palabras clave: Enseñanza-aprendizaje; Objetos digitales de aprendizaje; Inglés.

Resumo

Este artigo tem como finalidade refletir acerca das teorias de aprendizagem pertinentes a esta pesquisa apoiados em autores como Piaget (1982) e Vygotsky (1989). Apresentar brevemente as características dos objetos digitais de aprendizagem, pautadas nas ideias de Leffa e Irala (2014), entre outras. E contextualizar o movimento tecnológico no contexto pandêmico a partir de Lévy (2010) e Gaya (2022). Esta conversa inicial diz respeito à primeira fase do projeto Teacher Plus e se faz relevante para a construir a segunda etapa do projeto de pesquisa, bem como alicerçar a construção do repositório de objetos digitais de aprendizagem do curso de língua inglesa do campus da UFPA-Bragança.

Palavras-chave: Ensino-aprendizagem; Objetos digitais de aprendizagem; Língua inglesa.

Initial considerations

Understanding the relationship between new digital information and communication technologies (NDICTs) and the teaching and learning of the English language requires us to contemplate their extensive usage within society and the sociocultural changes stemming from such use.

According to Coll and Monereo (2010), NDICTs have played a pivotal role in shaping the cultural formation of society and the development of each individual. For the authors, NDICTs serve as "instruments for thinking, learning, acquiring knowledge, representing, and transmitting acquired knowledge to other individuals and subsequent generations" (COLL; MORENEO, 2010, p. 17).

One can assume that technological, media, and digital resources—also referred to as learning objects—historically constructed instruments possessing a language (GAYA, 2022, p. 110), act as mediators, both internal and external, in learning processes. They can induce transformations in individuals and likewise undergo changes when utilized. According to Burbules and Torres Santomé (2004), such technological resources usher in new forms of culture, media, and information and communication technologies, leading to significant transformations in the way societies have formed and (re)organized, especially in the context of the ongoing pandemic.

Education, as well as teaching and learning processes, needed to be rethought, giving rise to the need to consider different dimensions that encompass the educational landscape and its constituents. This emerges from a comprehensive understanding of globalization processes that bring numerous consequences and transformations.

This article presents reflections on learning, considering concepts from Piaget (1982), Vygotsky (1989), and Skinner (1976), among others. Regarding learning in the digital era, the foundational ideas of Roncarelli (2012) and Santos Junior and Monteiro (2020) are considered, among other authors. The theoretical framework used to develop the section on the technological movement takes into account concepts from Lévy (2010) and Gaya (2022), among others. The theoretical foundation regarding digital learning objects aligns with the reflections of Leffa and Irala (2014), Willey (2000), and other authors.

Digital learning objects, tied to an interactionist conception, foster critical thinking, reasoning, and support the teaching and learning process. The technological movement is portrayed in this study as the guidepost of technology's evolution up to the contemporary era, without forgetting the dynamism that characterizes this field.

This study characterizes itself as a bibliographic research, stemming from the first phase of the ongoing Teacher Plus⁵ research project, now in its second phase.

The research will be executed through the following stages: (1) theoretical framework development, (2) data collection, (3) data categorization and classification, and (4) repository construction. In the first stage, discussions will be held with student researchers regarding literature pertinent to the study area—technology and teacher training.

⁵ The Teacher Plus Project is characterized as a research project, coordinated by Prof. Dr. Karina Figueiredo Gaya. Its main objective is to build a virtual repository of ODA (in English) and contribute to the process of implementing TDIC in basic education schools in the municipality of Bragança – PA. This project has five English language undergraduate students as scholarship holders and is currently in its second phase.

In the subsequent stage, researchers will collect data through participation in remote/hybrid classes in basic education. In the third stage, researchers will describe how digital learning objects are used by teachers and suggest potential interventions if necessary. Finally, the fourth stage will involve constructing the digital learning object repository.

The relevance of this research lies in the initial understanding of digital learning objects, leading to their categorization and identification in use. By categorizing and identifying these objects, it becomes possible to analyze more accurately how these tools are being employed and their impacts on society.

Understanding the social significance of these objects involves examining how they contribute to promoting equal educational opportunities, overcoming socioeconomic inequalities, and providing a more inclusive education. Therefore, the objective of this article is to present an understanding of digital learning objects and the context in which they are situated.

- Thinking about learning

Human learning has been studied for millennia, with numerous philosophers and researchers attempting to comprehend the intricacies of this process. However, it's only in recent decades that scientific theories have been developed to discuss and stimulate reflections on how and in what manner learning operates in human life. In this context, understanding emerges from learning.

goes beyond mere intelligence and the construction of knowledge itself. It encompasses personal identification, character development, human formation, socialization, and relationships fostered through interactions within groups of people. (SANTOS; GHELLI, 2015)

Therefore, certain questions related to learning began to be scientifically addressed and discussed through the efforts of scholars who sought to explain what learning is and how it functions. The so-called 'theories of learning' initially emerged as the cognitive theory, with one of its key pioneers being Jean Piaget (1982), along with the constructivist approach.

These theories, along with others to be discussed in this text, have aided educational professionals in refining their methods and pedagogical practices. In the following, the main theoretical perspectives explaining the learning process will be briefly introduced, including cognitive theory, behaviorism, and interactionism.

From Piaget's perspective (1982), learning is prompted by situations.

induced by a psychological experimenter, a teacher referring to a didactic point, or an external situation. It is typically provoked, as opposed to being spontaneous. Furthermore, it is a process confined to a simple problem or a simple structure. (PIAGET, 1982, p.7)

In this constructivist approach, the learner⁶ is an active subject. Learning doesn't occur passively; rather, it's stimulated through collectivity, critical thinking, and creativity. The teacher always acts as a mediator, not as a holder of knowledge.

According to Piaget (1982), learning is an ongoing construction that begins from birth and goes through four stages of cognitive development: Sensory-Motor (0 to 2 years); Pre-Operational (2 - 7 years); Concrete Operational (8 - 11 years); Formal Operational (12 - 14 years). Each of these stages extends and encompasses the previous one.

Within the specifics of each phase, it's also important to highlight the concepts of assimilation and accommodation. As stated by Santos and Ghelli (2015), when the mind changes, Piaget refers to this as accommodation. These accommodations lead to the construction of new assimilation schemes, thereby promoting cognitive development.

In contrast to cognitive approaches that focus on the mind and the act of knowing, behaviorism aims to analyze human behavior. This approach, which emerged in the 20th century, is exemplified by F. Skinner (1904-1990).

Skinner's radical behaviorism is mainly based on behavior analysis and its consequences, particularly in teaching and learning. This observable behavior is what's sought for alignment within the learning process, focusing on the interaction between the individual and their environment, where the environment produces stimuli and the individual responds through actions.

⁶ The term "learner" will be used in this article to indicate the subjects involved in their own learning process, giving the idea of movement and fluidity to the term.

According to Skinner (1976), a child's learning centers around acquiring new behaviors through stimuli and responses.

In this view, learners are passive subjects in the teaching and learning process, receiving knowledge transferred by the teacher. There isn't a dialogue between the learner and this knowledge because it isn't constructed by the individual. Learning occurs through methodical teaching that relies on exhaustive repetition and standardized exercises for memorization.

While Skinner's (1976) contributions to radical behaviorism remain influential, his approach has been critiqued by some scholars, including Piaget.

A stimulus is a stimulus only to the extent that it is meaningful, and it becomes meaningful only to the extent that there is a structure that enables its assimilation, a structure that can accommodate this stimulus while simultaneously producing a response (PIAGET 1982, p.5)

Therefore, following Piaget's reflections, a stimulus only becomes a stimulus when instructed by a structure, which is necessary for generating a response.

Another important thought to highlight when studying learning is Vygotsky's (1989) social interactionism, which posits that learning is essentially linked to social interactions. Vygotsky contradicts Piaget's studies, asserting that from a biological perspective, there is little contribution and that most of our knowledge is constructed through interactions with the social environment.

In his studies, Vygotsky (1989) identifies two levels of development: the "actual developmental level," which refers to the knowledge already consolidated in the learner and the mental functions or processes that have already established, and the "potential developmental level," which pertains to what the learner can achieve with the assistance of others.

Following this idea, it is established in this study that the essence of learning is based on the individual construction of concepts, theories, and knowledge, as opposed to the passive reception of information. Therefore, the principle of mediation is emphasized. Mediation means facilitating and enhancing the construction of

knowledge, understanding that knowledge is not transferred; instead, it involves intentionally placing oneself between the object and the learner to modify, alter, emphasize, organize, and transform the stimuli from that object, aiming for the mediated learner to construct their own learning.

In summary, the presented learning theories, along with various other approaches, can determine and discuss how English language learning can be developed through the interaction with digital learning objects.

To comprehend the learner's interaction with DLOs, it is necessary to briefly conceptualize meaningful learning, as learners need to understand the real purpose of each task carried out through DLOs.

- Meaningful Learning

Moreira (2010, p. 2) states that meaningful learning is characterized by the interaction between prior knowledge and new knowledge, aligning with the views of Ausubel (1968), who, in turn, advocates that meaningful learning is the method in which the learner associates new information in a non-arbitrary and substantive way with relevant aspects present in their cognitive structure. For him, the learner, learning will only have meaning if it is linked to pre-existing knowledge.

Dewey (1979, p. 166) also supports Ausubel's (1968) ideas and clarifies that informational knowledge separated from reflective action is dead knowledge, a heavy burden on the spirit. It would be non-meaningful learning, as it lacks a final purpose, which would soon fade from the learner's memory.

In this way, for meaningful learning to occur, prior knowledge is necessary. It is worth noting, however, that such prior knowledge is not a guarantee of facilitation in the learning process if it is anchored in common sense, potentially taking on a blocking character for meaningful learning.

According to Rogers (2001), a meaningful learning

is more than the accumulation of facts. It is learning that induces change, whether in an individual's behavior, the future direction they choose, or in their attitudes and personalities. It is a profound form of learning that goes beyond a mere increase in knowledge. (ROGERS, 2001, p. 01). (tradução nossa)

It is understood that meaningful learning is associated with various factors. Therefore, in order to learn something meaningful, it is necessary that what is being presented to the learner is connected to previous experiences, prior knowledge, and past experiences so that it has a meaningful character. In this way, it is necessary to explore learning in the digital age to understand how education takes place within this context.

- Learning in the Digital Age

Learning in the digital age unfolds in the face of technological advancements that society has been experiencing in recent years. In light of these advancements, education has found itself in need of reformulation to align with the new reality in which society is immersed. Roncarelli (2012, p. 38) contends that "it is necessary to redesign the forms of teaching and learning in current times, especially with regard to the distinctive characteristics of traditional media, previously considered more passive".

Even in 2019, prior to the pandemic⁷, there were reports of some educators harboring reservations about employing certain technological tools in their classes, as they were rooted in more "traditional" modes of learning. However, the pandemic scenario reshaped the mindset of these educators. From a pedagogical perspective, these educators realized that technology is a tool that can bring numerous benefits to their classes. From a user's standpoint, apprehensions about utilizing technology may still linger.

⁷ The COVID-19 pandemic, according to the World Health Organization (WHO), is the worldwide spread of a new disease. In this case, Covid-19 is an infectious disease caused by the SARS-CoV-2 coronavirus and its main symptoms include fever, fatigue, and dry cough. The first cases were detected in the city of Wuhan, China, in December 2019. In Brazil, by March 2020, the cases had already exceeded 5,812 with 202 deaths. www.g1.globo.com/coronavirus Accessed: May 16, 2022 (19:50).

According to Auler, Santos, and Cericatto (2016, p.150), "scientific and technological development has created the need for educators to adopt new teaching models that meet the profound changes demanded by society." This was exemplified during the confinement imposed by the COVID-19 pandemic, wherein technology became the primary tool for students and teachers to establish contact and facilitate the mediation of knowledge.

Consequently, we can discern the significance of technology and the extent to which these tools can assist during instructional sessions. In light of these considerations, it can be asserted that.

In the classroom, hyper-connected students now have access to diverse sources of information, constantly updated in real-time with events occurring worldwide. In this context, it is crucial to reconsider the use of ICTs (Information and Communication Technologies) in the classroom as instruments for mediating learning. (SANTOS JUNIOR; MONTEIRO, 2020, p.5)

From an interactionist perspective, mediation doesn't emphasize either the subject or the object, but rather the interaction between them. Therefore, it can be said that learning takes place through the interaction of the subject with the learning object, mediated by technology and the teacher.

The digital age can be understood as an era of contrast between the new and the old, two extremes within the same society sharing the same current period, but with distinctions between the environments where teaching and learning processes originate.

For anyone born in the last 18 years, technologies such as cell phones, computers, and MP3 players are as much a part of their daily lives as automobiles, color television, and refrigerators were integral to the everyday lives of young people in the 1960s through the 1980s. Our youth have not experienced a world without video games, email, and instant messaging. It doesn't take much to assert what various studies confirm: that the habits of today's youth are vastly different from those of their parents and teachers. (TAGNIN, 2008, p. 44)

Consequently, if their habits are different, their motivations and the way they internalize and externalize a foreign language will occur differently. Prensky (2001) proposes the idea of 'digital immigrants' and 'digital natives', both of which are present in the current scenario of replacing the obsolete and complementing

pedagogical practices through technological mechanisms. However, while 'digital immigrants' may have been part of an initial learning process focused on more traditional resources before the 1980s, 'digital natives' enjoy an educational environment immersed in a society of continuous technological progress, where ICTs (Information and Communication Technologies) have taken on a dominant presence.

From a literacy standpoint, it's important to consider that 'digital immigrants' are still in the process of digital literacy, which, in accordance with Dudeney, Hockly, and Pegrum (2016), is "the individual and social skills needed to interpret, share, and create meaning effectively in the realm of digital communication" (p. 17). When it comes to educators as 'digital immigrants', time must be allowed for them to acquire such skills. Therefore, it's crucial to comprehend how the technological movement has impacted the educational landscape.

- Technological Movement

Demarco and Kratochwill (2013, cited in Castells, 1999) argue that digital information and communication technologies (ICTs) are to this new landscape what new sources of energy were to the industrial revolutions. As a result of this significance, a new virtual environment emerged, referred to as cyberspace, directly linked to cyberculture. For Lévy (2010, p.17), cyberspace is defined as

the new means of communication that arises from the worldwide interconnection of computers. The term specifies not only the material infrastructure of digital communication but also the oceanic universe of information that it contains, as well as the humans who navigate and contribute to this universe. (LÉVY, 2010, p.17)

Regarding cyberculture, Gaya (2022, p. 118) highlights that cyberculture is characterized by the digital and the study of its techniques that occur in cyberspace. Furthermore, cyberculture expresses the emergence of a new universal, distinct from cultural forms that came before, where a set of techniques (material and intellectual), practices, attitudes, modes of thought, and values develop alongside the growth of cyberspaces.

Within this realm, ICTs (Information and Communication Technologies) have an extremely significant impact on language learning, according to Moreira and Figueiredo (2012). Learners of English, for instance, have their learning process made more flexible and connected to distinct cultural values, yielding more productive results, as culture reflects language.

Embedded in the realm of ICTs, Computer-Assisted Language Learning (CALL), for instance, was one of the first technological resources used by language teachers to aid the English language teaching-learning process. This area examines the impact of computers on teaching and learning and was initially conceived under the influence of behaviorism in the 1960s.

CALL began with the Programmed Logic for Automatic Teaching Operations (PLATO) project undertaken by the University of Illinois. Its integration into Brazilian schools occurred through the National Educational Technology Program (PROINFO, 1997) by the Ministry of Education (MEC), aimed at promoting the pedagogical use of Information and Communication Technologies (ICTs) in the public elementary and secondary education sector. Through the integration of the internet and computer labs, pedagogical activities and research in the utilization of computers as educational aids and facilitators became more common.

Geddes (2004, p. 01) defines m-learning as "the acquisition of any knowledge and skill through the use of mobile technology, anywhere, anytime", leading, in certain terms, to a modification of the user's behavior, which in other words, signifies that the user is in a process of learning.

According to Sharma and Kitchens (2006), m-learning is described as an educational process that highlights the advantages of mobile devices, ubiquitous communication technologies, and intelligent interfaces. According to the authors, the adoption of m-learning will lead to a focus on the learning process itself rather than the mere emphasis on technology.

Mobile media, as an informal learning tool, according to Santos Costa (2013, p. 63), "has an impact on our understanding of learning, as its educational context involves real-life practices and authentic experiences in everyday life," corroborating

with Vygotsky's (1993) assertion that "the process of learning occurs as a result of our participation in cultural, linguistic, historical contexts and interactions within the family, friend groups, educational institutions, workplaces, sports activities, among others".

Analyzing the definition provided by Pinheiro and Rodrigues (2012, p.122), "the cell phone is a powerful instructional tool, as it encompasses various media, contributing to the development of students' communicative competence." This statement already encompasses the fact that this device fosters autonomy in learning, as it houses various media and reduces the monotony found in the traditional education system.

Considering these considerations, it is necessary to understand how these technological resources were utilized during the pandemic period caused by COVID-19 in Brazil.

- NTDICs and the Pandemic Context

Since around March 2020, Brazil and the entire world have been facing the greatest public health crisis in history due to COVID-19, a crisis that has extended across various social domains, affecting not only the healthcare sector but the entire societal structure, including education. According to Alcici (2014, p. 2), "the school is historically situated and is therefore subject to the same influences and transformations that affect society as a whole." In this context, the necessity of social isolation and prolonged periods of quarantine resulted in the closure of educational institutions. These actions prompted the need to devise new approaches to prevent a complete halt in educational activities.

Amidst these circumstances, the changes that transpired demanded a new mode of teaching to mitigate the complete loss of school-related activities. The Ministry of Education (2020) initially addressed these changes on March 17, 2020, through Decree No. 343, declaring that in-person classes should be replaced by lessons utilizing NTDICs to continue educational activities.

However, on April 28, the Ministry of Education (MEC) along with the National Education Council (CNE) expressed concerns in Opinion CNE/CP No. 5/2020 that the educational process and students' learning could regress during the pandemic-induced isolation if actions were not thoughtfully designed to include all students. Thus, it became imperative to analyze the situation students were in and their potential difficulties accessing these resources, which might not be feasible for some individuals in distinct contexts compared to others who easily access these resources.

For Pereira, Silva, Surdini (2019), this new MEC opinion seems to have left the educational institution responsible for deciding how to resume classes, allowing them to choose whether or not to use NTDICs to aid this process, under the understanding that NTDICs must be accessible and relevant to students' lives to truly be useful.

For educational institutions that opted for online resumption of activities, NTDICs proved to be potential tools, particularly in the context of English language teaching and learning, as all interactions could take place through mechanisms within the so-called cyberspace.

The assistance of digital technologies not only contributes to daily learning but also serves as an indispensable anchor to make the student a critical thinker and a transformative agent of knowledge, much like a digital literate. It becomes a differential factor in carrying out reading and writing practices, fostering innovation and alignment with current standards. (SILVA; FRANÇA; SILVA, 2020, p. 9)

In light of this, it's evident that NTDICs play a fundamental role in education and language teaching, as long as they are introduced with purpose in a space where their usage can be efficient.

In this regard, the utilization of digital learning objects in English language teaching can be considered an effective "trump card" with the goal of mitigating the effects of isolation stemming from the Covid-19 pandemic.

Digital learning objects and english language

Learning Digital Learning Objects (DLOs) have emerged as a novel educational paradigm that leverages distinct tools within scholastic environments to design and facilitate education through technological means. Subjected to various societal changes in recent decades, the educational institution has begun to deploy novel methods in an effort to keep pace with innovations inherent in scholastic domains, aiming to establish a relationship between technology and education, thereby transcending conventional didactic approaches and transitioning towards a new mode of envisioning the teaching-learning process.

DLOs represent digital artifacts that support pedagogical practice both inside and outside the classroom, including games, animations, simulators, and video lectures. These resources can be employed by educators to streamline the learning process, mediating content and competencies, while aiding in the formulation of creative educational activities that captivate students' interests.

Moreover, learners themselves and their families can directly engage with DLOs for studying and learning outside the confines of the educational institution. In accordance with Wiley's definition (2000), a Digital Learning Object (DLO) is any digital resource that can be used or reused to facilitate the learning process. From this perspective, certain inherent characteristics of DLOs preclude non-digital entities from being classified as objects. For instance, the act of editing, adapting, or incorporating a book into other books would prove challenging, whereas this process becomes considerably more manageable when dealing with digital entities.

Despite a lack of unanimity among authors regarding the characteristics of learning objects, there are internationally recognized aspects that are considered inherent properties of any DLO. Every learning object, akin to a teaching activity, must possess a specific purpose and stimulate learner reflection.

Additionally, another salient feature of this tool is that DLOs typically encapsulate a relatively concise segment of content. This granularity allows for the construction of objects that focus on specific facets within broader subjects. Mendes, Sousa, and Caregnato (2004) delineate the principal characteristics of a learning object.

According to these authors, a DLO should exhibit: (a) reusability – the capacity to be utilized repeatedly across diverse learning situations and environments, (b) adaptability – the ability to be adjusted to various teaching and learning contexts, (c) granularity – the presentation of atomic content units to facilitate usability, (d) accessibility – ease of internet-based access for deployment across various locations or the potential to cater to users with special needs, (e) durability – the ability to be consistently employed regardless of technological shifts, and (f) interoperability – the capacity to operate across a range of hardware, operating systems, and web browsers.

Leffa and Irala (2014) establish a connection between the progression from an instructivist perspective, wherein the teacher imparts knowledge to the student, to a constructivist viewpoint, wherein knowledge is collaboratively constructed through dialogue.

In this emerging scenario, there is a substitution of various formerly physical objects with singular tools capable of providing similar resources in a more practical manner. Adhering to Wiley's notion (2000) that any digital resource that can be (re)used to support learning qualifies as a Digital Learning Object (DLO), a standard concept emerges whereby diverse digital platforms can be employed for educational purposes, contingent upon a strategic intent.

Throughout the growth and development of new generations, this novel conception leads us to confront a diversity of new ideologies pertaining to the teaching-learning process. This burgeoning wave consequently illuminates specific domains, including the notable transformations within the realm of English language education over the course of this evolution.

Numerous scholars designate English as "the language of globalization," further likening it to "the Latin of modern times," thereby casting a spotlight on the discipline's significance within the contemporary context.

Leffa and Irala (2014) hold the belief that the comprehension of a language ought not to be restricted solely to the mastery of linguistic codes; instead, it should encompass the engagement of students with the encompassing environment and its contextual elements. From this perspective, the updating of pedagogical approaches becomes conceivable, facilitating beneficial learning outcomes. This is underscored by

the recognition that the amalgamation of technological tools, primarily used for entertainment, with the scholastic environment engenders a positive response and augments the interest and engagement of a substantial proportion of learners.

By highlighting the English language teaching process during the pandemic, the mediation among the relationships of teachers, students, and content is emphasized. In this context, Digital Learning Objects (DLOs) emerge as active components in the provision and organization of content, materials, and study guides. They also play a role in the creation of digital materials aimed at facilitating the enhancement of skills inherent to English language learning.

Consequently, adopting strategies to enhance efficiency within digital platforms becomes imperative, transcending mere manipulation of technological tools. In this light, the relationship between domains, as proposed by Bloom (1956), functions as an aid, propelling the idea of autonomy as fundamental. Autonomy is highlighted, emphasizing interaction and cooperation among learners, making them responsible for their own learning.

Bloom's (1956) taxonomy encompasses three domains during the individual learning process. The cognitive domain emphasizes intellectual outcomes, knowledge acquisition, and the ability to recognize information, patterns, and facts. The affective domain is related to how individuals express their emotions and relate to their surroundings. The psychomotor domain pertains to the ability to manipulate tools, objects, avatars, fostering the development and refinement of skills and behaviors. Viewing learners as constitutive entities in relation to learning prompts teachers to facilitate and nurture student motivation for collaboration, affective engagement, and interaction.

This aims to generate interest in the proposed content and establish productive connections with learners' reality.

Within the framework of interactionism, the teaching of the English language becomes a shared endeavor, centered around communication and sharing as pivotal elements. Thus, as Leffa and Irala (2014, p.26, cited in Mcgroarty, 1998; Reinfried, 2000) assert, "teaching ceases to be an imposition; learning is facilitated through negotiation, emphasizing student autonomy".

Integrating a DLO into an educational environment offers numerous possibilities for its application, as a DLO's characterization is contingent on its designated use. It can be incorporated into various contexts, as long as the mediator, often the teacher, can employ it appropriately.

The same mediator, according to Leffa (2006), must ensure the existence of a catalog of learning objects for language teaching. This cataloging is related to the level of advancement, skill, type, and level of interactivity, type of activity, speech acts, among other specificities.

In conclusion, it is believed that DLOs are important allies in the English language teaching-learning process. Their attributes such as flexibility, adaptability, and reusability, as highlighted by Mendes, Sousa, and Caregnato (2004), provide content personalization, addressing students' needs and fostering an engaging learning experience. Additionally, the accessibility via the internet and the durability and interoperability of DLOs, mentioned by Wiley (2000), make these resources effective tools in the teaching-learning process.

In summary, the characteristics described by Mendes, Sousa, and Caregnato (2004) and Wiley (2000) regarding DLOs allow teachers to approach content in a creative manner, using interactive resources such as games and animations, stimulating cognitive, affective, and psychomotor development. This constructivist approach, highlighted by Leffa and Irala (2014), emphasizes students' active participation in knowledge construction, leading to more meaningful English language learning experiences, kindling students' interests, while also fostering learner autonomy, enabling study outside the classroom.

Furthermore, due to their durability and interoperability, these objects are designed to adapt to different technologies and operating systems, ensuring their continuity despite technological changes. Thus, the flexibility and adaptability of DLOs, coupled with their durability and interoperability, ensure that these digital learning resources can be used in the long term, regardless of technological evolution.

In conclusion, based on the discussion presented in this section, it is believed that the characteristics of DLOs allow for their effective long-term use, reinforcing their relevance as powerful tools in the English language teaching-learning process. With this perspective in mind, this discussion concludes, and the final considerations of this article are initiated.

Final considerations

This study has led to the completion of the initial stage of the Teacher Plus project, which involved conducting a literature review. This endeavor played a pivotal role in providing a clear understanding of the genuine need to establish a repository of digital learning resources to support both teachers and students within the elementary education network of Bragança city⁸.

Throughout this article, various theoretical approaches to learning were explored, presenting the perspectives of Vygotsky, Skinner, and Piaget. Each of these theorists significantly contributed to the comprehension of learning processes and human development. Furthermore, the significance of meaningful learning was emphasized throughout the research, as well as the role of technology in education, aiming to provide a foundation for the type of outcomes achievable through the utilization of Digital Learning Objects (ODAs).

The reflections arising from readings and discussions on learning within a broader context facilitated an understanding of English language learning and how this process can be mediated through digital means, such as ODAs. Moreover, the review of Vygotsky's (1989) interactionist conception and his proposals regarding mediated learning assisted in outlining strategies for constructing the repository and developing the ODAs.

⁸ Bragança is one of the oldest cities in the State of Pará, with almost four centuries of history, currently has 130,122 inhabitants and around 20 public schools distributed between rural and urban areas. (PREFEITURA MUNICIPAL DE BRAGANÇA, 2019)

Therefore, this study is rooted in the viability of using ODAs in the virtual realm, surpassing the execution of mechanized, content-driven, and standardized exercises solely focused on the teacher or used merely for entertainment. In stark contrast, the use of ODAs necessitates planning that takes into consideration the specific characteristics of DLOs, the literacy levels of students and teachers, and how they interact within an environment replete with information, challenges, and possibilities. Discussions like this one are necessary for three reasons: firstly, to foster research at the undergraduate level; secondly, to provide support to the teaching efforts of the basic education network in the municipality; and thirdly, to expand the university's outreach activities.

It is crucial for the community in question to be aware that actions such as this one value differences and provide developmental opportunities for all individuals involved in the teaching-learning process.

References

ALCICI, S. A. **Tecnologia na Escola: abordagem pedagógica e abordagem técnica**. São Paulo: Cengage Learning, 2014

AULER, I. C. P.; SANTOS, G. F.; CERICATTO, S. K. O papel do professor e os desafios no contexto da cibercultura. **Inter Science Place**, v.11, n.4, p.149-169, 2016.

AUSUBEL, D. P. **Educational psychology: a cognitive view**. New York: Holt Rinehart & Winston, 1968.

BLOOM, B. S. **Taxonomy of Educational Objectives: The Classification of Educational Goals**. New York: Longmans, Green, 1956.

BROPHY, J. **Handbook of Classroom Management: Research, Practice & Contemporary Issues**. Mahwah, New Jersey: Lawrence Erlbaum Publishers, 2006.

BURBULES, N.; TORRES, C. A. **Globalização e Educação: Uma introdução**. In: BURBULES, N.; TORRES, C. A. (Org.) **Globalização e Educação: perspectivas críticas**. Porto Alegre: ArtMed, 2004. p.11-26

COLL, C.; MONEREO, C. Educação e aprendizagem no século XXI: novas ferramentas, novos cenários, novas finalidades. In: COLL, C.; MONEREO, C. (Eds.). **Psicologia da Educação Virtual: Aprender e Ensinar com as Tecnologias da Informação e da Comunicação**. Porto Alegre: Artmed, 2010. p.15-46

COSTA, G. S. **Mobile Learning**: explorando potencialidades com o uso do celular no ensino-aprendizagem de língua inglesa como língua estrangeira com alunos da escola pública. 2013. 182 f. Tese (Doutorado em Letras) - Universidade Federal de Pernambuco, Recife. 2013. Disponível em: <http://www.pgletras.com.br/2013/teses/TESE-Giselda-dos-Santos-Costa.PDF> Acesso em: 20 fev. 2023.

DEMARCO, S. R. **A cultura digital e o ensino da língua inglesa**. In: CONGRESSO NACIONAL DE EDUCAÇÃO, 5, 2018, Recife. Anais... Campina Grande: Realize Editora, 2018. Disponível em: <<https://editorarealize.com.br/artigo/visualizar/45635>>. Acesso em: 16 fev. 2022

DEWEY, J. **Como Pensamos como se Relaciona o Pensamento Reflexivo com o Processo Educativo**: uma reexposição. 4 ed. São Paulo: Nacional, 1979a. Atualidades Pedagógicas, v. 2.

DOS SANTOS JUNIOR, V. B.; DA SILVA MONTEIRO, J. C. Educação e covid-19: as tecnologias digitais mediando a aprendizagem em tempos de pandemia. **Revista Encantar**, v.2, p.1-15, 2020. Disponível em: <https://www.revistas.uneb.br/index.php/encantar/article/view/8583> Acesso em: 28 fev. 2022

FREIBERG, H. J. (Ed.). **Beyond behaviorism**: Changing the classroom management paradigm. Boston: Allyn and Bacon, 1999.

GAYA, K. F. **Aplicativo móvel gamificado Jênsino**: uma proposta para aprendizagem da língua parkatêjê. 2022. 197 f. Tese (Doutorado em Letras – Estudos Linguísticos) – Universidade Federal do Pará, Belem, 2022.

GEDDES, S. **Mobile learning in the 21st century**: benefit for learners. *The Knowledge Tree: An e-Journal of Learning Innovation*. 2004.

LEFFA, V. J. Nem tudo o que balança cai: objetos de aprendizagem no ensino de línguas. **Polifonia**, v.12, n.12, p.15-45, 2006.

LEFFA, V. J.; IRALA, V. B. O ensino de outra (s) língua (s) na contemporaneidade: questões conceituais e metodológicas. **Uma espiadinha na sala de aula: ensinando línguas adicionais no Brasil. Pelotas: Educat**, p.21-48, 2014.

LÉVY, P. O ciberespaço ou a virtualização da comunicação. In: LÉVY, Pierre. **Cibercultura**. São Paulo: Ed. 34, 2010, p. 87-110.

MENDES, R. M.; SOUZA, V. I.; CAREGNATO, S. E. **A propriedade intelectual na elaboração de objetos de aprendizagem**. In: ENCONTRO NACIONAL DE CIÊNCIA DA INFORMAÇÃO, 5, 2004, Salvador. Anais... Salvador: UFBA, 2004. Disponível em http://www.cinform.ufba.br/v_anais/artigos/rozimaramendes.html. Acesso em 02 fev. 2023

MENDES, R. M.; SOUZA, V. I.; CAREGNATO, S. E. **A propriedade intelectual na elaboração de objetos de aprendizagem**. In: ENCONTRO NACIONAL DE CIÊNCIA DA INFORMAÇÃO, 5, 2004, Salvador. Anais... Salvador: UFBA, 2004 Disponível em: <https://wiki.sj.ifsc.edu.br/images/7/7d/Propriedadintelec.pdf> Acesso em: 22 set. 2022

MOREIRA, M. A. **Mapas conceituais e aprendizagem significativa**. São Paulo: Centauro Editora, 2010.

MOREIRA, T. A. S.; FIGUEREDO, C. J. A Importância do Componente Intercultural na Prática Docente de Línguas Estrangeiras. **Gláuks**, v.12 n.1, p.147-168, 2012.

PEGNUM, M.; DUDENEY, G.; HOCKLY, N. Digital literacies revisited. **European Journal of Applied Linguistics and TEFL**, v.7, n.2, p.3-24, 2018. Disponível em: <https://www.proquest.com/openview/5e8a97a54ed74c280cbf87de841c7878/1?pq-origsite=gscholar&cbl=4565088> Acesso em: 10 set. 2022

PEREIRA, B. K. M.; DA SILVA, A. J. F.; SURDI, A. C. Educação na era digital: a compreensão dos alunos sobre a importância das TDICs no processo de ensino-aprendizagem. **Revista Temas em Educação**, v.28, n.3, 2019. Disponível em: <https://www.proquest.com/openview/6b168fda44009a5d42d8ad247224449f/1?pq-origsite=gscholar&cbl=4514812> Acesso em: 22 set. 2022

PIAGET, J. **Development and learning**. In: LAVATELLY, C. S.; STENDLER, F. **Reading in child behavior and development**. New York: Hartcourt Brace Janovich, 1982.

PINHEIRO, R. C.; RODRIGUES, M. L. O uso do celular como recurso pedagógico nas aulas de língua portuguesa. **Revista Philologus**, v.18, n.52, p.119- 128, 2012.

PREFEITURA MUNICIPAL DE BRAGANÇA. **Página Inicial**. Acessado em 28 mar. de 2023. Disponível em: <https://braganca.pa.gov.br/>

PRENSKY, M. Digital natives, digital immigrants. **On the Horizon**, v.9, n.5, 2001. Disponível em: <https://www.emerald.com/insight/content/doi/10.1108/10748120110424843/full/html> Acesso em: 09 dez. 2022

ROGERS, C. **Sobre o poder pessoal**. 4 ed. São Paulo: Martins Fontes, 2001a.

ROGERS, C. **Tornar-se pessoa**. 4 ed. São Paulo: Martins Fontes, 2001b.

ROGERS, C.; FREIBERG, J. **Freedom to learn**. 3 Ed. New Jersey: Merrill Publishing, 1994.

RONCARELLI, D. **Ágora**: concepção e organização de uma taxonomia para análise e avaliação de objetos digitais de ensino aprendizagem. Tese (Doutorado em Engenharia e Gestão do Conhecimento) – Centro Tecnológico, Universidade Federal de Santa Catarina, Florianópolis, 2012.

SANTOS, A. O.; GHELLI, K. G. M. **Implicações das teorias behavioristas e cognitivistas na aprendizagem matemática nas séries iniciais do ensino fundamental**. ENCONTRO DE PESQUISA EM EDUCAÇÃO, 8, 2015, Uberaba. Anais... Uberaba: Uniube, 2015. Disponível em: <https://silo.tips/download/implicacoes-das-teorias-behavioristas-e-cognitivistas-na-aprendizagem-matematica> Acesso em: 20 fev. 2023

SHARMA, S. K. et al. Web services model for mobile, distance and distributed learning using service-oriented architecture. **International Journal of Mobile Communications**, v.4, n.2, p.178-192, 2006. Disponível em: <https://www.inderscienceonline.com/doi/abs/10.1504/IJMC.2006.008608> Acesso em: 20 fev. 2023

SILVA, S. M.; FRANÇA, L. P. S.; SILVA, M. B. Importância da tecnologia: No ensino da Língua Estrangeira e Inglesa. **Revista Científica Multidisciplinar Núcleo do Conhecimento**, v.5, n.4, p.174-184, 2020. Disponível em: <https://www.nucleodoconhecimento.com.br/educacao/importancia-da-tecnologia>

SKINNER, B. F. **About Behaviorism**. New York: Vintage Books, 1976.

TAGNIN, F. **Computação 1 a 1**: o desafio de guiar os nativos digitais. Blog de Educação digital da Intel. Disponível em: http://blogs.intel.com/educacaodigital/2008/07/computacao_1_a_1_o_desafio_de_guiar_os_nativos_digitais.php> Publicado em, v. 18, 2008.

VYGOTSKY, L. S. Concrete human psychology. **Soviet psychology**, v.27, n.2, p.53-77, 1989.

WILEY, D. A. et al. Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy. **The instructional use of learning objects**, v.2830, n.435, p.1-35, 2000. Disponível em: <http://members.aect.org/publications/InstructionalUseofLearningObjects.pdf#page=7>. Acesso em: 20 fev. 2023