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RESEARCH ARTICLE

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## ACCESSIBILITY AND ASSISTIVE TECHNOLOGIES

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### ABSTRACT

This article aims to explore the meanings of technology in coexistence with a culture of accessibility, summoning or thinking about theoretical convergences and their relationships. Methodologically, a basic strategic research, qualitative approach, before a deductive method of investigation, with the procedure that indicates a bibliographical and documentary research. This study outlines aspects of inclusion in the digital and social society, in the face of political discussions that propose dignity and equity to all, in the definition of specificities, in particular, in view of the conditions of use.

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## INTRODUCTION

The meanings of technology is the initial objective of this writing, which presents conceptual meanings and which transitions epistemologically through all areas of knowledge. Opposing the idea that technology is a unique condition for educational processes, an idea emerges that, in itself, represents a system of relationships that involve other insignia necessary in educational processes, in their historical, cultural and cultural contexts. distinct social. Firstly, it is intended to go through the senses of technology in convergence with the culture of accessibility, summoning thinking in its conceptions, but mainly, in its relationships. Technology is a process, and it can also become a product. But looking at the intrinsic aspects of the educational act, it can be a pedagogical resource, a cultural artefact, an instrument and sign, as well as a technical device, to think according to the approached theory. A posteriori, to enter into a perspective of technology in society in relation to accessibility, demanding political discussions that propose equity and dignity to all, in the conception that specificities, in particular, can segregate people, in the face of conditions considered to be disabled.

The investigative path will bring a basic strategic research, with a qualitative approach, before a deductive method of investigation. As for the procedure, the research will be bibliographic and documentary. Assistive technologies encompass accessibility, expanding the communication conditions of people with disabilities to achieve full citizenship, in the face of daily activities. Screen readers, audio books, braille printers, sensors, audio description cameras, applications in sign language, are some of the examples that promote (egalitarian conditions of access) communication activities for the inclusion of people with disabilities. However, there are numerous barriers, whose impediments are not limited to the urban, informational context, but, mainly, behavioral, cultural and political. In this respect, it is necessary to recognize that with the advances in technique and technology, the need for studies and specificities that had been previously thought emerged.

### Technology and Society: Social and digital inclusion

When thinking about the relationship between technology and society, a historical reading from remote times to the present is

relevant, presenting the evolution of technology as a technical device, artifact and its perspective in this scientific and social field with the culture of accessibility with regard to the field of inclusion digital and social. The relationship does not emerge from the innocuous, but from observations of reality and necessary experiments. Research and social moments aimed at inclusion in the various formats constitute an exercise in citizenship. Lemos (2011) points to the emergence of new cultural formats and the need to understand digital inclusion projects. The perspective of inclusion and its forms of reading referred to in this writing is that of the literacy of the world in digital cities and information centers. "Knowing how to deal with new devices and telematic networks are today necessary and indispensable conditions for social inclusion in the information society" (LEMOS, 2011, p.19). In this sense, Araújo (2007) maps the levels of inclusion, namely: level 1 as representative of knowing for knowing, without continuous and prolonged use of the technological machine; level 2, constituted at the moment of digital literacy, in which the individual continuously uses technologies, knowing their resources and; level 3, representing the development of cognitive skills of selection and perception, through the continuous use of technologies, through activities that involve digital accessibility, inclusion and knowledge production.

In cultural practices, there is a movement of sciences, technology and innovation in contemporary times, regarding the development of technical devices that meet the condition of access, aiming to expand the functional skills of people with disabilities or reduced mobility (ROCHA, 2018). Since accessibility is the opportunity for citizenship, an attempt is made to correct a historical mistake that prevented these populations from reaching the goods and services common to all individuals. Assistive technologies include tactile floors, adaptive voice interface systems and alternative / augmentative communication, as well as motorized wheelchairs, among other devices that find in the digital technologies the possibility of independence and inclusion for people with disabilities. In their sense, assistive technologies make up the Digital Humanities, as they contemplate the complexity of human relationships in the natural world in interface with the informational field, regarding "the application of technology in the areas of knowledge of the humanities, including, but not limited to, issues accessibility" (ROCHA, 2018, p. 19). What is touching is the relationship between technology and society with digital and social inclusion in terms of access to technological devices, in particular within the sciences - human, exact and biological -, immaterialized at the university and materialized by artifacts.

The inclusion of social and digital accessibility also includes the space that technology occupies in the university, in order to move towards a university city enlivened by society. It is not a matter of imposing a way of using technologies, but of understanding that education is the phenomenon that encompasses the social and the formation of subjects, however, it can represent a form of oppression from the moment that makes the university dialogues unfeasible with the society. To think about digital inclusion is to subscribe to social inclusion. There is a concomitance in the idea that while it is digitally included it is inserted socially. The issue of physical mobility is part of this rhetoric and by making it feasible, the possibilities of informational mobility are expanded. The relationship of technology in social practices is the starting point for thinking about technologies. This

relationship is in society, as objectification and subjectification of all areas of knowledge. While sociability, there is in his thinking about the uses of digital media, the internalizations and the appropriations made by the subjects, whether in formal, non-formal and informal education, implying the identity of including science in their technique. Regarding non-formal educational spaces, Rodrigues and Rocha (2014) point out that:

Such spaces present new socio-historical configurations and can become a determining experience in the formation of citizens, promoting education for human, political, cultural and social rights, represented in freedom, equality and democracy (p. 131).

In this perspective, associating with the culture of accessibility, there is an understanding of access to citizenship, allowing to move beyond technical uses, but inscribed in the sphere of educational practices that navigate the ocean of inclusive learning. It is important to highlight not only non-formal environments, but also several informal ones, such as mapping digital cities, digital banks, applications for access to urban mobility, among others related to health, leisure and sports. The uses and appropriations of these accessibility environments promote a cognitive activity of cultural and historical significance in different contexts to promote citizenship. The sciences materialize in instruments. In the past, instruments are immaterialized in cultural signs. Brazil grows through technology and lacks insertions in the field of accessibility. In this path, critical thinking is relevant to the understanding of the subject in relation to technification. Education and technology are not dissociated from critical thinking and do not constitute segmented actions, but in interconnected areas for the promotion of scientific and technological advances. This is not possible without humanized education, in which it is not possible to use a technological device without seeking its social contribution, its articulation with society and the understanding of the connection with that thought. The importance of understanding technology in educational processes allows organizing the pedagogical process in its planning of formal, non-formal and informal education moments, as well as research, from a split with common sense, enabling inclusion, science and the critical thinking of the subjects involved, in an exercise of feeling, reflecting and participating in the new formats of society.

### **Policy and Accessibility**

Deterritorialization and the notion of time and space produce new meanings for the relationship between technology and education in the context of the world of work. Education from the point of view of public policies, exposed to the positions of distance education and a discourse of innovation far from advances, is interwoven with values imposing on man submissive to the culture of capital. The mismatches of what is innovation are in the issue of the formation of an ontological man in his capacity for creation and critical thinking that is reduced to the man with a mechanized task and devoid of the uses of technologies. Innovation is not denied, but placing it in the context of training and work is a necessary condition for the advancement of science and technology. Therefore, distance education is one of the moments in which technology and education are aligned to aspects of inclusion and democratization of access to knowledge. Its underutilization

and judgments issued by the academic community result in the centrality of technology in convergence with technological devices. The idea of developing hypermedia environments for inclusive learning includes using these announced judgments and understanding the possibilities of using technical devices such as podcast, videocast, social networks, Libras interpreter applications, learning objects, open learning resources, map generators mental, educational and social applicability software, digital libraries, access software for visiting museums, among many others. However, when thinking about society, the necessary reading of society is incurred. Sociologist Manuel Castells (1999) assists in the understanding that technology does not determine society, but the society that can determine technology. Technology is seen as starting from uses in / for society, but not as the predominant technique of society. Technology in conjunction with inclusion allows us to sustain this thinking about technology not determining society.

What emerges are questions to be thought about from the formation of the critical and scientific spirit as the idea of artificial intelligence (AI); the use of robotics in schools; uses of technology, chemistry, biology laboratories, among others. The issue with these resources is that they do not represent the centrality in the accessibility process while using instruments, but as an ontological inclusion in social actions. This understanding is necessary in order not to strengthen determinism conditioned to the use of technologies without values or to use it in a utilitarian way in different areas of knowledge. Ontology finds meaning in the face of the inclusion of people with disabilities, which initially translates into political instruments such as the 1994 Salamanca Declaration, which provides guidance on principles, policies and practices in the area of special educational needs, ensuring the right to education for each individual and, expands “the concept of special education, contemplating other needs, in addition to those characterized as disability” (LIMA, 2014, p. 18).

Conceptually, Article 1 of Decree 6949/2015 defines people with disabilities as being,

(...) those who have long-term physical, mental, intellectual or sensory impairments, which, in interaction with various barriers, can obstruct their full and effective participation in society under equal conditions with other people (BRASIL, 2015).

In this sense, assistive technologies developed by products, equipment, resources, methodologies and strategies are developed in order to promote autonomy, independence and quality of life for people with disabilities (BRASIL, 2015). Thus, it is necessary to resort to studies of forms of teaching and learning, considering the debate and the clashes of accessibility conditions. "An inclusion that provides not only the use of these technologies, but the critical awareness of the process of processing information and knowledge in the network by the popular strata" (MARCON, 2015, p. 39). What is incurred is an absence of reflection, the centralization of technology and its developed products and the dis (appropriation) of processes both when we use technologies both in their articulation with the digital culture of individual and social accessibility, in a denial, sometimes, unprecedented of the relevance of technology at all times, as well as the implications generated in society.

**Some Considerations:** Thinking about the uses of technology simultaneously in society allows developments from some examples of what is in technology and education, in the uses of the media in the teaching and learning processes loaded with values in order to form critical thinking beyond the dominance of the subject, allowing access to technological artifacts in order to think as a whole in their training and work process. The meanings and dialogues between technologies, society, education and inclusion make it possible to reflect research as an educational principle from an integral formation, as a possibility of offering to subjects, taking into account the articulation with the ontology of being. In addition to instrumental aspects of traveling in the deterritorialized space, being in front of the different digital libraries as well as having access to research, teaching materials, digital books, ebooks, courses, videos, among many other options, being aware of these possibilities as pedagogical resources and not centers of the educational process. The relationship between technology and society is constituted in educational activities and in the considerations about what to teach, who to teach, how to teach and in what context to teach. At this moment, it is possible to affirm meanings and convergences. The technology finds in the assistive technology devices the possibility of communication, mobility and functionality for the dignified training of these individuals, previously excluded from the process. Dialectically, it is not always possible to access and develop projects and resources in this field of human activity, due to the high cost both for individuals who need these devices and for the adaptation and production of equipment, creating a gap in the senses and dialogues, which can only be overcome based on the awareness of the public good for the construction of equality and social and cultural inclusion of people with disabilities. There is much to walk and talk about, in the visceral sense of these words, but the steps need to be taken, assertive, accessible and continued.

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