

EDITORIAL

Education, Teaching and Technology, and the Amazonian Identities

Educação, Ensino, Tecnologia e as Identidades Amazônicas

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Post-graduation in Brazil and the North Region

In Brazil, the Post-Graduation is developed in a structured manner and accompanied by the Coordination for the Improvement of Higher Education Personnel - CAPES, a governmental agency of the Ministry of Education that supports the higher education through the different boards, coordination and area committees, in order to ensure the isonomy of the offer, application of regulations, evaluation and monitoring of *Stricto sensu* courses and graduate programs (PPG). Despite the efforts of researchers of higher education institutions throughout the country to meet the demands for training at this level, the distribution of courses and programs reflects the demographic, socioeconomic and cultural inequalities among the various Brazilian regions. Of the total number of programs and courses recognized throughout the country, the Northern region represents only 6.1% of the programs, with 5.4% of all master's and/or doctorate courses offered, considering all areas of knowledge (BRAZIL, 2020).

According to available data at the Sucupira Platform (BRAZIL, 2020), 190 programs (284 master and/or doctorate courses) in Education, and 187 programs (230 master and/or doctorate courses) in Teaching are offered throughout Brazil. Of these, only 16 programs in Education and 20 in Teaching are offered in the entire Northern region.

Faced with the reduced vacancy supply framework, the few existing programs in the North region, concentrated in Belém and Manaus, exercise a prominent social function, since they meet a demand that comes from the other 5 states of the region. We highlight here the fundamental role of research foundations (FAP) that, together with CAPES and the National Council for Scientific and Technological Development - CNPq, support the maintenance of these PPGs with financial assistance and master's and doctoral scholarships. In addition, FAP scientific initiation grants serve to stimulate research at the undergraduate level and represent an important contribution in the prospection and collection of results for many dissertations and theses. For most undergraduate and graduate students, scholarships are the only guarantee of



livelihood during their studies, especially for those who need to move from their communities to live in the state capitals, in which most Higher Education Institutions are concentrated.

Brazilian differential contexts

Despite the low demographic density of the Northern region and the typical concentration of population in the large urban centers, a scenario that is repeated in other Brazilian states (BRITO; PINHO, 2014), as well as throughout Latin America (SILVA et al. 2014), other issues must be raised that require efforts in an attempt to understand the different and conflicting identities of the Northern, Amazonian, urban and riverine people, indigenous and (i)migrant, born in the heart of nature or in the concrete sea of the capitals. These identity issues can be at the heart of our educational doing, since educating/teaching is an involving process, intimately dependent on the educator's own understanding of himself, of his cultural, professional, social, and identity as a human being (IZA et al. 2014).

How to research, produce knowledge from the multiple regional knowledges and teach them in the face of the enormous challenges of the Amazon? Ethnic issues involving indigenous peoples, quilombola communities, riverine populations add to the demands of subjects who struggle for policies of inclusion and valuing difference (education for the disabled, youth, and adults, subalternized workers from the urban peripheries).

To educate without adapting the methodologies and teaching materials for these different social subjects, seeking to make them feel like participants in the teaching learning process instead of passive listeners, is to waste efforts without a perspective of moving towards the transformative and emancipatory education of these populations.

Just to focus on a differential among so many others, the Amazon Biome offers a fascinating ecological biological diversity rich in information yet to be unveiled. From the traditional peoples in their way of relating to nature to the populations of the big cities, the dynamics of life shape the scenarios while, at the same time, transform them. Is it possible to adopt the same didactic materials for a child growing up in the condominiums of the city of Manaus and a child growing up on the banks of the Amazon rivers and wanting to obtain similar levels of learning or content assimilation? Primary school students in Manaus, an urban space, can identify more with the African savanna of television documentaries than with the Amazon forest (MORAES, 2010), as a result of the inadequacy of teaching materials in schools or the relevant role of the media in transmitting information that ultimately influences the formation of identity.

Producing knowledge from the historical and social understanding of our multiple and diverse Amazonian identities is intricately linked to the challenges of inclusion. We cannot freely launch ourselves into the tsunami of globalization without simultaneously seeking to understand our roots, history and the many stories of the traditions that have brought us to this point, contributing to our being and everyday life, shaping our perception of the world, even when we are not aware of it. In this context, the PPGs in Education and Teaching in the Northern region seek to answer the many questions that arise in this scenario of immense difficulties, with the determination to give new meaning to the processes and means of teaching, as well as to being and doing Amazonian.



Challenges of Education and Technological Teaching

The insertion of digital technologies in educational practices has been the subject of many studies. Technology teaching and the teaching technologies are pervasive and often confused with digital technologies, to the point that many no longer conceive of teaching without the use of them. However, it is necessary not to lose the perception that the acquisition of a digital apparatus or tool in itself does not guarantee the diffusion of knowledge that fit the different realities, nor the improvement of the population's quality of life (ECHALAR; PEIXOTO, 2017).

In this sense, the relationship between education and technology must be based on epistemological foundations that allow a critical view of this process, or as Álvaro Pinto guides us, technology must be an epistemology of technique (PINTO, 2005). In 2019, the Ministry of Education launched the MEC Digital Transformation Plan (BRASIL, 2019):

The intention is to provide a better service to the citizen by reducing bureaucracy, simplifying access, reducing waiting time and costs for obtaining public services. The measure translates into more efficiency, more speed, in addition to lowering infrastructure costs and optimizing the workforce. All these initiatives reflect in an initial spending reduction of R\$ 32.5 million.

Besides facilitating access to services, reducing bureaucracy, one of the targets was to expand attendance in distance education actions. However, infrastructure issues exclude about one million Brazilians living in the Legal Amazon from the electricity supply (IEMA, 2019), an essential item to be able to connect to the Internet, or simply connect a television set to watch TV Escola. Access to the school, as a physical space, in the communities and even in the headquarters of the municipalities, can represent an alternative for remote access if the school has electric power and internet access. But in the most distant places, reaching the school is a daily challenge, often made impossible by the typical torrential rains of the region.

In large cities, access to digital technologies is scarce in the peripheries, as much of the coverage of the world's computer network is through mobile phone antennas, and smartphones, although quite suitable for access to digital platforms, are high market value goods. The high cost of Internet access through mobile phone packages must be considered when access to basic food and housing items is guaranteed, since all states in the Northern region are among those with the highest percentage of people living on the poverty line or underneath (IBGE, 2019).

This same precariousness in serving the energy matrix makes technological education difficult, with a view to professional education. How to expand the offer of professional training centers for municipalities without electricity? How to use didactic materials produced for the Amazonian reality using digital media if it is not possible to use a multimedia projector, computers, printers? In the digital world, the time has been accelerated by these technological tools, making it possible to solve many different things in a short time...when you have electricity and, even better, when you have access to the internet.

And in Amazonian terms, what other teaching technologies can be thought of? And what technologies are already applied by the Amazon traditional peoples and need to be learned by the so-called "civilized"? What is our contribution to the dissemination of knowledge of these peoples through the PPGs developed in the Northern region of Brazil?



Future scenarios in the face of the COVID-19 pandemic

In 2020, a new challenge presented itself to all humanity: to survive the COVID-19 pandemic. In this context, much has been said, and, in some cases, the virtual school has been practiced. The Amazon is being especially punished by the disease, especially when it is considered that underreporting of cases is already a chronic problem for some endemic diseases such as leprosy (FREITAS; DUARTE; GARCIA, 2017) and malaria (MENDES et al. 2020), for example. What about the number of infected and fatal victims in the face of unavailability of tests so that cases of COVID-19 can be properly reported?

In addition to all the human and economic losses that expose and deepen the abyss between social classes in Brazil, the entire educational system is suffering the impacts of the pandemic, from Early Childhood Education to Post-Graduation. Private schools try to remotely continue school activities, counting on the support of parents or guardians. The public system at the federal, state, and municipal levels has partially suspended classes. The Amazon faces another great obstacle to be overcome, considering the issues of basic infrastructure for the use of the Internet, mentioned above.

One of the premises of remote teaching, the intense preparation of classes, cannot be properly addressed in the current emergency scenario. Teachers, parents, and students are having to learn how to use teaching tools without first understanding the social processes that justify them in a transformative education context. Moreover, teachers and other education workers are not exempt from the impacts of the pandemic on their physical and mental health, compromising the adequate response to these new demands.

In the case of postgraduate studies, mentoring, project qualifying, and public presentations for master's and doctoral degrees continue to be remotely carried out due to the use of digital platforms. We are writing an unprecedented chapter in the history of education. Shortly, we will probably be computing post-pandemic socioeconomic data and comparing its impact on the lives of those who have access to digital media with those who do not. From a positive perspective, it may be possible to understand the socially referenced role of the school, its importance for the formation of identity as an individual and as a citizen before the collectivity and the solidarity actions that arise from it. The importance of respect and solidarity to each other will undoubtedly be one of the greatest lessons we can learn from this period of social isolation imposed by public health authorities.

This special edition of EDUCITEC aims to focus the research carried out in these contrasting scenarios and by the different post-graduate actors in the Northern region. Most of the work focused on Education and Teaching produced in the most diverse realities, the result of collective efforts to train educators, develop teaching strategies, and involve innovative technologies, are presented here with the aim of contributing to development through the training of people.

The contributions of seventeen (17) institutions brought in in the following work deal with topics such as teacher training using project-based learning methodology (PBL), use of information and communication technologies (ICT) in mathematics education, sexuality issues in the context of scientific literacy in basic education, teaching perceptions of professional and technological education (EFA), the initial training of mathematics teachers, and teaching technical English in professional training.



In the context of didactic processes and resources, the authors describe their processes of research, collection of data and results analysis on the use of a game for literacy in the 2nd grade of elementary school, elaboration and application of a guide with scripts for teaching and research on soils for Geography in High School, production of a school newspaper in elementary school for science teaching, use of active methodologies in the teaching of biology, application of debate technique about socio-environmental issues in the teaching of chemistry, and the study of the manufacturing process of ceramics adapted to regional climatic conditions.

As educational products and methodologies for their elaboration, two articles resulting from master's research developed in PPGET/IFAM were included here. One of them describes the paths to product development Activity Plan for Telecenters, conceived from the use of Scratch to help develop digital skills for telecenter coordinators. The other was dedicated to discussing the implications of conceiving a product dedicated to inclusive education, from the description of the methodological paths of a practical approach.

We hope you have good reading and that the reflections, discussions, solutions brought here can be added to so many other ideas, contributions, and achievements of teachers and educational researchers, in their various areas of expertise. We are sure that from each proposal described here, many other good ideas and propositions will emerge in their creative minds, because, without a doubt, the best educators are those who discover and help their students to discover new paths.

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