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Review

Educational and digital inclusion for subjects with autism spectrum disorders in 1:1 technological configuration

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ABSTRACT

Focused on inclusive public policies, the relationship between students with Autism Spectrum Disorders and mobile devices was examined for discussing the limits and possibilities of the 1:1 technological configuration for supporting educational and digital inclusion programs in the Brazilian public schools. This was a qualitative research, with exploratory and explanatory approaches. Data collection was carried out through direct observation and document analysis, interviews and focus groups. From the data collected, we could observe the flaws and the potential of the interaction of three research subjects, all attending the first years of Elementary School, with mobile devices. The laptop is not user-friendly and not easy to understand, due to the complexity of the operational system, with its multiple choices and configurations. The interaction with the tablet showed a more friendly and intuitive use, since it is used more naturally, using fingers to touch the screen. The tablet can be used anywhere and in any position, which is good for students who are hyperactive and can quality strategies for pedagogical mediations.

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1. Introduction

Throughout history, obstacles have been set to people with disabilities, raising difficulties or even making it impossible for them to have access to social rights like health and education. Digital technologies can work as empowering resources, increasing the possibility for social integration.

Empowerment, a concept which is present in managerial agendas, was brought to the educational scenario by Paulo Freire. He also put forward many other expressions, such as “Banking education” and “Culture of Silence”, which are always used to confirm the capacity for human transformation. Empowerment is the action through which people, communities or organizations

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acquire resources that give them voice, visibility, influence, and the capacity to act and make decisions.

The importance of this concept when analyses are performed through the perspective of human diversity was ratified by Irina Bokova, UNESCOS's Director-general, when she said that to empower people with disabilities is to empower society as a whole (UNESCO's Director-general Report, 2014).

Access to tools that enable empowering practices does not occur automatically, particularly for people who have physical, sensory or cognitive disadvantages, or who find themselves in a situation of social or economic vulnerability. When building and managing systems that are external to individuals and organizations, governments must forge strategies so that empowering resources are given to people with disabilities as well.

Schools in Brazil claim to be institutions that welcome differences and distance themselves from educational actions which are limited by rigid demarcations of times and spaces for learning. Through inclusive public policies, human diversity and mobile devices (laptops and tablets) have begun to show the possibilities and the challenges related to the presence of students with disabilities in regular schools. These technologies also allowed these students to experience connectivity, portability, flexibility and a feeling of belonging.

When examining the educational process through the concept of "difference", we also find the need of problematizing the educational resources that are made available to schools. Studies done in the field of Informatics in Special Education have called attention to the capacity digital technologies have, when made available, to boost new practices of empowerment for teachers and students, with or without disabilities (Santarosa, Conforto & Vieira, 2014).

With the goal of outlining the practices for educational and socio-digital inclusion started by the use of mobile devices (laptops and tablets), researchers from NIEE/UFRGS, inspired by UNESCO's Director-General Report (2014, p. 19), analyzed the data collected by the imbrication and complementarity of the three elements presented in Fig. 1. The starting elements for writing the research plan were public policies which claimed to be inclusive and governmental actions which put themselves as fundamental means for the creation of social-cultural and economic initiatives which work under the logic of equity. After establishing this prerogative, it makes sense to clarify the difference between the expressions equality and equity.

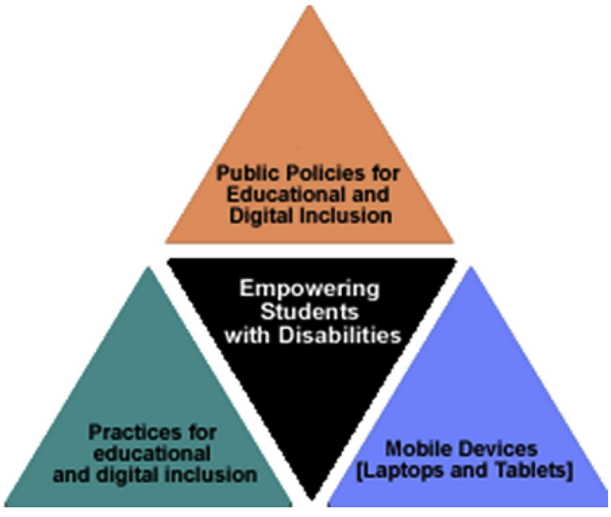

Fig. 1. Organogram of the investigative plan. Source: Adapted by the authors: UNESCO's Director-General Report (2014).

Equality, represented by the "equal" sign, hints at situations which are identical, uniform and equivalent to all people. The word equity refers to the capacity of examining and judging with rightness, justice and equality, regardless of the action or social context, which are both products and processes of human actions. Equity impartially analyzes each case, so as not to have inequalities and social injustice.

Public policies that build educational processes without basing them on the concept of equity will create schools which are impassive to differences, treating those who are different with equality. Like Bourdieu (1999) says, "the formal equality that guides pedagogical practices serves as a mask and a justification for their indifference towards real inequalities […]."

The Brazilian constitutional principle that guaranteed universality of access to school, including to people with disabilities, must not be weakened by the search for homogeneity that has traditionally supported educational practices that treat the unequal equally. Inclusive public policies, the focus of this article, are relevant because the enable us to analyze governmental actions as the promoters of strategies which boost legal, regulatory and inclusive contexts (Chart 1) towards the recognition and valorization of human diversity.

Discussing the educational policies of school and digital inclusion is the scope for the construction of this article, which chooses as interest focus the analysis of the movements triggered by moving the computer resources out of the Digital Lab. The 1:1 computer configuration breaks the supremacy of the Digital Lab, working towards a pulverization of the technology in the school, increasing the time and frequency of the access to digital languages of the students with or without diverse needs.

The Brazilian school affirms itself as an institution that houses the difference and ruptures with educative actions restricted by the rigid demarcation of time and space for the learning processes. The presence of human diversity and the mobility provided by educational laptops and tablets insert the concepts of diversity, connectivity, portability, flexibility, belonging and customization in the Brazilian school environment supported by inclusive public policies.

International researches performed by Pellerin (2012), Dionne (2013) and Terrer-Perez (2013) point to the popularization of mobile technologies as na orientation device for teacher who interact with students with diverse needs. Investigations performed by Hayhoe (2012) have explore the potential of mobile devices to support students with visual impairment in literacy processes, while the researches performed by Sultana and Hayhoe (2013) show an improvement in interpersonal, communication and organization skills in children with Autism Spectrum Disorders when interacting with tablets.

Studies conducted by Hutchison's team (2012) have explored the benefits of digital read to enhance the capability of text comprehension for students with diverse needs. The audio support, the possibility of reading word by word, the association with visual animation have allowed alternative forms of engagement and motivation for reading.

However, the positive aspects of the interaction of students with diverse needs with mobile devices will only be concrete when the technological interfaces observe the aspects pointed by Fernandez-Lopez and other researchers (2013): (1) to project an interface which is easy and intuitive; (2) to make the customization of the interface and educational content possible (3) to increase the possibilities of grabbing the attention of the student with diverse needs; (4) to perform pro-active interactions in order to promote communication.

Being constructed by the concept of difference, the educational process also leads us to the need of discussing the educational