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Inequalities and democracy in online education during the Covid-19 pandemic: A comparison between Brazil and Sweden and their representativeness in current global issues

Desigualdades e democracia na educação *on-line* durante a pandemia Covid-19: Uma comparação entre Brasil e Suécia e suas representatividades em questões globais atuais

Inegalites et democratie dans l'education en ligne pendant la pandemie Covid-19: Une comparaison entre le Brésil et la Suède et leur représentativité dans les enjeux mondiaux actuels

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Abstract: This article presents a brief study on inequalities and democracy in online education during the Covid-19 pandemic, based on a comparison between Brazil and Sweden. The paper addresses the organization of the educational systems; educational measures during the Covid-19 pandemic concerning the frame factor resources such as digital technologies; the effects of these measures on access and use of digital technologies, regarding the digital divide; a problematization of online education with Big Tech digital platforms in the light of an association between liberation pedagogy and socio-technical cartography. As methodology, legislation, speeches, and statistical data from different institutions related to primary and secondary education in Brazil and Sweden were consulted and processed through content analysis. These materials focus on the interim March-June of 2020, a period characterized by hasty adoption of measures that defined the technical and political bases of online education present until today. The authors expect that this brief investigation presents results of interest for studies on globalized countries, which shares similarities and differences on socio-educational issues and technologies for online education. Thus, this paper is a contribution to

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comparative studies about singularities and universalities worldwide, specially on inequalities and democracy in online education during the Covid-19 pandemic.

Keywords: education, inequalities, democracy, Covid-19

Resumo: Este artigo apresenta um breve estudo sobre desigualdades e democracia na educação *online* durante a pandemia covid-19, a partir de uma comparação entre Brasil e Suécia. O artigo aborda: a organização dos sistemas educacionais desses países; medidas de reorganização da educação básica, com ênfase em tecnologias digitais; efeitos dessas medidas no acesso e uso das tecnologias digitais, com ênfase na desigualdade social; problematização da educação *on-line* com plataformas digitais *Big Tech*, à luz de uma associação entre pedagogia libertadora e cartografia sociotécnica. Como metodologia, foram consultadas e analisadas legislações, discursos e dados estatísticos de diferentes instituições relacionadas à educação básica no Brasil e na Suécia. Esses materiais enfocam o ínterim entre março a junho de 2020, período caracterizado pela rápida adoção de medidas públicas que definiram as bases técnicas e políticas da educação *on-line* nesse período e que se mantém atualmente. Os autores esperam que esta breve investigação apresente resultados de interesse para estudos sobre Brasil, Suécia e outros países globalizados, que compartilham semelhanças e diferenças tanto em questões socioeducativas quanto em tecnologias para educação *on-line*. Trata-se de uma breve contribuição para estudos comparativos sobre singularidades e universalidades, em todo o mundo, especialmente sobre desigualdades e democracia na educação *on-line* durante a pandemia covid-19.

Palavras-chave: educação, desigualdades, democracia, Covid-19

Résumé: Cet article présente une brève étude sur les inégalités et la démocratie dans l'éducation en ligne pendant la pandémie de Covid-19, basée sur une comparaison entre le Brésil et la Suède. L'article traite: l'organisation de ces systèmes éducatifs; des mesures de réorganisation de l'éducation de base, en particulier des technologies numériques; effets de ces mesures sur l'accès et l'utilisation des technologies numériques, en particulier sur les inégalités sociales; problématisation de l'éducation en ligne avec les plateformes numériques *Big Tech*, à la lumière d'une association entre pédagogie libératrice et cartographie sociotechnique. En ce qui concerne la méthodologie, la législation, les discours et les données statistiques de différentes institutions liées à l'éducation de base au Brésil et en Suède ont été consultés et analysés. Ces documents se concentrent sur l'intérim entre mars et juin 2020, une période caractérisée par l'adoption rapide de mesures qui ont défini les bases techniques et politiques de l'éducation en ligne au cours de cette période et qui est actuellement maintenue. Les auteurs espèrent que cette brève enquête présentera des résultats intéressants pour des études sur le Brésil, la Suède et d'autres pays mondialisés, qui partagent des similitudes et des différences à la fois dans les questions socio-éducatives et dans les technologies de l'éducation en ligne. Ainsi, cet article est une brève contribution à des études comparatives sur les singularités et les universalités dans le monde,

en particulier sur les inégalités et la démocratie dans l'éducation en ligne pendant la pandémie de Covid-19.

Mots-clés: éducation, inégalités, démocratie, Covid-19

Introduction

In 2020, the year of the Covid-19 pandemic, countries from all over the world adopted social isolation policies. Measures were taken on an urgent basis and under recommendations from local health authorities and World Health Organization (WHO) due to the high speed of viral transmission, sudden illness, and hospital beds' imminent overcrowding. For instance, school closures were one of the first isolation measures adopted regarding secondary education – even by countries that partially enacted or did not enact lockdowns, such as Brazil and Sweden. As a solution to school closures, online education (distance and remote) through digital platforms had become public policy in most countries. In this scenario, issues of *inequalities* and *democracy* became necessary for problematization.

Regarding *inequalities* related to digital divides (Krumsvik et al., 2018), students from lower classes experienced digital inequality in the lack of access to digital technologies or home environments for online studies and were hampered to attend the institutionalized education. Besides, another factor of inequality was evoked during this time, in the lack of attention to digital literacy (Coiro et al., 2014; Krumsvik et al., 2018) that the widespread implementation of online education suddenly entailed, which ignored the pedagogical aspects of "use". Regarding *democracy* issues, online education was conducted mainly through governments and schools urgently increasing the use of a small number of digital platforms companies, the Big Techs, which in the last decade has been receiving complaints and went under legal processes regarding the surveillance of students and workers and illegal manipulation of personal data (Parra et al., 2018; Statt, 2020).

Brazil and Sweden, two countries with significant differences in histories, cultures, governments and inequality rates, but highly globalized, were interesting for problematizing and representing global issues in education during the Covid-19. As scientific studies on comparative education have shown, the contrast between countries offers important scientific and social contributions (Brandão, 2019). This article presents political and techno-pedagogical problematizations to understand the current challenges of organizing digital education, scaled up during the crisis period caused by the Covid-19 pandemic. In particular, by comparing Brazil and Sweden, learning examples related to issues that may arise in education and digitization can provide a den for developing necessary understandings and proactivity, and an awareness of associated

problems in other areas. Besides, a scientific and pedagogical exchange between different countries is vital for developing common issues. Brazil and Sweden are similar as both countries are firmly integrated into contemporary globalization. In education, they have signed cross-border education projects, for example, UNESCO (United Nations Educational, Scientific and Cultural Organization), which also influences national education programs. These datums raise challenges for researchers and teachers from different regions (Brandão, 2019; Carvalho, 2014), who can benefit from understanding how questions permeate countries to varying degrees and with various consequences, which can counteract the limited critical perception of national problems by acknowledging the self and compare it to the different (Franco, 1992) through the knowledge of the universal and the specific (Lima & Afonso, 2002). The variations between Brazil's and Sweden's education system may also highlight the importance of tracking (Latour, 2000) the historical and political-pedagogical role of education (Latour, 2000) in overcoming social inequalities. For example, how issues of democracy and inequality are raised on a large scale in times of crisis, even though the Nordic countries are seen as leaders at the international level for quality of education. Therefore, a comparison of two countries often goes beyond the contrasting units. Comparisons can offer materials that transcend differences and commonalities and provide learning opportunities for other countries worldwide to improve their critical perception of themselves and the global pedagogical reality in which they are inserted.

In general, this article's objective was to address inequalities and democracy in education during the Covid-19 pandemic, based on a comparison between Brazil and Sweden and their representativeness in the organization of online and face-to-face education. Government measures and advances in social inequalities were first addressed in relation to access and use. Second, techno-political issues and the use of Big Techs digital platforms were examined. Third, an approximation between critical liberation pedagogy and socio-technical cartography was made as a teaching-learning resource for designing and overcoming socio-technical limit-situations.

Methodology

As a methodology, the information given by the Brazilian and Swedish governments regarding educational measures taken during March-June 2020 were observed. The analyses focused on this period as it was characterized by hasty adoption of measures that defined the technical and political bases of online education present until this day. Especially, this timeframe is important since the state of the pandemic remained and both countries continued to prioritize online education. It will form the basis for our comparisons on how the situation in many ways got changed in primary and secondary education due to the increased restrictions. In

the second half of 2020 and first months of 2021, governments authorized the return of face-to-face education, but fluctuating with periods of school closings for only online education in Brazil and in Sweden, following the online education bases established in the first half of 2020. As the situation has not changed significantly in the two countries since then, apart from local and financial efforts implemented to varying degrees, these initial measures are the breeding ground for understanding inequalities and democracy in online education during the Covid-19 pandemic in Brazil and Sweden.

Searches were undertaken on the webpages www.regeringen.se in Sweden and www.mec.gov.br in Brazil. An advanced search was performed using the available filter function. Besides using the search function and the keyword "Corona" five settings were made: for content – press releases and statements were chosen; for areas – children and youth education was marked; for government – ministers no choice was made; for ministries – the ministry of education was selected; and dates from January to June 2020.

The content of the text data retrieved in the searches were selected based on a three-way screening, and through a simple version of content analysis (Silverman, 2006), categories were defined based on how the text data was corresponding to the deductively defined topic under investigation – the organization of education during the pandemic. First, an overarching analysis was based on how all text data shed light on crucial changes for education in schools in Brazil and Sweden, focusing on the decrees and restrictions. A second step concentrated on initiatives clarifying the organization of online and face-to-face education. Third, the frame factor resources (digital technologies) and the access and use of those resources were appointed.

Different theories were used to illuminate inequality and democracy related to online and face-to-face education. First, digital technologies were regarded as important frame factors (e.g., Lundgren, 1999) and one of the most significant resources used nowadays in organization of education. Second, digital technologies were overall related to the notions of cultural tools (Säljö, 2013), and their significance in guiding actions (Wartofsky, 1979) and cognitive processes (Vygotsky et al., 1978) in the organization of teaching and learning. The concept of online education was related to teaching, cognitive, and social presence by teachers and students through a digital delivery system such as the Internet contingent on the access and use of digital technologies, as opposed to face-to-face education that demanded simultaneous physical presence in time and space with or without digital technologies (Sun & Chen, 2016). Distance and remote education are concepts specifically related to asynchronous (distance) and remote (synchronous) ways of conducting teaching and learning, for example, inaugurated in the Swedish *Education Act 2010:800* (Utbildningsdepartementet, 2010). The digital divide (Krumsvik et al., 2018) was used to discuss inequality aspects linked to digital literacy and digital inequality (Coiro et al., 2014; Krumsvik et al., 2018). Democratic issues in online education and mass adoption of Big

Tech digital platforms were problematized mainly through "Science, Technology and Society" academic perspectives. Finally, the educational view was illuminated by a Freirean-based critical pedagogy and a Latour-based socio-technical cartography, focusing on an approximation between the dialectical dialogue (Freire, 1968/2019) and the cartography of controversies of actor-network theory (Latour, 2000), for the design and the overcome of socio-technical limit situations.

School systems and technologies, in Brazil and Sweden

The primary and secondary education in Brazil are joint responsibilities between the Federal Government, States, Federal District, and Municipalities, according to the Constitution of Brazil (Constituição da República Federativa do Brasil, 1988, Art. 211-212) and the Law of Directives and Bases of National Education (LDB, 1996, Art. 8-19). The primary education is administrated mainly by the Municipalities, while the secondary by the States[1]. These governments share information with the Federal Government, to coordinate the elaboration of national politics of primary and secondary education. Municipalities and States support school's autonomy in developing their political-pedagogical projects. This autonomy also refers to schools being able to make local associations with health, transportation and social services, cultural institutions, universities, and to deal with eventualities, such as how pandemic impacts on each location, according to the National Curriculum Guidelines for Secondary Education (Secretaria de Educação Básica, 2006) and the National Curriculum Parameters (Secretaria de Educação Básica, 2000). Principals are responsible for gathering educators, students, families, and the community in general so that the school curriculum meets local particularities (LDB, 1996, Art. 3, 12, 15).

Regarding technologies in the Brazilian education, the federal level has national directives elaborated in integration with Municipalities, States, universities, schools, and other institutions. The primary and secondary education has "the objective of basic citizen formation, through (...) II – the comprehension of the natural and the social environment, the political system, the technology, the arts and the values on which society is founded"[2] (LDB, 1996, Art. 32). In the

> primary education, technology refers to 'scientific-technological literacy', understood as familiarization with the handling of technologies of universalized usages (...). In secondary education, technology (...) refers to activities related to the application of knowledge and skills learned throughout all basic education. (Secretaria de Educação Básica, 2000, pp. 93-94)

[1] The federal district administers primary and secondary schools under the same rules as Municipalities and States. For clarity throughout the text, it is preferred to mention only Municipalities and States, as is common in Brazilian legislation.

[2] All non-English quotations were freely translated by the authors.

In the last normative document, Common National Curriculum Base (BNCC), a high emphasis on the problematization of socio-technical issues can be noticed: students, assisted by the teacher, need to "discuss the usages and provide critical analysis of new technologies, exploring their potentialities and highlighting their limits in the configuration of the current world" (Ministério da Educação do Brasil [MEC], 2018, p. 562). In general, from 1996 to 2018, there is a growing emphasis on understanding technologies as agents of social impacts, and not just as tools.

The Swedish government and the different school authorities govern primary and secondary education with strategic objectives and guidelines through the school law, the *Education Act 2010:800* (Utbildningsdepartementet, 2010), and curriculums. Besides, the government issues various regulations for the different school forms (Skolverket, 2021).

There is a strong emphasis on all students' rights to an equivalent education in Sweden, and it is mainly publicly financed and free of charge. Guided by such premises, adolescents, regardless of gender, social and economic conditions, have equal access to education in the public school system wherever it is arranged in the country.

While Swedish fundamental democratic values are conveyed by the *Education Act 2010:800* (Utbildningsdepartementet, 2010) and the curriculums, permeating every school activity, the notions of equivalence also get formalized in a decentralized school model (Lundgren, 1999). From the principles of equivalence and decentralization, the Swedish school system is ruled by what is commonly known as frame factors (Dahllöf, 1999; Gustafson, 1999): time allowance, goals, and aims, results, and resources. In the decentralized model, the curriculum and syllabuses get operationalized through such frames, the municipalities' and the school principals' main priorities are to customize and fill them with relevant content and adapt them to the local needs and prerequisites (Lundgren, 1999). For example, and based on the frame factor *resources*, the 1:1 initiative leading digital development in the Swedish schools (Håkansson-Lindqvist, 2015) has made a variety of solutions and technologies available.

Technology as a resource in the curriculum has gained a lot of attention by the National Digitalization Strategy for the School System (Utbildningsdepartementet, 2017) and referred to as: "pupils developing an understanding of how digitalization is affecting the individual and the development of society and that all pupils should be allowed to develop their ability to use digital technology" (Skolverket, n.d.b, p. 8). However, while there is a strong emphasis on the implementation and adoption of digital technologies in teaching and learning to get digital literate students (Coiro et al., 2014), there is still available space for a selection of what technology to best support such development, and for Sweden to reach its goal of being best in the world taking advantage of the possibilities the digitalization offers (Utbildningsdepartementet, 2017).

In summary, Brazil and Sweden have similarities at a general level, as the principles of equality and intergovernability and the understandings of technologies as objects of use and of critical analysis. However, essential differences on a more detailed level will be focused below.

Brazilian and Swedish educational changes, during March-June 2020 Covid-19 pandemic

Between the WHO declaration of Covid-19 as a pandemic (March 11) and June, the Brazilian Federal Government (BFG), as well the Ministry of Education (MEC), and the Swedish Federal Government (SFG), as well the Department of Education (DE), were similar to countries worldwide in adopting several measures regarding primary and secondary education.

Regarding Brazil, the March-June period has the BFG and MEC adopting measures for online education. Although, official notes (MEC, 2020a; MEC, 2020b) and interviews given by the Minister of Education, Abraham Weintraub, reiterated a discourse contrary and aggressive against governors and mayors decreeing interruption of face-to-face education, disparaging them as "criminals" and being in "a lack of control" (Martins, 2020). Weintraub argued: (1) in many regions there were few or no Covid-19 cases; (2) federal government and MEC provided hygiene and prevention kits; (3) the number of probable deaths was lower than the annual deaths in road traffic and could be controlled with preventive measures, "so are we going to prohibit the circulation of cars and motorcycles or are we simply going to demand more seat belts and more punishment for reckless driving?" (Bertoni, 2020).

Weintraub also denied that the pandemic worsens inequalities between social classes regarding access to higher education. In Brazil, Enem (national high school exam), the entrance exam for public higher education, is a delicate national theme as the upper social classes have been gaining more vacancies because private secondary education focused on preparing for this exam. In the last two decades, the federal government adopted affirmative actions to temporarily remedy the gaps between classes and ethnic groups in access to higher education by adjusting the Enem scores and reserving vacancies. These affirmative actions have reduced inequality in access to prestigious public universities and one of the main ways to empower minorities in many sectors of society. Weintraub repeatedly argued that the pandemic affects everyone equally, so the inequalities in access to higher education through Enem did not worsen. Therefore, the Minister denied a social appeal to postpone the date of application to Enem, which was claimed by Municipalities, States, universities, councils, unions, media, and civil society in general. For instance, these groups presented statistical and empirical data on the difficulties of the lower social classes in accessing online education, such as the growth of unemployment during the pandemic, which led a high number of young students to seek for jobs and help in raising the family incomes (Roubicek, 2020). Besides, the discrepancies between social classes regarding facilities for home studies (Hartmann & Boff, 2020) and access to digital technologies were large – only 9% of families in classes D and E in 2018 had at least one computer at home, while 98% in class A (CETIC.br, 2018). According to Ocimar Munhoz Alavarse (Faculty of Education, University of São Paulo), Weintraubs's denial was an absence in fulfilling one of MEC's democratic prerogatives:

> MEC and Inep prepare Enem, but the ones who take care of school education, especially secondary education, of millions of young people in Brazil, are the States. Therefore, the States need to be heard. Something banal, which is the articulation of different governments and institutions, is not happening. (Bertoni, 2020)

This lack of articulation and non-compliance with this democratic prerogative can be observed when Weintraub released an official note (MEC, 2020b). Weintraub stated, in text and video, that schools received instructions on social distance and materials for sanitation, so it was necessary to put pressure on mayors and governors to recover "common sense" and open schools. The video and the audio version were massively transmitted through TV and radio. Although some BFG and MEC measures assisted online education, providing materials (Estrella, 2020) and guidelines (MEC, 2020c) for educators, families, and students, the pressure for the reopening lasted throughout all 2020 and until present days.

It is worth mentioning that the BFG's prerogative to articulate different governments and institutions is not unprecedented in Brazil. More recently, it was done between 2014 and 2019 for the development of the Common National Curriculum Base (MEC, 2018). BFG and MEC developed a website where any citizen or institution could attach its ideas, opine, vote, and check each phase of the text's elaboration. Delegates from different institutions were invited to face-to-face meetings and deliberations to represent different sectors. Although academic and social criticisms show that the final version of the BNCC favored liberal policies and certain social groups, it is at least plausible to consider that BFG and MEC articulated different social actors.

On the other hand, in Sweden, the schools' hybrid model (between online and face-to-face education) was adopted and sturdily governed by the government and the DE, and all schools in Sweden were imposed to execute and keep the measures statutory by the higher courts on the advice of the Ministry of health and experts. Differences in society can get illuminated in crises seen in Brazil and Sweden. But for a society like Sweden, with strong pediments in social welfare, solidarity, and equivalence, the maintenance of education was a strong driving force, perpetuating and balancing the social effects that might otherwise have arisen. Consistent measures implemented to organize the Swedish education throughout the country were possible on several grounds. First, the decentralized school system and the autonomy and mandate of the municipalities and principals to execute the *Education Act 2010:800* (Utbildningsdepartementet, 2010) and regulations made the restrictive incentives more easily locally adapted to the schools' specific prerequisites (Lundgren, 1999) and, therefore, possible to execute. Second, since the principals where given opportunities and autonomy to deal with the situations connected to the closing of schools, they also had the opportunity to adapt the inducements to meet the Education Act's 2010:800 (Utbildningsdepartementet, 2010) and curriculums' decrees of students' equal rights to education, while trying to maintain the right level of protection against viral transmission (Skolverket, n.d.a). However, the decrees did not give any detailed control of

frame factors such as time, design, scope, and placement of the education, for instance, with increased opportunities to adapt online education through the resources, digital technologies. Third, although it is implicit and not addressed in the debate, 1:1 incentives facilitated online education to be carried out with digital technologies and sufficient infrastructures to support it. However, lack of computer experience or access to necessary learning tools might have hindered such appropriation (Wertsch, 1997), and subsequently, knowledge development, and *one* incitement for the decree on partial lockdown to see the light of the day. Fourth, the digital technologies available were not selected following these dramatic changes in teaching and learning and were not based on students' needs to gain knowledge under such circumstances either (Skolverket, 2006; Reichenberg, 2014). There was a mass adoption made before the pandemic but with enhanced and increased utilization during this time. Since the broad and rapid measures around online education were made without analyzing the limitations and possibilities that the digital technologies might bring about, there was a subsequent mission assigned to The Swedish National Agency for Education to support the online transfer in teaching and learning. Fifth, in their recent upscaled versions, distance and remote education (as different forms of online education) were new to the Swedish school context. Before, distance education did not exist, and remote education was allowed only to specific target groups (Skolverket, n.d.a), which also added to the unpreparedness on how to deal with the allocation of digital technologies and how to organize digital schooling accordingly.

Finally, some reflections can be summarized regarding inequality and democracy in Brazil and Sweden on the States' measures and educational changes during the March-June period of the Covid-19 pandemic. In Sweden, the government organized synchronized actions between different institutions of power related to primary and secondary education, which resulted in a hybrid model of online and face-to-face education adapted to local needs, made possible with infrastructure and 1:1. In Brazil, the federal government denied that the pandemic could increase inequalities in access to education and put pressure on States, the Federal District, and Municipalities to re-open schools. Thus, there was a greater intergovernmental collaboration in the Nordic country in the allocation of measures. In contrast, there was a more significant denial of the BFG in fulfilling democratic prerogatives, which affected precise measurements to contain the advance of social inequalities in education. On a closer look, it is, however, not easy to divide the incentives made by the various countries from a dichotomy like this. More thoroughly, there are fine-grained problems that do not as strongly as presumed allow for compartmentalization of the actions taken by these countries. Thus, equal schooling could not be facilitated in Brazil due to limited access. Simultaneously, the Swedish way of handling the pandemic had consequences regarding the actual teaching and learning in the face-to-face and online modes and the use of technologies. In other words, the Brazilian and Swedish models share the problem of inequality but on different levels. While the Swedish school system suffers

from acknowledging digital literacy, Brazil undergoes the issue of digital inequality which in turn is related to digital literacy. However, both issues belong to the notions of the digital divide (Coiro et al., 2014; Krumsvik et al., 2018). Another common denominator is that the governments of Brazil and Sweden fail to address the mass use of digital technology, regardless of whether they were implemented before (partially in Brazil/entirely in Sweden).

Access and use of digital technologies in Covid-19 pandemic: digital literacy and digital inequality through and beyond Brazil and Sweden

In the rapid adoption of online education, aimed at containing the Covid-19 transmission, the issue of access and use of digital technologies and their impacts on inequality and democracy are essential to be considered.

In Sweden, online education was made possible due to the predominant 1:1 incentives, promoted by the Swedish government's aim to foster future democratic citizens by making them more digital literate (Skolverket, n.d.b). The Swedish National Agency for Education had a mission to guide educational practices in organizing teaching and learning through digital technologies during the first phase of the pandemic. Although the upscaled use was catered for by 1:1 technologies as important frame factors (Dahllöf, 1999; Gustafson, 1999) and didactical support by The Swedish National Agency for Education on the use, the technologies were still not related to how teaching and learning should best be carried out under the increased use in the distance and remote mode, and what access to specific technologies could facilitate or limit in relation to teaching and learning with other technologies. In the end, the adoption of distance and remote teaching and learning in Sweden without acknowledging the *how* in *use* concerning the affordances and constraints of the specific technologies (Gibson, 1986; Kress, 2010; Norman, 2007; Säljö, 2013), background the positive effect of the 1:1 *access*. Moreover, the 1:1 *access* relates to *what* kind of teaching and learning opportunities can be facilitated with the available technologies and the online mode. According to Coiro et al. (2014), digital literacy enhancement demands far more than access to technologies, such as concrete strategies for conducting teaching and learning in *using* them. Thus, the digital divide (Krumsvik et al., 2018) concerning mostly digital literacy in Sweden got renewed attention through the corona pandemic. For instance, digital literacy is related to the need to connect the prevailing Swedish 1:1 incentives to the qualitative aspects of digital education, including access to some technologies while excluding others and how teaching and learning can be enhanced using different technologies.

In contrast, the digital divide was in firsthand related to digital inequalities between social classes in Brazil since imbalances were increased due to the insufficient *access* to digital

technologies and infrastructure. The problems of uniting the federal government's decrees and restrictions with the states and municipalities' measures resulted in an imbalance also in *use* related to online and face-to-face modes throughout the country, which affected, for instance, the possibilities in carrying out home studies. In Brazil, equal access to digital technologies is crucial in strengthening the opportunities to provide equal education to all (Krumsvik et al., 2018) and, in the end, to educate digital literate students (Coiro et al., 2014), needed to be able to participate in society fully.

Digital divides related to digital inequality in access and digital literacy in use in both Brazil and Sweden during the corona pandemic, thus constitute a window to understanding society's digitalization. Consequently, it is maintained here that education takes place in the intersection between the resources supplied to the system (Lundgren, 1999) and the absence of understanding of what these resources bring to such structures, and how lack of technologies and infrastructure all together affect equivalent schooling. The example made here highlights the importance of ensuring both access and pedagogical principles for the use and how digital education, and more broadly digitalization, are best to be organized and facilitated in different contexts.

Critical pedagogy and socio-technical cartography in Covid-19 mass adoption of Big Tech digital platforms for education – an issue beyond Brazil and Sweden

Critical pedagogy and social-technical cartography: a brief association

The socio-technical cartography is here referring to the actor-network theory (ANT) and the cartography of controversies (CC; Latour, 1994, 2000). The cartography is related to a process of tracking associations between human and non-human actants and mapping a socio-technical network from a controversial fact. In this section of the article, the controversy is *the use of Big Tech digital platforms in online education in the Covid-19 pandemic.* The technologies are understood as *actants*, therefore not just objects of use. Actants in the sense of "what we can do with the technical objects and what they make us do" (Latour, 1994). Technologies' agencies-actancies that cannot be predicted by forms of technical objects in relation to humans' purposes but can be interpreted when contradictions are followed, associations are designed, and a socio-technical map is made. The map made here includes the pandemic context, Governments quickly signing contracts with Big Techs, the academic research regarding potentials and limitations in supporting teaching-learning, and, finally, social groups' denouncements and academic research regarding democratic issues related to mass surveillance and data commercialization. In the end, the agency is from the *actor-network,* not from *humans plus technical objects.*

The ANT and CC are, thereto, related to Freire's dialectical dialogue in the Pedagogy of the Oppressed (1968/2019). Dialectical dialogue can be understood as the educational act that is developed through educators and students contrasting *ad-mirations* of concrete situations of social contradictions of the students' reality, towards the design of *limit-situations,* the *unprecedented viable* and *praxis* (Freire, 1968/2019). An educational act that needs to make "real oppression even more oppressive, adding to it the consciousness of oppression", as Freire refers to Marx (p. 52), which is equivalent to the recognition of limit-situations

> as they are: concrete and historical dimensions of a certain reality. Dimensions that challenge men[3], that act on them through actions that Vieira Pinto calls 'limit-acts' – those that aim at overcoming and denying the real, instead of implying its docile and passive acceptance. (p. 125)

Ad-miration that consists of the subjective approach to the concrete object, which is constitutive of subjectivity, what makes knowledge always objective-subjective (Freire, 1968/2019). This characteristic of the generation of knowledge about reality makes dialectical dialogue necessary because the contrast brings objectivities-subjectivities together and refines the design of limit-situations. Each student operates an exclusive approach to the concrete object due to their empirical, sensitive, artistic, theoretical, and even technological knowledge about the concrete reality. Since the educator-liberator may accumulate less experiences on the students' concrete reality, it is necessary to immerse in the community, through visiting different spaces and interacting with locals, to empower the design of limit-situations with students. It is an educational act in which educators and students generate knowledge from associations between social immersions, experiences, media, speeches, photos, films, technical objects, articles and books, made centuries or days ago. Dialectical dialogue that historicizes consciousness and fissures the concrete reality for the "unprecedented viable", educating for the understanding of reality as *editable through praxis* and not as *determined by immutable circumstances.* A critical pedagogy, therefore, for the recognition and the overcoming of oppression.

Despite the epistemological and methodological differences between Freire and Latour, socio-technical cartography is an intellectual instrument that can be opportunely applied in the teaching-learning to expand the dialectical dialogue to design oppressive technologies' agencies. A pedagogical way of attending to the need to "discuss the usages and provide critical analysis of new technologies, exploring their potentialities and highlighting their limits in the configuration of the current world" (MEC, 2018, p. 562) and "how technology has developed and is developing in interaction with society (...) [that is,] about the role and driving forces of technology from ethical perspectives" (The Swedish National Agency for Education, 2018). A

[3] Men resemble humans.

critical education, which intimately associates the generation of knowledge with the democratic commitment to overcome social inequalities. This approximation between critical pedagogy and socio-technical cartography is presented below, along with its application to design limit-situations in online education with Big Tech digital platforms during the Covid-19 pandemic. It is used to discuss global issues such as inequality and democracy through Brazil and Sweden as representatives.

Critical pedagogy and social-technical cartography: a brief application on social contradictions in online education with Big Tech digital platforms

In online education during the Covid-19 pandemic, Brazil and Sweden contributed to the expansive global usage of videoconferencing platforms such as Zoom, Google Hangouts, and Microsoft Teams. Zoom grew in use from 10 million daily participants in December 2019 to 200 million in March and 300 million in April (Mihalcik, 2020). Microsoft Teams had 200 million users and increased with 31 million new users in April (Zaveri, 2020). Google Hangouts had 100 million in April and raised its daily usage 30 times since January 2020 (Peters, 2020).

Together, these companies offer resources in addition to videoconferencing, such as file exchange, screen sharing, chats, creating and storing activities, automating corrections, and facilitating the use of audiovisual resources, allowing for multimodal use that can enable different forms of teaching and learning. Among the benefits are these companies' role in developing digital tools to facilitate the creation and management of virtual spaces often charging only advanced features. According to Bottentuit Junior et al. (2011), such a process democratizes the Internet since more people can occupy this space. Simultaneously, these Big Techs, with their technologies adopted massively worldwide, deepen themselves as obligatory passage points (Latour, 2000) in primary and secondary education. In other words, they have become a central node in the socio-technical cartography of online education that somehow forces those interested in online education to use Big Tech digital technologies – "a privileged point from which it is possible to access, locally, distributed powers, which are otherwise inaccessible, but which also comes to dominate and coerce the actions that it attracts and processes" (Ferreira, 2017, p. 111). At the same time, an obligatory passage point that presents social contradictions, such as democratization in Internet access in contrast to undemocratic mass surveillance and commercialization of personal data. A contrast showing that "what we can do" with technologies is related to "what it makes us do" (Latour, 1994). Thus, problematization is necessary by educators and students in their dialectical dialogues for the design of limit-situations and openness for the unprecedented viable – even more in online education during Covid-19 pandemic.

Here, *digital surveillance* refers to the tools that enable employers and educational managers to access videoconferences of workers, teachers, and students, record content, access files, observe if people are browsing other content, identify the user location – all without notice by those being watched. In education, the well-known *mass surveillance* can be related to activities that take place out of the schools when students log in to their accounts on personal computers, smartphones, and tablets, to do educational or other activities. By not logging off, they expose data from home networks, residence, daily routes, web-history and make available their family's and other people's data. This data is stored mainly on servers of companies that own the digital platforms, therefore, not guaranteeing that users control it[4].

The *commercialization of personal data* refers to what companies do with the data stored. It includes denouncements from WikiLeaks, Edward Snowden and former employees of Facebook, Google, Twitter, Instagram, and Cambridge Analytica. Denouncements that in the last decade has been sources of academic researchers' critique about violations of privacy and manipulation of people's behavior in educational institutions (Parra et al., 2018), in governance and elections (Lindh & Nolin, 2016; Rouvroy & Bernes, 2015) and for commercial advantages (Fuchs, 2011; Rossini & Moore, 2015).

In common, *digital surveillance* and *commercialization of personal data* present violations of democratic rights, since citizens' privacy is being hacked for political and capitalistic purposes, in what is nowadays recognized as *surveillance capitalism* (Zuboff, 2015). Privacy in the form of personal data, which is used for a biopolitical control of public behavior (Lazzarato, 1998) of users whose computers, smartphones, e-mails, clouds, search engines, and social networks tend to be used as ubiquitous tools for daily tasks, therefore visible in "what we can do" and invisible in "what it makes us do". A phenomenon of hyperbolization of instrumental reason over the technique (Heidegger, 1997), which tends to hide social-technical agency (Latour, 1994) and, thus, hinder an education that problematize the cultural existence of technology (Simondon, 1989).

Thus, the Big Tech digital platforms are not *just tools* to enable education in pandemic times, but *agents* in socio-technical networks. They can impact on the expansion of social inequalities and democracy issues by favoring dominant social classes, violating democratic rights, and exercising oppressive biopolitical control. In schools, places par excellence for democratic formation, the association between dialectical dialogues and socio-technical cartography can be one contribution to make socio-technical agencies visible and expand the design of limit-situations to the worldwide arena.

[4] A compilation (academic research, legal complaints and activism) is available on the Electronic Frontier Foundation website: https://ssd.eff.org/module/privacy-students.

Conclusion

This article presented a brief study on inequalities and democracy in online education during the first semester of the Covid-19 pandemic, based on a comparison between Brazil and Sweden and their representativeness in current global issues. Research can learn about inequalities and democracy regarding governmental measures, access and use of digital technologies, techno-political issues related to Big Techs digital platforms, and an approximation between liberation pedagogy and socio-technical cartography, and how these phenomena can move across different cultures and social systems.

The results showed that Brazil and Sweden dealt with aspects of inequalities related to digital divides (Krumsvik et al., 2018). In Brazil, the digital divide is more acutely associated with the digital inequality in lack of access, which also impacts the knowledge around using technologies and, in the end, the schooling of digital literate society-members (Coiro et al., 2014). Thus, the Brazilian federal government presented scientific denialism and avoided coordinating the meeting of different national entities, which gave data, statistics, and testimonies of advances in social inequalities related to digital divides in education. Regarding Sweden, the results showed a country that dealt with the continuation of education through the coordination of governmental, educational, and scientific entities. Sweden's organization aimed at precisely verifying local demands to contain the advance of social inequalities while containing viral transmission. Although, issues were found connected to the qualitative impact on teaching and learning related to the earlier supply of technologies that was not examined based on pedagogical principles, preferably implemented on other grounds, and raised issues around digital literacy and teaching practices. While Brazil had a greater focus on providing access to digital technologies, there were more issues about how to operate online education successfully form a learning point of view in Sweden, which pinpoint the fact that access and use are vital factors to regard to achieve equal schooling. Moreover, technologies need to be provided, discussed, and implemented in relation to how teaching and learning should best be carried out in relation to increased use and how the affordances of the chosen technologies might hinder or facilitate successful appropriation (Wertsch, 1997).

At last, Brazil and Sweden use Big Techs digital platforms in online education, as several countries worldwide, and comparative studies can be of interest for investigations of localities and universalities, both influenced by the current globalization. To that end, this article applied an approximation between liberation pedagogy and socio-technical cartography, to explore technical-political issues related to the mass adoption of Big Techs digital platforms to support online education in the Covid-19 pandemic.

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