LIMITING THE DIGITAL IN BRAZILIAN SCHOOLS

Structural Difficulties and School Culture

Daniela Costa and Juliana Doretto

Introduction

This chapter presents data that demonstrates the difficulties and contradictions of working with digital technologies in Brazilian schools. Two research surveys will be discussed, both conducted by the Regional Center for Studies on the Development of the Information Society (Cetic.br) in Brazil: ICT in Education and ICT Kids Online Brazil. ICT in Education investigated 1,106 schools in urban areas in Brazil in 2016, interviewing 11,069 students and 1,854 teachers. The second survey interviewed 2,999 children and young people (aged 9 to 17 years) from 2016–2017. The data collected is compared with Brazil’s public policies on the educational use of digital technologies. The objective is to show contradictions between the data, which reveal schools do not have adequate internet connections or basic supplies, and government policies in a developing country. In this case, governmental decisions reflect social discourses that understand children’s digital technology skills as being key to addressing education problems (Livingstone, 2017), even though the capacity to support widespread digital engagement is lacking.

Technology in Brazil’s Educational Policies

On 6 November 2017, Geraldo Alckmin, governor of the State of São Paulo, approved Law No. 16567, allowing the use of mobile phones by elementary- and high-school students for ‘educational purposes’ in the classrooms of schools in the state education system. Before this law, their use was not permitted under any circumstances in classrooms during school hours. The governor argued at the time that “internet on mobile phones opens up countless possibilities for activities and research. It will therefore be a major leap forward for the benefit of students”, (“Alckmin libera celular”, 2017). The government also announced that, by October 2018, all 5,000 state schools would be equipped with wi-fi and broadband systems (“Alckmin libera celular”, 2017). Although there is no national law in Brazil that regulates the adoption of mobile phones in schools, in most of the 27 Brazilian states their use within classrooms remains forbidden. Importantly, São Paulo is one of the wealthiest states in the country, although the majority of students in the state education system are from low-income families as middle- and upper-income earners prefer private education (Moraes & Belluzzo, 2014; INEP, 2018).

In January 2018, Folha de S. Paulo published an article that examined the impact of the law (Caldeira, 2018), stating that “all it takes is a quick visit to a school to realise that the law means
almost nothing in relation to what is a conspicuous and, especially, tense reality” (2018). The article argued that even when classroom mobile use was prohibited, teachers working on the outskirts of São Paulo claimed they used mobile phones for educational activities since the students already brought them to school. Although the mobiles’ primary purpose was for children’s communication with parents, the students also used their devices for entertainment, even during classes.

Teachers were trying to reverse this situation by attracting their students’ attention through mobile phone use and introducing educational elements. For example, they created WhatsApp groups to send educational content, used audio recorders on students’ devices for school projects, treated the phones as stimuli for playing logic-based games, and listened to music and discussed the lyrics (Caldeira, 2018). English teacher Katia Josefa told the journalist “It was irritating to do this when there was a sign in the classroom saying that their use was prohibited” (Caldeira, 2018). Daniela Cacure, a history teacher, also noted that “the school network is not open to students; you can only ask them to do research on their own mobile phones, but not all of them have an internet plan, which gives rise to ‘discrimination’” (Caldeira, 2018). A quote by chemistry teacher Rodrigo Matos ended the article, stating that “It is difficult to use mobile phones as a pedagogical tool … but this is a battle that must be won” (Caldeira, 2018).

The sentiments of the teachers echo what Livingstone (2017) argued in an ethnographic study that monitored the technological habits, both inside and outside the classroom, of a class of young students aged 13 and 14 in a suburban high school in London:

Now that digital networks underpin and enable social networks, it seems that the logic of the digital age dictates that connection is good and, therefore, disconnection is bad … Many hope that the affordances of digital, networked technologies can be harnessed to connect disaffected or “underperforming” young people with exciting learning opportunities, or disillusioned teachers with innovative ways of engaging their students, or marginalised families with knowledge traditionally accessible only to the privileged. But how many connections do people need or want?

(pp. 63–4)

Livingstone clearly outlines the social expectations regarding technology, expressing also the inherent contradictions within that hope. The digital realm emerges as a way of creating a closer bond between schools and the ‘connected’ youth. Common sense says that educators will attract more students’ attention if they stop using traditional learning methods and adopt digital devices to structure their lessons.

According to Livingstone (2017, p. 64), these technologies are hoped to be something of a ‘cure’ for uninspired teachers (who feel distant from their students) and unmotivated students (who are far from achieving the expectations socially imposed upon them). Digital technologies would be even more important in critical cases, since they could serve as a path for providing more opportunities for disadvantaged young people or those with learning or behavioural difficulties. However, as Livingstone (2017, p. 56) contends, it is important to overcome technological determinism, since it is not the technologies that produce change in schools, but the use that people make of them. It is necessary to look at contextual and multidimensional variables, which are beyond the technology itself, such as access to quality education, family structure, and the equalisation of income gaps.

Reflecting upon these social expectations in Brazil, as exemplified by the news article cited above, school capabilities are considered out of sync in relation to the technological consumption of younger students. As one teacher noted, “Our school model is not technology-ready” (Caldeira, 2018). Although the new law in São Paulo, which allows cell phone use in schools,
is considered an advance in terms of public strategies, it does not discuss important issues such as internet quality, open wi-fi access in schools, or the doubts teachers may have in using the devices as a pedagogical tool. Rather, the law only states that the network cannot be closed to students, while also acknowledging a lack of available computer monitors within the schools.

Buckingham (2006) has noted that the term “a ‘digital’ generation – a generation defined through its relationship with a particular technology or medium – goes beyond education and clearly runs the risk of attributing an all-powerful role to technology”. He explained that there are children who have access to digital devices and use them in an advanced way. Yet there is a social narrative that circulates the idea that there is a generation capable of transforming its reality through technology, something that schools are not able to facilitate and, for lack of this, may fail to support young people in the digital realm. This narrative, however, does not deal with a real scenario, since young people have different degrees of access and skills in relation to information and communication technologies (ICT). It does, rather, reproduce a hegemonic social discourse that establishes “a set of imperatives” about what young people “should be or what they need to become” regarding digital technologies (Buckingham, 2006). That is, the terminology of a ‘digital generation’ contemplates the idea that if children and young people have access to technology – which is, of course, important and can even be considered a right, according to Livingstone (2014) – they can solve any problem they encounter during their lives. In this respect, the community needs only to provide them with access to devices, and this would be sufficient. Livingstone (2017) argues for caution, noting that:

The competitive individualism of the aspiring middle-classes [is] now spreading also to encompass the diversity of families including many poor ones. This [has] often led to enthusiastic adoption of digital media goods along with the latest digital skills; but the vision is not necessarily that of connected learning, and it certainly doesn’t promote social justice.

(p. 64)

Therefore, solely providing young people with access to digital media runs the risk of being a panacea for surmounting obstacles on both national and individual levels, as well as an immediate path for families to climb socially. Yet, the quality and end goal of their technology use is not questioned, nor the lack of criticality associated with it. As the Net Children Go Mobile project claims: “it is not sufficient to know how to use the equipment technology, it is essential to be able to use in the rational way the enormous quantity and diversity of information and interactions available in the digital networks” (Simões et al., 2014, pp. 60–1).

boyd (2014) compiled a series of observations of young people’s digital media use in various American states between 2005 and 2012. She conducted formal and semi-structured interviews with teens, conversing with them in their homes, at school, and in public places. She also interviewed parents, teachers, librarians, church staff, and other adults who worked with young people in a wide range of socioeconomic and ethnic communities. She observed social networking sites, blogs, and other media resources that were part of youth culture. Among the various themes addressed in her study is the denial of the idea that there is a naturally hyperconnected, homogeneous digital generation. In her study, boyd had contact with adolescents with very different characteristics. Some programmed complex websites, whereas others did not know what an internet browser was. There were adolescents who disseminated content through the internet and had many followers, while others were unable to recognise spam mail. In fact, boyd establishes that to assume that young people are naturally gifted in digital technologies may put them at risk, since they stop receiving support from adults who would have much
to offer them in terms of experience (p. 197). Apart from this, assuming equitable access conceals serious social differences.

The article in *Folha de S.Paulo* clearly demonstrates the struggles that teachers have in following this narrative of obligatory technological inclusion – in their words “this is a battle that must be won” – as well as the struggles of children to use these technologies in a balanced (and profitable) way (Caldeira, 2018). In contrast with the seven educators who were interviewed, Caldeira (2018) also interviewed and published the views of two students. Student Lorhaynne Xavier said she used to use her mobile phone constantly, but it got better when her mother “imposed limits” on the amount of time she could use it (Caldeira, 2018). Kaio Miranda, despite having a mobile phone for reading about matters of interest, had problems in several subjects, saying that the school “has a very limited repertoire” and he wanted to “greatly expand [his knowledge]” (Caldeira, 2018). This student seemed unable to take advantage of his online skills for school activities, blaming the school for not facilitating this and not supporting the development of his mobile phone use as a means of addressing the school’s limitations.

Although the article only published the opinions of two students, their views call attention to some of Brazil’s problems regarding internet access. Lorhaynne Xavier said that she and her friends had problems connecting their devices to the internet, because they cannot use their school’s wi-fi. The students, however, needed money to purchase prepaid ‘credits’ (a data package) in order to access the online elements of their school lessons. This theme is explored further in the following section of this chapter.

### Young People’s ICT Use and Skills in Numbers

The results of the ICT Kids Online Brazil 2016 survey (Brazilian Internet Steering Committee [CGI.br], 2017b) corroborated the reality described by boyd and exemplified by Lorhaynne. Conducted by Cetic.br in Brazil, the survey interviewed 2,999 children and young people (aged 9 to 17 years) in 2016 and 2017. A rigorous statistical methodology was used, including face-to-face research and the application of structured questionnaires in households according to census enumeration sectors developed by the Brazilian Institute of Geography and Statistics. This methodology allowed the results to be extended to the national population of this age group, taking into account sampling errors. The survey showed that around eight out of ten Brazilian children (9–17) use the internet. This statistic could bolster the idea of a digital generation, if the data is not examined more closely. This is due to children’s usage not being the same throughout the country, or equivalent across cultural contexts.

In urban areas, 86% of the population in this age group used the internet, compared with 65% in rural areas. In the Southeast region, the richest area in the country, which includes the state of São Paulo, 91% of those between the ages of 9 and 17 had internet access. In the poorer regions of Brazil – the North and Northeast – the numbers dropped to 69% and 73%, respectively. There was greater inequality among social classes. Within the highest group (classified in the survey as AB), almost all the children (98%) accessed the internet, while in the lowest (DE), this was only 66%. Parents’ education also impacted internet usage, with 92% of children whose parents had completed at least high school accessing the internet, but only 71% of children where parents had only studied for around four years. In relation to gender, however, no relevant differences were found (CGI.br, 2017b, p. 212).

It is important to note that an internet user was defined as someone who had accessed the internet in the three months prior to the survey, as defined by International Telecommunication Union (2014). In other words, it did not necessarily correspond to frequent use (9% of those who used the internet did so “at least once a week”, 4% “at least once a month”, and 69% reported “more than once a day”) (CGI.br, 2017b, p. 254). The findings underline Buckingham’s
(2006) caution that, “the meanings and uses of technology are so variable, that we need some quite fine distinctions in order to capture what is happening here”.

The Brazilian findings illustrate the inequality of access to digital technologies in Brazil, the so-called ‘digital divide’ described by van Dijk and Hacker as something that extends beyond the possibility of accessing new technologies. Rather, the divide is represented by a:

*usage gap* between parts of the population systematically using and benefiting from advanced digital technology and the more difficult applications for work and education, and other parts only using basic digital technologies for simple applications with a relatively large part being entertainment.

*(2003, p. 316)*

These differences in use are not only due to personal choices (the decision to connect or not to connect), but are also generated by structural factors that are difficult to overcome (such as being unable to afford to connect).

It is important to remember that in a networked society, competent use of technology affords greater opportunities for professional and social mobility, associated with other social factors such as gender and social class. This generates a vicious cycle, where non-users (or less frequent users, or those whose use is less sophisticated) remain in a condition where

Inequalities become structural when they “solidify”, that is, when [the] positions people occupy in society, in social networks, and in media networks, or other media, become lasting and determine to a large degree whether they have any influence on decisions made in several fields of society.

*(van Dijk & Hacker, 2003, p. 324)*

Hargittai (2010) also argued that those who have more and better opportunities to use these technologies also receive more stimuli for the development of certain ICT skills. These perspectives are reinforced by data from the ICT Kids Online Brazil survey series (CGI.br, 2017b), which show the persistence of these inequalities over the course of several years of research, starting in 2012.

In the 2016 Kids Online Brazil survey, more differences between social groups were noted regarding children’s digital media activities. For internet use by mobile phone, for example, the inequalities observed in relation to access reappeared: 61% of children in classes DE who used the internet accessed it solely by mobile phone (in classes AB it was 12%, implying access to a range of internet-connected technologies). In rural areas this was observed in 54% of cases, compared with 34% in urban areas. In the Southeast, 27% of children who used the internet did so solely by mobile phone, as opposed to 52% in the North and 49% in the Northeast (CGI.br, 2017b, p. 251). The survey of children conducted by Cetic.br draws attention to these differences by affirming that “despite the inclusive potential of mobile devices, quality of access has important implications for the profile of online activities actually carried out, and consequently, can serve as a factor that maintains inequalities” (CGI.br, 2017b, p. 105). Bearing in mind that mobile phones permit less complex digital activities than computers, children’s development of computer-based skills is still crucial for equitable access to the labour market.

This differential profile of internet access has also been found in other Latin-American countries, according to data collected by Global Kids Online (of which Cetic.br is part). Global Kids Online conducted quantitative surveys with the same methodology used in the European research network, from which the initiative arose. The Uruguayan report said that
as indicated in the country context section, Uruguay has significantly reduced connectivity gaps; however, disparities in this aspect persist. In terms of socioeconomic level, 78% of children in higher classes accessed the internet from home daily, as opposed to 55% of those from the middle class and 37% from lower classes.

(Kids Online Uruguay, 2018, p. 54)

The results from Chile showed that 40% of children in classes DE who used the internet accessed it “every day, several times a day”, compared with 60.5% of those who belonged to higher socioeconomic classes (Global Kids Online, 2019, p. 15). Likewise, 67% of young people whose families had lower incomes used the internet on portable computers and, among children whose families had higher incomes, 96% used these devices (Global Kids Online, 2019, p. 14).

Within this context of structural inequalities, schools represent a venue for addressing disadvantage related to connectivity deficiencies. The next section discusses some aspects of internet use in Brazilian schools in regards to the country’s public policies.

Brazil’s Public Policies on Internet Use in Schools

Brazil has around 48 million basic education students enrolled in public schools, according to data from the 2017 Basic Education School Census, conducted by the Anísio Teixeira National Institute for Educational Studies and Research (INEP, 2018). In rural areas, public schools have more than a pedagogical function; they also perform an important role in social inclusion. Most of the national public policies on digital inclusion and skills development focus on schools.

The first public policies that encouraged the use of ICT in schools were developed in the 1980s, when the economic value of having computer skills first became apparent. The need to train a contingent of people who were skilled in the use of these new devices and languages led the Brazilian government to draft a national informatics policy. This involved actions by various public entities connected to fields such as science and research, health, agriculture, culture, national defence, and, above all, education. The focus of public policies for digital inclusion and professional training for the use of these technologies in schools was to be the trademark of all government programmes in the sector from that point on (Almeida & Valente, 2016).

The National Program for Informatics in Education (ProInfo) (Ordinance No. 522, 1997) has been the longest-lasting public policy for the development of strategies to integrate technology within children’s learning and teaching in Brazil. Launched in April 1997, ProInfo’s main initiatives were primarily dedicated to installing computer labs in schools. When the programme was relaunched in 2007 under the name of ProInfo Integrado, in addition to providing computer and internet access, other initiatives included the creation and dissemination of digital educational resources, the distribution of mobile devices, lower taxes for equipment purchases by educators, and teacher training.

In 2017, the Brazilian Ministry of Education launched a new programme to expand the use of ICT in schools (Ordinance No. 9204, 2017). Its main dimensions relate to improving internet access in schools, supplying training for teachers and public managers, and providing open educational resource repositories for teachers and students. The primary objective of the programme is to enhance the quality of public education.

According to Barbosa and Fernandes (2017), these programmes occur in the context of a demand for basic education that meets the economic needs of the country and develops a skilled workforce for the increasingly complex contemporary labour market. Schools also have a responsibility to create conditions for students that enable them to develop their digital skills and learn the necessary content to understand and participate in economic, social, and cultural relationships. Combining the use of technologies and the development of education gives ICTs much more
relevance than merely serving as a tool for pedagogical use. In this context, technologies are understood as a language through which people take ownership of culture, while the school is seen as a means of accessing this culture, especially for children in conditions of social vulnerability. This imperative to develop a digitally competent labour force also assigns teachers responsibility for supporting student learning with and through the use of these technologies.

However, as van Dijk and Hacker (2003) contend, reducing digital inequalities requires more than simply providing connectivity and training for labour tasks. It also involves quality access, in terms of the use of technological resources to enhance the freedom of individuals to express themselves, gain knowledge, participate, interact, and join others. As seen above, when addressing the inequalities faced by children, the mere fact of having access to a cell phone may not be sufficient for them to benefit from the opportunities offered by the technologies. This is an issue that has not yet been resolved by Brazilian public policies.

The next section uses data from another survey developed by Cetic.br to help demonstrate other consequences of the most recent governmental policies and the struggles Brazilian system education must face in improving the use of digital technologies in school students’ learning and teaching processes.

ICT in Brazilian Schools

ICT in Education (CGI.br, 2017a) is a sampling survey, conducted face to face in public and private schools in urban and rural areas in all Brazilian states, with students from the 5th and 9th year of Elementary Education and/or the 2nd year of Secondary Education. Every year since 2010, researchers have visited selected schools to collect data, via structured questionnaires, from students aged 11 to 17 years. Teachers, directors of studies, and principals are also surveyed about educational access to ICT opportunities, including the use and appropriation of these resources in their daily lives, as well as the conditions of access and use of ICT in the school for administrative and pedagogical activities. For the ICT in Education 2016 survey, 1,106 urban schools were visited and 935 principals, 894 directors of studies, 1,854 teachers, and 11,069 students answered the questionnaires.

The survey reveals contradictions in use between children and teachers inside and outside of school. Reflecting the data collected from children in the ICT Kids Online Brazil survey, the students interviewed for the ICT in Education 2016 (CGI.br, 2017a, p. 199) survey also said that mobile phones were the main device they used for internet access, and 51% of public-school students reported using their mobile phones in school-related activities. Eight out of ten children cited research for their school work as being among the activities for which they used the internet – a percentage very close to that for sending instant messages. Most of these young people used their own mobile phones, but only 5% said they had permission to use mobile phones in classrooms (CGI.br, 2017a, p. 209), which is consistent with Caldeira’s Folha de S.Paulo article (2018). Although it is arguably forbidden to many children, 30% reported using the internet via mobile phones at school (CGI.br, 2017a, p. 210).

Apart from prohibitions concerning mobile phone use in schools, wi-fi network restrictions are another challenge for school students. In 2016, more than 90% of public schools in urban areas had wi-fi access, but for 61% this use was restricted to administrative staff and educators. A password was required and not disseminated to the students. Because of such restrictions, many students did not consider school to be a place where they could access the internet, with only 39% of students saying they had used their school’s internet.

The conditions for using ICTs in Brazilian public schools are still closely linked to the actions taken during the ProInfo period. The ICT in Education 2016 survey indicates that 96% of urban schools and 45% of rural schools had internet access, i.e., at least one computer
(desktop, portable, or tablet) with internet access for student use. However, in the case of urban public schools, which serve most of the school population, especially from lower social classes, only 55% had internet access in classrooms, while 47% had access in libraries or study rooms for students. The 2016 survey indicated that internet access for students was mainly concentrated in computer labs (73%), a practice still linked to early public policies such as ProInfo. However, these labs were available to students in less than 60% of these schools, due to infrastructure problems and also because managers often feared that the equipment would be damaged or stolen. Even so, there was internet access in the offices of principals and directors of studies in 92% of schools.

Connection speed was another main reason for inequalities in internet use in schools. Around 45% of public schools located in urban areas had speeds of up to 4 Mbps; in rural public schools this percentage was 55% and, in 47% of these, speeds did not exceed 2 Mbps. Under these conditions, it is very difficult to share internet access among teachers and, especially, among students. Low speeds also inhibit use of the internet in areas outside computer labs, as the computers cannot easily open video files, good quality images, or websites. In such disadvantaged schools, managers prioritised internet access in the offices of principals and directors of studies in order to use school management systems and carry out the school’s administrative activities. Consequently, these conditions increased the digital divide among students, and between students and their teachers. Notably, whereas only 25% of public schools had connection speeds exceeding 5 Mbps, this speed was available in 58% of private schools (CGI.br, 2017a, p. 202).

There were also regional inequalities among teachers. Almost all of them had internet access at home, and even the lowest percentage for this (91%, for teachers in the Northern region) was comparatively high. However, when teachers were asked if they accessed the internet at school, greater differences emerged. In the country’s more economically developed Southeast regions, more than 90% of teachers could access the internet at work. In the North and Northeast regions, these percentages dropped to 72% and 75%, respectively (CGI.br, 2017a, p. 244).

To a certain extent, the public policies implemented by the government have had a positive effect on teachers using these technologies in teaching and learning processes. After more than 20 years of teacher training activities, many involving partnerships with public and private universities, teachers conduct at least a few activities with students using computers and the internet (CGI.br, 2017a, p. 214). The focus remains on more instrumental and centralised activities of teachers demonstrating use, however, rather than encouraging hands-on student-based skill development. Teachers often said they circumvented their school’s technology deficiencies by using their own devices and internet access networks in educational activities. One in ten teachers said they used their own portable computers or tablets every day for activities with students, and 12% reported using the internet at least once a week (CGI.br, 2017a, p. 295).

As with students, there has been an upward curve in teachers’ use of mobile phones for internet access. Between 2011 and 2016, the number of teachers who used their mobile to access the internet rose from 15% to 91%. Public school teachers’ use of personal mobile phones for supporting digital activities with students rose from 36% to 46% between 2015 and 2016. Interestingly, although differences still exist between the country’s regions, results across Brazil are very similar in this respect. This finding complements the information published in Caldeira’s article (Folha de S. Paulo, 2018) relating to the use of mobile phones by teachers as a means of gaining students’ attention during class, demonstrating that portable devices, with their own network connections, serve as a means for navigating difficulties encountered by teachers and students in accessing digital content in schools.
Conclusion

In Brazil, digital inclusion in schools reflects the social inequality that marks the country. The schools in the poorest areas are the least connected, although the public educational system as a whole presents systemic problems such as wi-fi networks that are closed to students, low internet speeds, and a lack of adequate equipment. However, there are advances in school connectivity, albeit slowly.

Although most Brazilian children and young people have access to the internet out of school, this digital inclusion is made possible through access to mobile phones, with internet usage restrictions such as high network access costs. Teachers are using their own, and students’ own, access to the internet in order to incorporate technology within the curriculum.

The liberation of the use of cell phones in schools is a step towards recognising students’ and teachers’ existing practices. It is necessary, however, to take into account that, more than just encouraging the use of digital devices, which is strongly stimulated by social expectations in the country, public policies on education should make technologies a part of the whole educational process, including time spent outside school. This requires changes in the way digital media curricula and education are understood: as being more than just training for the labour market.

According to the line of thought adopted by van Dijk and Hacker (2003), today’s society understands technologies as languages through which individuals construct their identities, interact with each other, and appropriate reality. Technologies permeate cultural, economic, and social dynamics. Thus the use of technologies in schools relates to the equalisation of access to cultural, economic, and social assets. The purpose of the technology-driven curriculum is to provide incentives for school community members to develop a critical vision, to find ways of expressing themselves, and spaces for affirming identity. It is thus not the technologies that produce the change, but the use that individuals make of them.

This line of thinking about the relation between technologies and education also takes into account the fact that students have an active voice and should participate in democratic processes within their educational contexts and in the formulation of public policies.

References


