

Abstract: This paper aims to present emerging trends of Brazilian connected students towards the use and appropriation of ICT resources through data of two national surveys: 2014 #Connected Youth Brazil and 2018 ICT in Education Survey. #Connected Youth Brazil was developed by the School of the Future Research and Culture Laboratory at the University of São Paulo, NACE EF-USP (www.futuro.usp.br), in association with Telefonica Vivo Foundation Brazil (<http://fundacaotelefonicavivo.org.br>). The survey interviewed 1,440 Brazilian youngster and also developed focus groups sessions with celebrities and educators plus navigation observation through a special software applied to ten authorized adolescents. 2018 ICT in Education survey was developed by Brazilian Internet Steering Committee and interviewed 11,361 students plus teachers and directors. Main findings are: smartphones to democratize Internet connection; students challenged by fake news and information sources; schools are not the main place of connection and students are autonomous learners regarding media literacy.

Keywords: Brazilian connected students behavior; #Connected Youth Brazil Survey; Media and Information Literacy (MIL) - Brazil; 2018 ICT in Education CGI Survey.

Resumo: Este artigo tem como objetivo apresentar as tendências emergentes de estudantes brasileiros conectados em relação ao uso e apropriação de recursos de TIC por meio de dados de duas pesquisas nacionais: #JuventudeConectada 2014 e TIC na Educação 2018. #JuventudeConectada foi desenvolvido pelo Núcleo de Apoio à Cultura e Extensão Escola do Futuro da Universidade de São Paulo - NACE EF-USP (www.futuro.usp.br), em associação com a Fundação Telefonica Vivo Brasil (<http://fundacaotelefonicavivo.org.br>). A pesquisa entrevistou 1.440 jovens brasileiros e também desenvolveu sessões de grupos focais com celebridades e educadores e observação da navegação por meio de um software especial aplicado a dez adolescentes autorizados. A pesquisa TIC na Educação de 2018 foi desenvolvida pelo Comitê Gestor da Internet no Brasil e entrevistou 11.361 alunos, além de professores e diretores. As principais conclusões são: smartphones para democratizar a conexão à Internet; alunos desafiados por notícias falsas e fontes de informação; as escolas não sendo o principal local de conexão e os alunos sendo aprendizes autônomos em relação à literacias de mídia e informação.

Palavras-chave: Comportamento de alunos brasileiros conectados; #JuventudeConectada; Literacias de Mídia e Informação (LMI) - Brasil; Pesquisa TIC na Educação 2018.

1. Introduction

The School of the Future Research and Culture Laboratory at the University of São Paulo (NACE EF-USP) began its activities in 1989 and became a Research Center in 1993 linked to the Dean's Office. Since the beginning, it seeks to improve education in Brazil through the introduction of digital culture within formal and open education considering technology as a language and its impacts building a new ecosystem of learning and the production of knowledge. The commitment to theoretical research and to applied strategies

for education, communication and information are the core principles guiding its operational activities.

This new ecosystem of learning with digital networks and technologies requires out-of-box studies regarding the impacts of ICT on the hyperconnected contemporary life. NACE EF-USP so developed a partnership model involving university, society, different research funding agencies and government spheres in order to fund action-research projects. In addition, the Digital Culture Observatory was created in 2007, focusing on emerging digital literacies and media and information literacies (MIL), new social practices and sociabilities. Surveys, ethnographic and netnography studies constitute a platform to investigate new behaviors within a society of connected players embedded in IoT, Big Data and artificial intelligence (AI).

This hyperconnected contemporary society constitute a new centrality around which the reconfiguration of social relations and their power structures emerges and urges. Considering an increasingly present remix culture, a new order and new protocols need to be collectively developed and implemented to account for the increasingly complex mediations of network-actors and their interfaces (LATOURET, 2005). Contemporary social networks and digital platforms have established a new ecosystem of human relationships and interactions and intelligent interfaces, profoundly altering the appropriation and production of knowledge in relation to traditional methods (PASSARELLI e ANGELUCI, 2018).

In fact, a number of recent researches confirm trends on new uses and appropriation of digital devices among young people (CETIC.BR, 2016), aligned with NACE EF-USP findings along the years. Many authors have also been discussing how actors in the society are reshaping their social experience due to the impact of ICT (FLORIDI, 2014). New perceptions on attention, ownership, privacy and responsibility are emerging and requesting adequate framework to better understand and make decisions in a digital culture. The next section presents some highlights of NACE EF-USP research trying to address some contemporary challenges.

2. National surveys on Brazilian connected youth

2.1. #Connected Youth Brazil

Based on NACE EF-USP's expertise in both theoretical and applied research on ICT influences (CASTELLS, 2009; PASSARELLI e ANGELUCI, 2014; PASSARELLI e JUNQUEIRA, 2012; PASSARELLI, JUNQUEIRA e ANGELUCI, 2014; PASSARELLI, 2011; PASSARELLI, *et al.*, 2014; PASSARELLI, 2014; PASSARELLI e GOMES, 2020; PASSARELLI e ANGELUCI, 2018), Brazilian Telefonica Foundation invited NACE EF-USP to perform a partnership in national surveys regarding youth behavior and digital technology. Two big reports were developed then: "Interactive Generations Brazil" (2012) and "Connected Youth Brazil" (2014) (PASSARELLI e ANGELUCI, 2013; PASSARELLI, *et al.*, 2014). This manuscript presents a brief overview on main topics of the original report 2014 plus new insights to previous collected data based on TIC Education Report 2019 (CGI.BR, 2019).

Connected Youth Brazil Study of 2014 took into consideration four main axes regarding connected youth behavior: education, leisure, entrepreneurship performance and activism. 1,440 Brazilians between 16 and 24 years old from the five regions of the country were interviewed regarding transformations and opportunities brought to them by digital connection. Research vectors also included socioeconomic class, educational level, and were ranked regarding their digital abilities as beginner, intermediate and advanced explorers.

A qualitative collection was carried out as well, using 6 focus groups (with 7-9 participants), online focus groups (3 groups) and presential discussions (3 groups,) and Internet usage monitoring through E-meter software (10 participants allowed to be monitored for this purpose). Also, 8 specialists nationally recognized by their knowledge in the investigated fields were interviewed in order to deepen complex issues and promote the understanding of ideas, perceptions and opinions revealed during quantitative stage.

2.2. ICT in Education Report 2018 (CGI.br)

The Brazilian Internet Steering Committee (CGI.br), through the Regional Center for Studies on the Development of the Information Society (Cetic.br), a department of the Brazilian Network Information Center (NIC.br) developed a Survey on the Use of Information and Communication Technologies in Brazilian Schools.

The survey was developed in urban schools interviewing in person 11,142 students, 1,807 teachers, 906 pedagogical coordinators and 979 school directors. Interviews were developed by telephone with 1433 school directors and/or responsible with rural schools. The objective of the ICT in Education survey is to identify ICT access, use, and appropriation in Brazilian schools in relation to pedagogical practices and school administration.

3. Emerging trends on Brazilian connected students behavior based on 2014 and 2018 surveys

3.1. Smartphone is protagonist in connecting to the Internet

For the surveyed youth on the 2014 study, no matter gender, age or socioeconomic class both desktops and smartphones were devices to access the Internet – and 42% considered the smartphone the main one. The ICT Education Report 2018 shows that after three years of stability, the percentage of urban public schools that replaced computers went from 23% in 2015 to 34% in 2018. Obsolete devices were mentioned by educators as one of the main challenges to expanding connectivity in schools.

Since 2014 mobile communication through the use of smartphones is helping teachers and students to develop learning and other communication activities. Brazilian youth were also very interested in mobile communication for chatting. In a daily basis, 90% of respondents in 2014 used social network at least one time as a priority – “leisure and entertainment”, “seeking information”, “support and online services” and “education and learning activities” were behind in this order. In relation to school activities, 43% of respondents argued that they use Internet more than once a day and were even more engaged with online courses. Fig. 1 summarized youth performances by activities. On the other hand,

2018 ICT survey presents that In rural areas, 58% of those responsible for schools reported using mobile phones in administrative activities, and of these, 52% used their personal phones, which were not funded by the schools. Furthermore, 52% said that teachers took their own devices to carry out activities with students.

3.2. Fake news / Content publishing / Net-activism

The 2014 survey presents that in several opportunities, interviewees expressed to be worried about critics, discussions and misunderstanding over disseminated content in social networks. It can be pointed out the youth wish for acceptance and low tolerance facing a debate or a polemic issue. Therefore, they usually avoid confrontation with divergent or opposite opinions. This trend is still resident on 2018 survey. The ICT in Education survey also investigated the perceptions of teachers about students' knowledge of safe Internet use and using information on the Internet. The 2018 results show that most teachers said they believed their students knew how to use computers and the Internet to access content on subjects addressed in class (75%) and to search on the Internet (74%). However, only 32% of teachers said their students knew how to evaluate information that should not be shared on the Internet or compare websites and identify relevant sources of information. Furthermore, only one out of five teachers (21%) believed that their students knew how to interpret and judge the reliability of information available online.

2014 survey also has shown that for the young Brazilian connected, participation in popular mobilizations or net-activism, even if restricted to the virtual environment, without face-to-face involvement, was considered totally valid. Note that when asked whether they would not approve or agree with the people who only participated in the social movements only through the internet, 27% of young people declare to agree totally or almost totally that it is necessary to participate in person. A slightly lower share, 14%, on the contrary, declares to disagree totally or almost totally, while 27% of the interviewees remained in neutral positions regarding the subject matter.

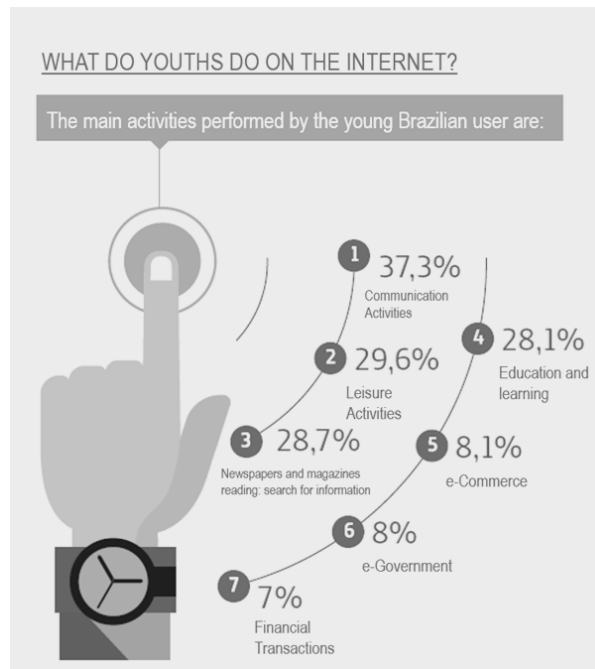
2014 survey revealed as well unknown sides of youth behavior and social practices that enable further discussions on juvenile manifests. As for using the internet to learn about social, environmental and political causes, young people surveyed were equally divided. A portion of 36% of the sample totally or almost totally agrees with the statement, and only 7% disagree totally or almost totally. Neutral positions concentrate 24% of the total of the young people interviewed.

It appears that the majority of young people surveyed consider that producing and sharing content on social networks – such as videos, photos and texts – about social and/or environmental problems are very effective ways to protest. In its results, the survey accounted for 43% of responses of total agreement or almost total with this concept, compared to only 5% of total or almost total disagreement, and 24% of neutrality or indifference. The results positively indicate the youth's perception that the Internet can be an effective instrument in raising awareness and acting effectively in the defense of social and environmental causes.

Considering that this data was collected right after the effervescence of the June 2013 protests in Brazil, it is necessary pointing that the online social network environment changed a lot since then. It is important to observe how concerns on manipulation of user's data has emerged as a hot topic, leading to problematic scenarios of misinformation and

fake news, deep fakes, robots and other strategies to mine reputations and influence opinions with bias. How is the connected Brazilian youth really aware of online misinformation? How different they behave when faced with controversies on Twitter and Facebook compared to older generations? These questions claim for more updated data collections.

Fig. 1 – Students performances by activities



Source: Adapted from Passarelli, *et al.*, 2014

3.3. Brazilian students use Internet for learning activities but school is not the main place to do so

The 2014 survey pointed that Internet was consolidated as an important vector to support the educational activities of the Brazilian connected youth, mainly from its use in the domestic sphere. In fact, 82% of the young people surveyed stated that they had already used it at home to carry out activities proposed at school - and 77% of them said they had used the Internet at home to do work on their own initiative.

In 2018, the results of the survey remained stable regarding the connectivity of students in urban schools: 84% were Internet users, *i. e.*, reported having accessed the Internet in the 3 months prior to the study. However, the data show inequalities in the proportions among students from different regions of the country: in the South, for example, 90% of students reported being Internet users, while in the North, this proportion was 74%. In the other regions, the proportions gravitated around the national average: 87% in the Southeast, 84% in the Center-West and 80% in the Northeast.

Another important trend to observe is that school is not the most important place to connect to the Internet. Among different locations of access, students who were Internet

users went online predominately at home (93% in living rooms and 80% in their bedrooms), and at other people's homes, such as relatives and friends (90%). Confirming the trend already observed in previous editions of the survey, schools were not a priority location for Internet use for students, considering that the proportion of students who mentioned the school environment was a little over one-third (37%).

Regarding the educational process, the study appointed that new technologies and media and information literacies are shaping the relation between teachers and students inside the school environment as a crescent tendency building a classroom new ecology. This new connected scenario imposes urgency and transformation within educational processes: the teacher is no longer the only reliable privileged source of information and knowledge but, on the other hand, he is empowered to teach them how to think and find relevant information in a sea of abundance. New pedagogical approaches demand professors and schools to reshape their core rules to offer students education skills for their future, and no one so far can predict exactly what it is going to be.

2014 survey has pointed that 47% of connected young Brazilians totally or almost totally agree with the statement that using information and communication technologies to teach is also seen as an important learning factor. An identical percentage of respondents also declared that they believe totally or almost that the Internet and other technologies collaborate to improve the relationship and the exchange of knowledge between colleagues.

2018 survey also points the use of online videos and tutorials by teachers to learn about technologies increased 16 percentage points between 2015 and 2018. Among students, this percentage also grew from 63% in 2015 to 78% in 2018.

The growth of distance learning education in Brazil shows how boundaries between technologies and learning environment are dissolving. Due to mobility issues in big cities and rural areas, new ecologies of learning contexts are getting stronger. The robustness of virtual learning environments, increasingly lighter and responsive to mobile devices, contributes to this scenario. This is something to be further investigated, mainly concerning to lower-income individuals.

3.4. Brazilian students are autonomous in developing media literacy

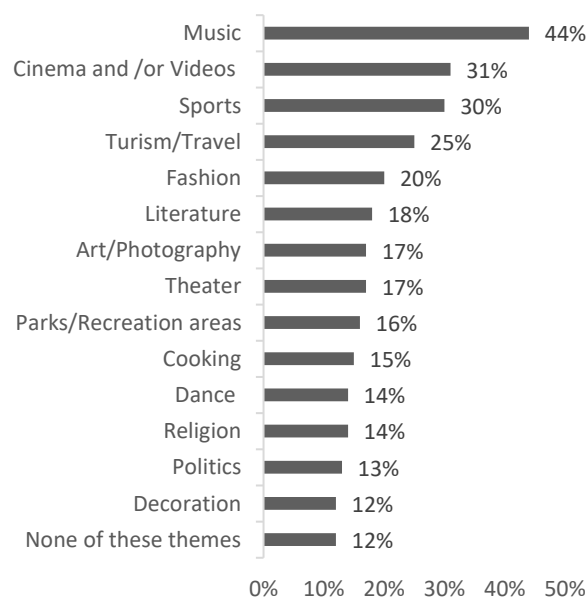
Regarding Fig. 2, the three main categories pointed out for the dissemination, creation or production of events and content – Music, Cinema and /or Videos and Sports – coincide, in the same order, with the themes also most searched by the Brazilian connected youth. Generally speaking, the themes on which young people most intensively seek information on the Internet are also the same ones on which they usually disseminate, create or produce events or content, demonstrating a coherent order of priorities for cultural, informational and recreational interests. Still in the same direction, religion gains greater relative relevance in the production of events and content when compared to the interests of research by youth politics on the Internet.

Regarding student media and information literacy ICT 2018 survey reinforce trends shown in 2014 survey. In this respect, in 2018, 44% of students who were Internet users learned about technologies with teachers at school, a percentage lower than that for other sources of information and support for ICT use. Many students who were Internet users said they learned about computers and the Internet on their own (78%) – a percentage that was

higher among students in the 2nd year of Secondary Education (86%). Between 2015 and 2018, as was the case among teachers, there was an increase in the proportion of students who reported learning about technologies through online videos or tutorials, rising from 63% to 78%. Learning through these tools was also more common among students in the 9th year of Elementary Education (83%) and the 2nd year of Secondary Education (89%).

It is worthy pointing that the emerging of mobile technologies and the even more constant presence of smartphones nowadays bring to this sole screen the core function of integrating all these activities. Music, sports and cooking circulate as a mix of themes being offered by the algorithms of Instagram, Tik Tok and many others mobile applications, raising questions about youth autonomy in deciding what to see and produce. How much are the youngsters influenced by the recommendation systems of these platforms? Their AI processes get more robust and complex as time goes by and, although there is still a long way to go regarding AI, it is certainly more developed than years ago and will be much more improvements in a couple of years.

Fig. 2 – Internet usage to publicize, create and produce content



Source: Adapted from Passarelli, *et al.*, 2014

4. Final remarks

Our intention in this paper was to bring to light main trends in ICT use and appropriation among Brazilian young population through the comparison of collected data in two national surveys: 2014 #Connected Youth Brazil and 2018 ICT in Education Report. Our focus was strongly related to education, uses and attitudes of students due to the fact that both surveys were realized in formal education system environment. Mains findings were distributed in four axes: smartphone protagonism in connecting to the Internet; fake news/

/content publishing/net-activism; school is not main place to connect and students are mostly autonomous in developing media literacy.

Data from ICT in Education 2018 survey indicate universal Internet access among teachers, including connection via mobile phones (98%) and Internet use in schools (89%). Many teachers also had computers in their homes, especially portable devices, according to 91% of teachers who taught in schools in urban areas. This is a very strong indicator towards democratization of ICT resources among teachers mainly in south and southeast regions.

On the other hand, fragile conditions of schools, especially rural schools, in terms of availability of the Internet and adequate devices to use technologies in pedagogical activities, brings to light the barriers faced by these institutions in adapting to the directives set forth by the National Common Curricular Base (BNCC) regarding the ICT skills to be developed by students.

BNCC requires that students understand how technologies and media work and learn to be both creators and disseminators of their own productions, all based on creative, reflective and ethical attitudes. It is worth mention that teachers are also required to develop media and information literacy. This is even more challenging for teachers than that for students, even due to generation gap.

The results of the ICT in Education 2018 survey highlight the school community participation to carry out initiatives to improve conditions for ICT access, use, and appropriation in educational institutions. It is also important to consider recognition of efforts made by teachers to seek out strategies to train and improve their practice and better develop curricular content with their students, and that of students who appropriate technologies to expand the school environment beyond the four walls of classrooms.

Schooling is an empowerment process that leads to deep transformation. It begins in the classroom and shall expand into social network behavior. It is also important to consider risks related to psychological health, beyond ethical and moral values that can be easily deconstructed in Internet and smartphone use (like social network addiction). Citizen's empowerment toward a critical, autonomous, ethical and protagonist development also shall consider connecting schools and families as key players in developing skills for the contemporary hyperconnected society.

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