Media and Information Literacy among Brazilian K-12 Teachers:
a case study at Guarujá Municipal Education System

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ABSTRACT

The aim of this study was to map the access, use and appropriation of In-formation and Communication Technologies (ICT) by K-12 teachers in the city of Guarujá, on the coast of the State of São Paulo, Brazil. The investigation was carried out throughout the distance training workshops and distance learning activities offered by the Research Center for New Communications Technologies Applied to Education from the University of São Paulo – School of the Future-USP. An Innovation Ecosystem in Basic Education pro-gram was conceived in order to conduct the activities and needed to be adapted to fully digital circumstances due to the global COVID-19 emergency in 2020 and 2021. This change ended up allowing the collection of important information about teachers' perceptions of their digital competences. Among the results pointed out, activities started to be carried out digitally, including by non-conventional means, such as through social networks and also mediated by cell phones; the mandatory experience with the digital environment made the teachers understand that it will not be possible to return to a relationship of certain distance with the computational resources. This scenario makes recurrent difficulties even more serious, such as lack of technical support and maintenance, low Internet connection speed and pedagogical support for creating class content with computers.

Keywords: Media and Information Literacy, Digital Competences and Technologies in Education.

1. INTRODUCTION

School of the Future-USP origins
Since its inauguration in 1989, the Research Center for New Communications Technologies Applied to Education – School of the Future-USP has a mission to improve education in Brazil through the introduction of ICT into formal and in-formal learning and teaching environments. In order to do so School of the Future-USP developed a partnership model involving university, society and different research funding agencies and government spheres to fund action research projects. With its projects and research activities the objective is to implement innovative proposals that contribute to the reconfiguration of learning and teaching processes, through the use of the Internet and digital technologies to build a new classroom ecology. Accordingly, its operational activities are guided by core principles such as a commitment to research and the evaluation of different educational strategies and the application of academic research to classroom practice.

In order to differentiate the development of action-research projects from survey and qualitative research School of the Future – USP created a separate re-search team called Digital Culture Observatory devoted to investigate connected actor's behaviors in different contexts. These investigations results are published in international conferences and indexed journals, as well as in e-books and other traditional media [1, 2, 3]. The latest survey results are presented as follows.

Innovation Ecosystem in Basic Education program
This paper reports the main findings related to a survey carried out with the K-12 educators participating in the distance training workshops conducted by School of the Future-USP through the 6 modules of the Ecosystem of Innovation in Basic Education program, offered to the Municipal Secretary of Education from Guarujá, a coastal city of 300,000 inhabitants in the state of São Paulo, Brazil. The pro-gram was offered between the months of August and December 2020. The Ecosystem of Innovation in Basic Education is a hybrid digital ecosystem to foster the development of media and information literacy (MIL) in the distance training of educators and multipliers.

The Covid-19 pandemic that strongly emerged in Brazil in March 2020 required adaptations to the work proposal, which became totally and exclusively remote, with asynchronous activities made available by offering a platform and various digital content with synchronous remote activities, carried out through workshops via Google Meets to reinforce and consolidate topics covered in asynchronous content.

In this context, research has become essential to collect impressions and understand behaviors, uses and appropriations of digital information that circulated in this ecosystem. The survey application made it possible to understand cultural nuances, acceptance or resistance to technologies, collaborating in the permanent improvement and revision of the platform, methods, contents and training tools used, providing constant development, remodeling and improvement of the Innovation Ecosystem in Basic Education program.

Access, use and appropriation of ICT were approached from the following are-as of investigation: users' professional profile; use, skills and specific training for the use of ICT; knowledge about copyright and open licenses; notions of cybersecurity and post-truth (fake news); socio-emotional skills in hybrid environments; educational and coordination activities proposed by them based on training; changes in attitudes and behavior after training.

The results here presented were organized in 5 indicators in order to shape the data in to categories that emerged when modelling descriptive statistics, highlighting the main initial insights discussed in the subsequent sections.

2. METHOD

The survey is a questionnaire with multiple choice questions structured in three blocks: the first one aimed to obtain socio-demographic data of respondents; the second was structured in sentences to indicate the degree of agreement and frequency with regard to some of the seven areas of investigation indicated in the Introduction; finally, the third and last block of questions also covered the previously indicated areas of investigation, although it was aligned in its design with questionnaires of national scope for comparison purposes. Its formatting is anchored in previous studies already carried out by School of the Future-USP in the last two decades [3, 4, 5, 6, 7], and also aligned with the theoretical-methodological procedures used by authors who investigate the behavior of information users [8]; additionally, it is inspired by techniques and instruments applied in studies by Brazilian national research entities such as Cetic.br, which since 2010 has been collecting data on the behavior of users of digital information and ICTs in schools through the ICT Education survey [9], which was used in some comparative scenarios before and during Pandemic landscape.

The scope of the sample is local and includes 129 (N=129) respondents from 450 K-12 teachers from the Municipal Secretary of Education of Guarujá who participated in 06 (six) virtual training modules over 06 (six) months. It has a confidence level of 95%, with a margin of error of 7.3%. In terms of genre, 12.4% were male and 86.7% female; considering the age group: 29 to 39 years old – 15.8%; 40 to 49 years old – 21.6%; 50 to 59 years old – 52.2%; and 60 to 66 years old – 17.5%. Regarding the educational level, only 1.6% had a PhD degree and 2.3% a master degree; most of them had a specialization course (62.8%) and 33.3% were only graduated. According to the classification of the Brazilian Institute of Geography and Statistics (IBGE), the family income of 3.1% were R$ 20,900.01 or more (around US$ 3,900); 25.6% between R$ 10,450.01 to R$ 20,900.00 (US$ 1,900 to US$ 3,900); 63.6% in the range of R$ 4,180.01 to R$ 10,450.00 (US$ 780 to US$ 1,900); and 7.8% lived in families with income from R$2,090.01 to R$4,180.00 (US$ 390 to US$ 780).

3. RESULTS

Using the digital
When asked "How do you assess your digital competence?", almost 80% of respondents consider themselves newbies in dealing with digital technologies. Pioneers correspond only to a very small portion of teachers (Fig. 1).
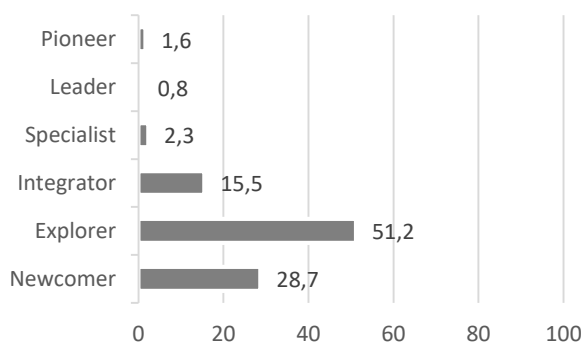

Fig. 1. Perception of digital competence, following the concept of European Commission for Education.

Although 56% believe digital resources will be permanent after the end of coronavirus pandemic, an important part of respondents (39%) are skeptical or are inclined to consider the digital environments use will weaken (Fig. 2).
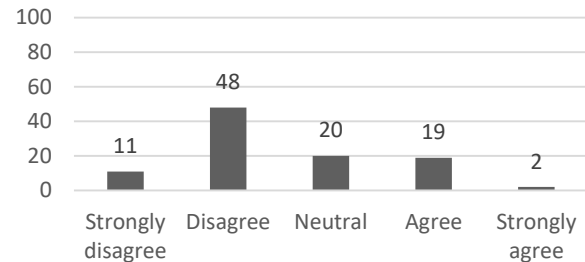

Fig. 2. "The use of environments and digital resources for activities and classes with students will decrease after the end of the pandemic?" (%).

Figure 3 showed that the usage of social media for pedagogical purposes tends to be prominent. It is at least occasional for 87% of teachers.
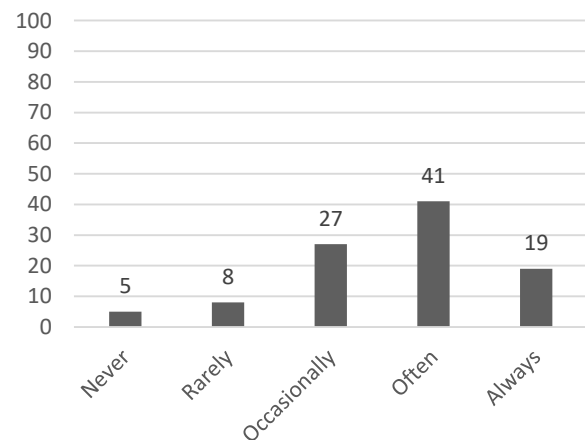

Fig. 3. Indicate your level of agreement on the following statement: "I use social media as a pedagogical tool in my classes" (%).

Indicator #1: regarding online activities
The number of teachers who sought online training grew from 2019 to 2020. It is thought that due to the challenges of the pandemic and distance learning, improving knowledge in the use of the digital environment has become a priority for the vast majority of professionals (Fig. 4).
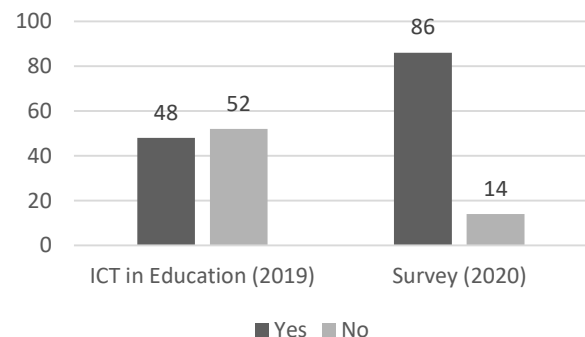

Fig. 4. Teacher who took distance courses on the Internet" (%).

The digital presence of teachers in 2020 grew in forums and discussion groups. Again, the evidence points that this movement towards these virtual spaces was accentuated by the demand for hybrid teaching activities (Fig. 5).
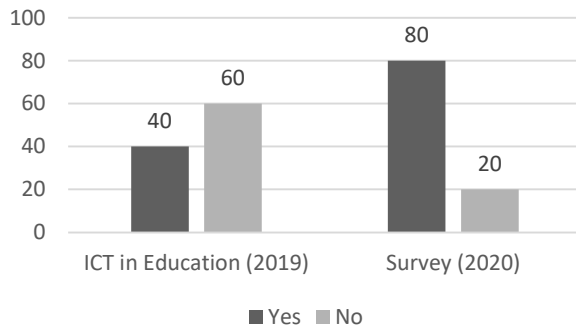

Fig. 5. Teachers who participated in forums or discussion groups on the Internet (%).

Data indicate in Figure 6 that in the analyzed period there was no significant change with regard to the habit of teachers in consuming information on the Internet.
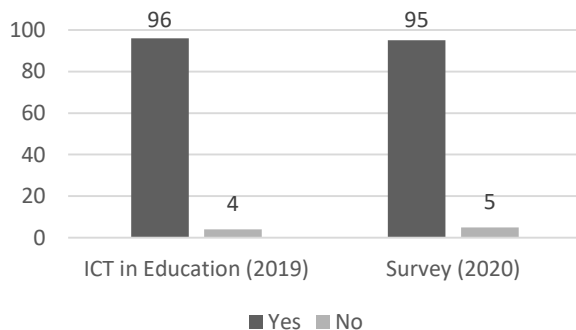

Fig. 6. Teachers who read newspapers, magazines or news on the Internet (%).

Indicator #2: regarding the way of learning and updating on the use of the computer and the Internet
There is a slight increase in the use of videos and online tutorials aimed at Internet usage competencies from 2019 to 2020 (Fig. 7).
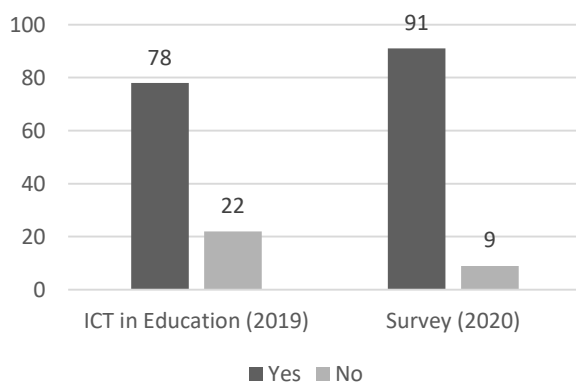

Fig. 7. Teachers learning and updating on the use of the computer and the Internet with videos or online tutorials (%).

Indicator #3: regarding the frequency of teachers accessing the Internet via mobile phone in activities with students
Data show in Figure 8 that there was a significant increase in the use of mobile devices in activities between teachers and students in the year 2020. The non-use of the cell phone in 2019, which reached one third of the respondents, was reduced to 10% of the total in the following year. Also, there was an increase in frequency with 64% using it more than once a day in 2020.
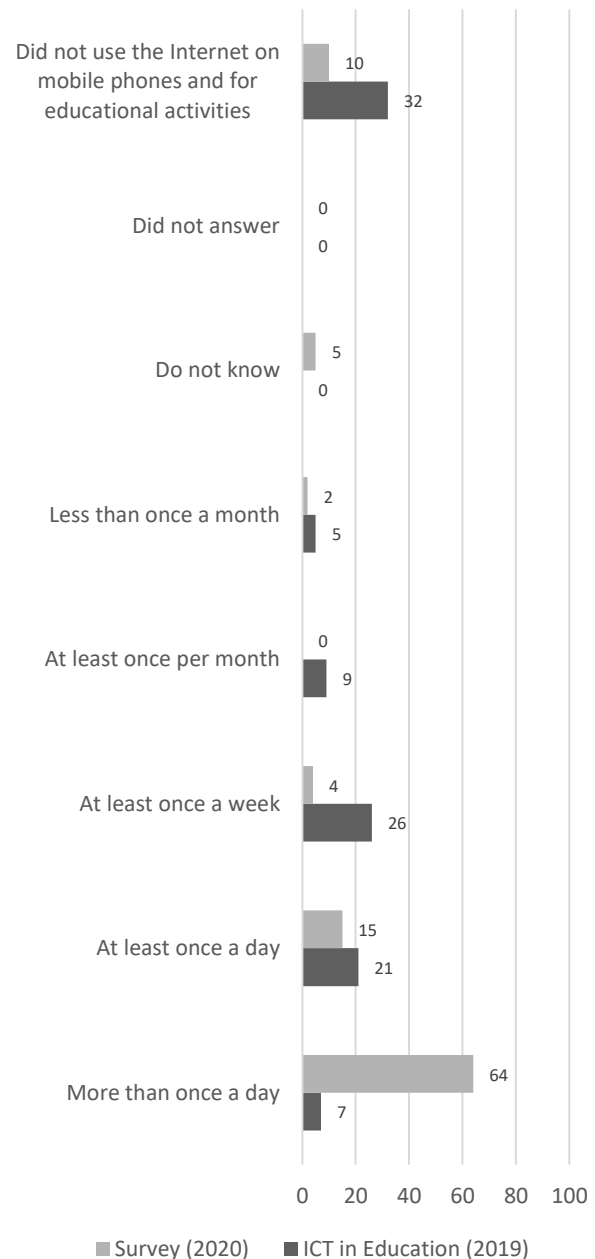

Fig. 8. Frequency of teachers accessing the Internet via mobile phone in activities with students (%).

Indicator #4: regarding the perception of teachers about possible impacts of ICT on pedagogical practices
With respect to new teaching methods enhanced by the use of ICT, the comparison between the data from the two surveys did not point out significant differences with regard to the application of new teaching-learning strategies by teachers (Fig. 9).
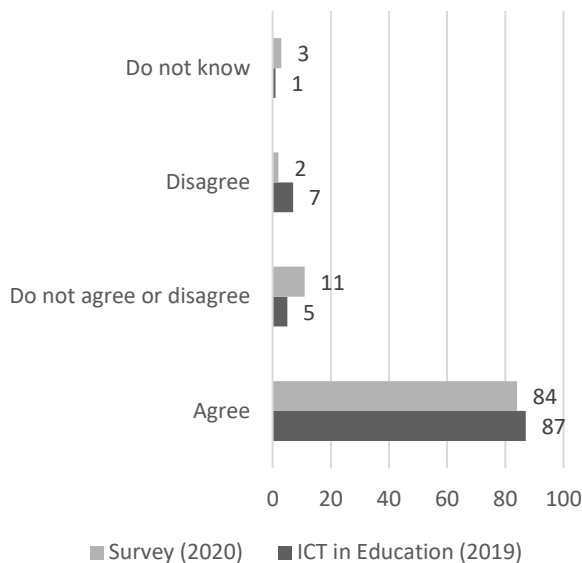
Fig. 9. Started to adopt new teaching methods (%).

Regarding the improvement in communication with the student (Fig. 10), although with a small marginal difference, there is an indication of growth in the greater agreement from 2019 to 2020.
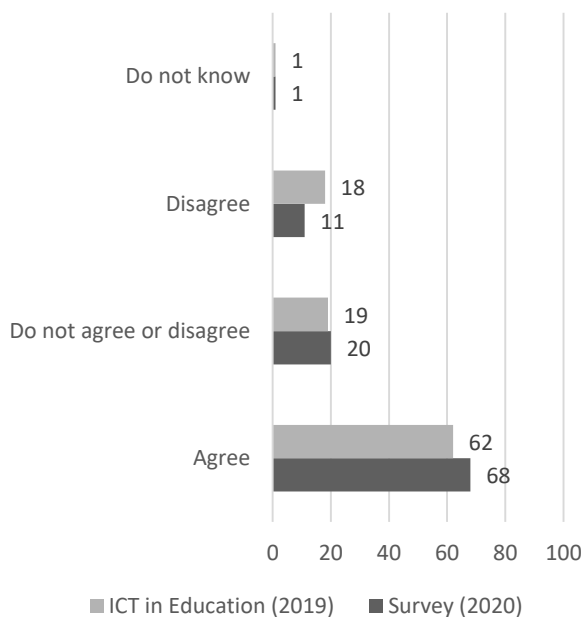

Fig. 10. Started to communicate with students more easily (%).

Indicator #5: regarding teachers' perception of students' knowledge about the use of computers and the Internet
The 2020 data suggests a better balance between responses. In 2019, most teachers (70%) believed that students did not know how to assess what they should not share online. For 24% of respondents in 2020, however, students do not know - an important reduction in perception. Most (45%) believe that students know how to evaluate what they should not post (Fig. 11).
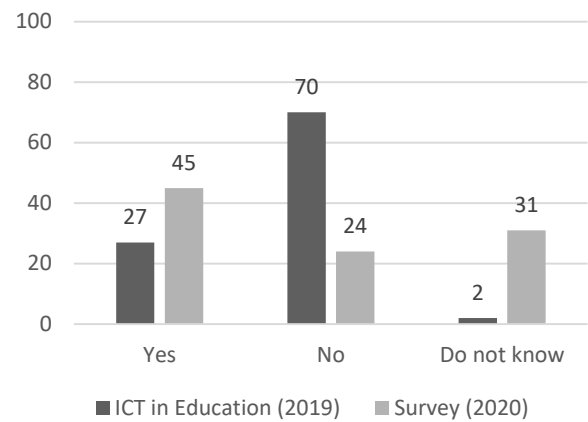

Fig. 11. Assess what information they shouldn't share on the Internet (%).

Figure 12 reveal that, for teachers, their students have become more reliable in terms of their skills in interpreting and judging information online. Note that almost 80% of respondents in 2019 did not trust this ability of students. For 2020, there was a reduction of this distrust, being restricted to only 1/4 of the respondents.
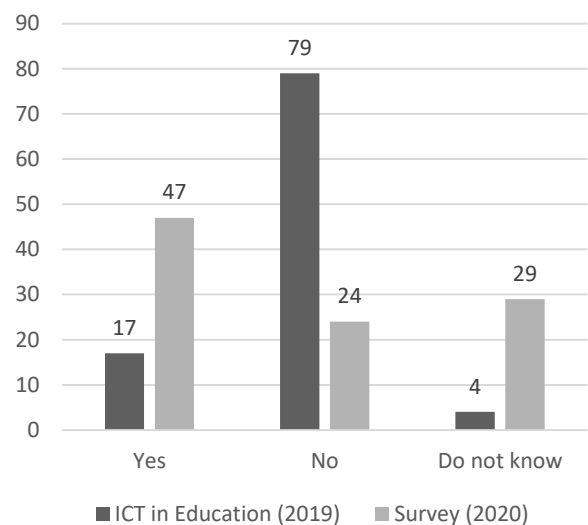

Fig. 12. Interpret and judge the reliability of information available on the Internet (%).

4. DISCUSSIONS AND FINAL REMARKS

Data analyzed indicated that survey respondents are mostly part of the Brazilian middle class and have specialization courses. Almost 70% are over 50 years old, therefore, it is a mature and elderly adult population. About 95% of respondents consider themselves a beginner in technologies, as they rank in the first strata of digital competence. These initial data reveal, in part, the challenges faced by this group of K-12 teachers, as well as their perceptions, expectations and discoveries along the training path. In general terms, it is a group that recognizes the transforming role of emerging technologies in the processes of interaction, communication and citizen participation in life in society, as the data reveal. They understand that, due to the Covid-19 pandemic in 2020, the mandatory experience with the digital environment made them understand that it will not be possible to return to a

relationship of a certain distance with computing resources, as recorded in the reports: migration to the digital and the hybrid environment that reconciles face-to-face and remote moments is a path of no return.

This transition to digital is revealed by the predominance of activities that are now being carried out in digital, including through unconventional means, such as social networks and also mediated by cell phones: the data show that teachers started to use more frequent social networks and cell phones for didactic ex-changes with their students – demonstrating, however, that they are always alert in the relationship between personal/professional life on the networks. In this experience with digital, it is also clear that most respondents are aware of the importance of respecting copyright and citing sources. This relationship with the digital in the production of content, however, remains superficial: when they expose that they play little on the Internet, they show little proximity to contemporary practices of network interaction, typical of the new generations, being out of step with the universe and the languages that they are essential to be incorporated into teaching practices.

Training for the use of computers and the Internet seems to be a solitary activity for the vast majority: with some protagonism of the education departments, learning and using digital resources has become an individual and personal experience, with few exchanges - especially with students. The lack of knowledge exchange between generations is perhaps one of the main bottlenecks and accentuates the generational gap with regard to cultural references and media languages that are fundamental for healthy exchanges in digital environments.

Other complicating factors for a better experience in their relationship with technologies are pointed out in the set of questions about the main barriers to ICT: lack of technical support and maintenance, low Internet connection speed and pedagogical support for creating content for classes with computers are among the main challenges of the group of teachers consulted.

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