EXECUTIVE SUMMARY

ICT IN EDUCATION SURVEY

2022

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Executive Summary ICT in Education 2022

Universal and meaningful connectivity[1] stands out as one of the main agendas of educational policies in Brazil, especially with regard to schools. At the same time, education for digital citizenship is also present in the public debate, as a way of promoting the guarantee of digital rights for children. These are also some of the themes addressed by the indicators of the ICT in Education 2022 survey, collected from students, educators, and managers of Primary and Secondary Education schools in Brazil.

Connectivity and use of digital technologies in Primary and Secondary Education schools

According to the ICT in Education 2022 survey, 94% of Primary and Secondary Education schools had Internet access. In the 2020 edition of the survey, 82% of schools had Internet access. The the estimates for the speed of the main Internet connection in schools also increased between the 2020 and 2022 editions of the survey. According to the 2020 edition, 11% of municipal schools and 22% of state schools had a main Internet connection speed of more than 51 Mbps, proportions that reached 29% and 52%, respectively, in the 2022 edition.

58% OF SCHOOLS HAD COMPUTERS AND INTERNET ACCESS FOR STUDENTS TO USE

Despite the progress made, the country still faces challenges in meeting the universalization and access qualification targets, especially with regard to the use of digital technologies by students in learning activities (Chart 1). There was Internet access in the classrooms in 79% of municipal schools and 74% of state schools, but access was available for students to use in only 60% of municipal schools and 61% of state schools. According to 46% of public school managers (municipal, state, and federal), the school Internet always or almost always did not support multiple accesses at the same time, and 43% said that the institution's Internet signal always or almost always did not reach the rooms farthest away from the router.

This interference in the quality of connectivity hinders the availability of connectivity in school spaces and its dissemination among students and teachers, which is also demonstrated by the indicators on the availability of digital devices in educational institutions. Although 91% of schools had at least one type of computer (desktops, portable computers, or tablets), only 63% had devices for students to use in educational activities. Analysis of the indicator for the availability of Internet access and computers for student use shows the intensification of these connectivity inequalities in schools (Chart 1).

[1] International Telecommunication Union. (2021). *Achieving universal and meaningful digital connectivity: Setting a baseline and targets for 2030.*

Use of digital technologies in teaching and learning activities

Of all the students who were Internet users, 77% said they accessed the Internet at school, a proportion that was 51% among students in the Primary Education and 92% among students in Upper Secondary Education. Among students in the Lower Secondary Education (55%) and Upper Secondary Education (81%), mobile phones were the devices most used to access the Internet at school. Mobile networks were also mentioned by 42% of these students when accessing the Internet at school, while 31% used the school Wi-Fi.

The main reasons reported by students for not accessing the Internet in schools were the fact that students were prohibited from using the school Internet (46%), mobile phone use at school was prohibited (61%), and Internet activities with students did not carry out during the classes (64%). For 60% of students from schools located in rural areas, the quality of the Internet signal was the main reason for not accessing the Internet at school. Carrying out research on topics addressed by teachers in class (57%) was the learning activity most carried out by students using the Internet at school.

78% OF TEACHERS ASKED STUDENTS TO USE DIGITAL TECHNOLOGIES DURING CLASS TO CARRY OUT RESEARCH

The activities in which students had to use digital technologies to produce content were mentioned the least (Chart 2). These aspects are also present in the data collected from teachers. Of all the Primary and Secondary Education teachers, 75% used digital technologies to carry out lectures to students and 78% asked students to use digital technologies to carry out research on the topics covered in class. However, a smaller proportion asked students to use digital resources to record or produce videos or music (47%), produce dissertations or literary texts (44%), or create spreadsheets and charts (19%). For teachers who did not use digital technologies with students in teaching and learning activities, the lack of computers for teachers and students to use at school (84%) was among the main reasons for not adopting these resources in their teaching practice (Table 1).

Solving problems and computational thinking

Regarding the development of students' digital skills related to computational thinking and problem-solving, 64% of teachers said they always or almost always encouraged students to work collaboratively using digital technologies. However, a smaller proportion of teachers mentioned frequently carrying out activities in which students had to evaluate the benefits and advantages of technological solutions or create new solutions or products using these resources (Chart 5).

According to 24% of the directors of studies, the schools offered maker education or practical classes or activities, and 23% offered unplugged computing initiatives, while robotics activities (16%) or coding and programming classes (13%) were mentioned to a lesser extent. According to 42% of students who were Internet users, their teachers talked to them about the use of technologies such as Artificial Intelligence (AI).

The data also shows the need to support teachers so that these topics are disseminated in the curricula: 14% of schools offered training for teachers on programming languages and robotics in the 12 months prior to the survey.

CHART 1

SCHOOLS BY CONNECTIVITY AVAILABILITY FOR STUDENT USE IN EDUCATIONAL ACTIVITIES (2022)

Total number of Primary and Secondary Education schools (%)

94%
of schools had Internet access

91%
of schools had working computers

89%
of schools had computers and Internet access

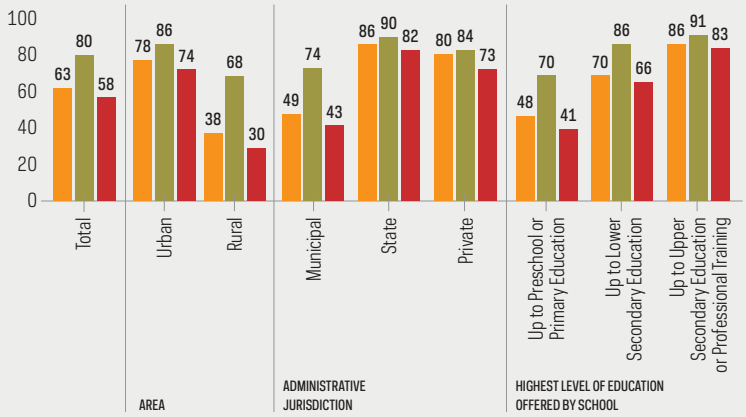


CHART 2

STUDENTS BY USE OF DIGITAL TECHNOLOGIES IN EDUCATIONAL ACTIVITIES AT SCHOOL (2022)

Total number of students in Primary and Secondary Education schools who are Internet users (%)

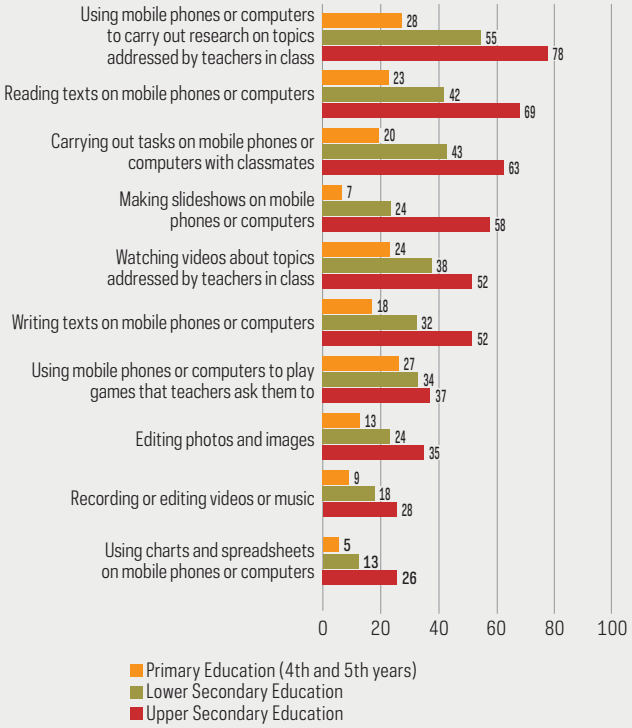


TABLE 1

TEACHERS BY REASONS FOR NOT USING DIGITAL TECHNOLOGIES IN TEACHING AND LEARNING ACTIVITIES WITH STUDENTS AT SCHOOLS (2022)

Total number of Primary and Secondary Education teachers who do not use digital technologies with students at schools (%)

Lack of computers available for use by teachers or students in school	84
Lack of Internet access for use in educational activities in school	53
Students' attention decreases when technology is used in class	50
There is nobody in the school to support teachers in using digital technologies in activities with students	38
Mobile phone use at school or in the classroom is prohibited	37
It is necessary to schedule time to use the school's technological resources	35
Has doubts about how to use digital technologies in activities with students	18
Using technologies in activities with students requires a lot of planning time	15
Other reason	27

Privacy, data protection, and information security

According to school managers, 47% of schools had documents that defined the information security and data protection policies of the institution. Concerns about student privacy and data protection led 27% of schools to stop adopting digital educational resources. The risk of data theft or leakage was the main concern reported by school managers (16%). Among teachers, measures to protect students' digital identity (34%) were the aspect that most concerned them in relation to the adoption of digital technologies. Among directors of studies, measures to protect student data and digital identity adopted by educational resources (62%) were considered more important than the amount of data collected (45%).

Education for digital citizenship

For 44% of all students who used the Internet, teachers or school educators were considered sources of information on the use of digital technologies, a proportion that reached 56% of students in schools located in rural areas. The students said that their teachers explained how to create and use passwords safely on the Internet (33%), taught them how to protect privacy on the Internet (40%), talked about what information students should or should not provide (45%), instructed them to compare online information from different sources (50%), and taught them to check if information or news on the Internet is accurate (54%).

Among teachers, the proportion of those who carried out activities with students on the safe, responsible, and critical use of the Internet went from 75% to 89% between the 2021 and 2022 editions of the survey (Chart 3). The proportion of teachers who supported students in dealing with sensitive situations on the Internet also increased, from 49% to 61% (Chart 4). Classroom conversations and discussions (83%) and the delivery of assignments and research done by students (66%) were the types of activities carried out with students cited in the highest proportions by teachers.

With regard to the activities offered by schools, 45% of directors of studies said that at least once a month there were activities for students on the safe, responsible, and critical use of the Internet at school, and 37% at least once a semester.

Survey methodology and access to data

Carried out annually since 2010, the ICT in Education survey investigates access to, and use and appropriation of, information and communication technologies (ICT) by educational communities, especially students and teachers, in teaching and learning activities and school management. The data collection for the ICT in Education 2022 survey took place between October 2022 and May 2023, in person, using the computer-assisted personal interviewing (CAPI) technique. A total of 10,448 interviews were carried out in 1,394 Primary and Secondary Education schools, both public and private, located in urban and rural areas. The school actors interviewed were 7,192 students from the 4th year of Primary Education to the 3rd year of Upper Secondary Education, 1,424 teachers, 873 directors of studies, and 959 school managers. The results of the ICT in Education survey, including tables of proportions, total values, and margins of error, are available on Cetic.br|NIC.br's website (https://www.cetic.br). The "Methodological Report" and the "Data Collection Report" can be accessed both in the printed publication and on the website.

CHART 3

TEACHERS BY THEMES OF ACTIVITIES CARRIED OUT WITH STUDENTS REGARDING SAFE, RESPONSIBLE AND CRITICAL USE OF THE INTERNET IN THE 12 MONTHS PRIOR TO THE SURVEY (2021 - 2022)

Total number of Primary and Secondary Education teachers (%)

89%
of teachers say they had carried out activities with students on at least one of these topics.

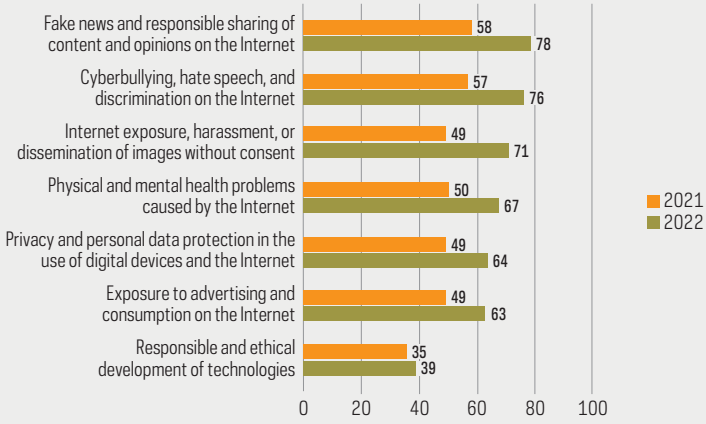


CHART 4

TEACHERS WHO HAVE SUPPORTED STUDENTS IN DEALING WITH SENSITIVE SITUATIONS THAT OCCURRED ON THE INTERNET IN THE 12 MONTHS PRIOR TO THE SURVEY, BY TYPES OF SITUATIONS (2021 - 2022)

Total number of Primary and Secondary Education teachers (%)

61%
of teachers said they had supported students in dealing with sensitive situations on the Internet.

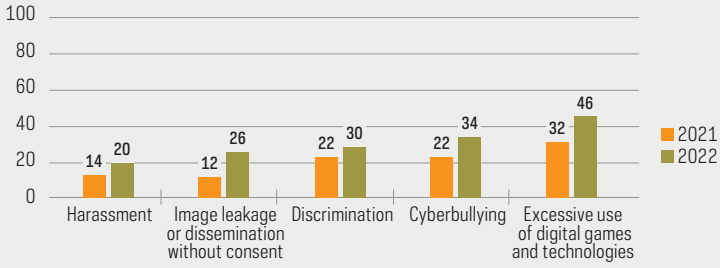
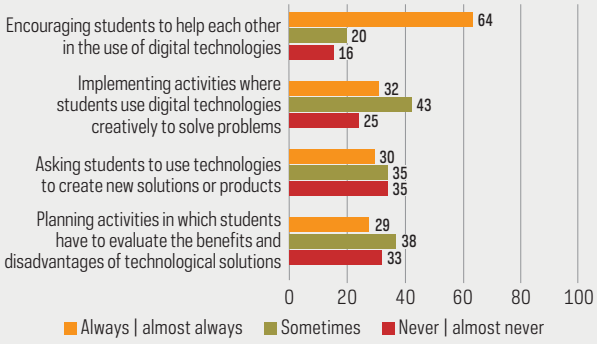


CHART 5

TEACHERS BY FREQUENCY WITH WHICH THEY CARRY OUT ACTIVITIES WITH STUDENTS - DIGITAL PROBLEM-SOLVING (2022)

Total number of Primary and Secondary Education teachers (%)



24%
of directors of studies stated that the school offered maker education or practical experiences classes

23%
unplugged computing classes

16%
robotics classes

13%
coding or programming classes

ABOUT CETIC.br

The Regional Center for Studies on the Development of the Information Society, a department of NIC.br, is responsible for producing indicators and statistics on the access and use of the Internet in Brazil, disseminating analyzes and periodic information on the Internet development in the country. Cetic.br is a Regional Study Center, under the auspices of UNESCO. More information at http://www.cetic.br/.

ABOUT NIC.br

The Brazilian Network Information Center – NIC.br (http://www.nic.br/) is a non-profit civil entity, which in addition to implementing the decisions and projects of the Brazilian Internet Steering Committee, has among its attributions: coordinate the registration of domain names – Registro.br (http://www.registro.br/), study, address and handle security incidents in Brazil – CERT.br (http://www.cert.br/), study and research network technologies and operations – CEPTRO.br (http://www.ceptro.br/), produce indicators on information and communication technologies – Cetic.br (http://www.cetic.br/), implement and operate Internet Exchange Points – IX.br (http://ix.br/), enable the participation of the Brazilian community in the global development of the Web and support the formulation of public policies – Ceweb.br (http://www.ceweb.br), and host the Brazilian W3C office (http://www.w3c.br/).

ABOUT CGI.br

The Brazilian Internet Steering Committee, responsible for establishing strategic guidelines related to the use and development of the Internet in Brazil, coordinates and integrates all Internet service initiatives in the country, promoting technical quality, innovation and dissemination of the services offered. Based on the principles of multistakeholderism and transparency, CGI.br represents a democratic Internet governance model, internationally praised, in which all sectors of society participate equitable in the decision-making. One of its formulations is the 10 Principles for the Governance and Use of the Internet in Brazil (http://www.cgi.br/principios). More information at http://www.cgi.br/.

Access complete data from the survey

The full publication and survey results are available on the **Cetic.br** website, including the tables of proportions, totals and margins of error.