The national strategy for connected schools in Brazil

October 2023

Introduction

This case study[1] aims to provide an overview of the national strategy for connected schools in Brazil[2] launched by the Government of Brazil on 26 September 2023 by Presidential Decree 11.713/2023 and to highlight potential issues for consideration during its implementation.

Background: Previous policies

The Government of Brazil has been working to enhance school connectivity for more than two decades and has implemented a number of programmes to that end[3]:

- The Citizen Assistance Service (GESAC) was launched in 2002 to provide Internet access to underserved and remote areas of Brazil, bringing connectivity to schools and public facilities, mostly through satellites.

- The Broadband in Schools Programme (PBLE) was launched in 2008 to connect urban schools , but will be discontinued in 2025.

- The Rural Connectivity Programme (4G-Rural) was launched in 2012 to improve connectivity in rural and remote areas through 4G mobile networks, including in schools and will be discontinued in 2027.

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[1] This case study has been prepared by Diogo Moyses Rodrigues in his capacity as an ITU expert, in support of ITU work on school connectivity and in partnership with the United Kingdom Foreign, Commonwealth and Development Office (FCDO).

[2] The official strategy page can be accessed at: https://www.gov.br/mec/pt-br/escolas-conectadas.

[3] All the previous major initiatives carried out by the Brazilian Government to connect schools, and the results of those initiatives, were presented in the report "Challenges and opportunities for sustainable and effective connectivity policies in Brazilian", published as part of the ITU-FCDO project in the first half of 2023 (pages 8 to 21).

- The Connected Education Innovation Policy (PIEC), which was introduced in 2017, provides a framework for maintaining connectivity in schools, with resources from the education sector, and is considered the main instrument to ensure the sustainability of connectivity initiatives.

Since 2021, new initiatives have galvanized national efforts to enhance connectivity in schools:

- In 2021, some BRL 3.1 billion collected from 5G spectrum auction revenues were allocated to improve connectivity in schools, under the coordination of the National Telecommunications Agency (ANATEL).
- The government approved Law 14.172 (Connectivity Law) under which BRL 3,5 billion was transferred to states and the federal district for investment in Internet access for students and teachers following the COVID-19 pandemic. The law was amended in 2023 to extend its application deadline to the end of 2024 and to allow it to be used to enhance connectivity in schools.
- In 2023, the Fund for the Universalization of Telecommunication Services, operated by the National Bank for Economic and Social Development (BNDES), started to expand the infrastructure and enhance connectivity in schools[4].
- In 2021, the Connected Education project was launched as part of the Connected Northeast programme, a Ministry of Communications initiative to expand high-speed networks in the northeast region, operationalized through a partnership with the National Education and Research Network.
- Wi-Fi Brazil, the successor to the Citizen Assistance Service (GESAC) and implemented by the Ministry of Communications, connects schools through the Geostationary Defence and Strategic Communications Satellite (SGDC) operated by Telebras, and through the Connected Schools programme, in partnership with the National Education and Research Network.

Alongside the above-mentioned projects, several data and monitoring initiatives were also rolled out to support the development, implementation and monitoring of public policies. The most relevant were:

- The Connected Education Gauge was launched in 2018 to monitor the quality of Internet access in schools by collecting data using software developed by the Brazilian Network Information Center (NIC. br)[5];
- The National School Connectivity Data Dashboard was launched by ANATEL in 2022 to collate data from different sources on the total number of active

schools, disaggregated by area, level of Internet access, existence of computer labs and connection to the electrical grid.

Challenges, lessons learned and previous recommendations

Initiatives implemented during the last five years have galvanized national efforts to connect schools. Significant funding has been set aside for this purpose and monitoring initiatives have enabled the government to understand in greater detail the individual situation of almost 140 000 public schools run by states and municipalities in Brazil.

However, during the roll-out of these initiatives key issues arose that would need to be addressed to overcome previously identified school connectivity policy challenges. Table 1 sets out the issues that the government examined by theme, lessons learned and recommended actions during the development of the new national school connectivity strategy[6].

Current status of school connectivity

According to the ANATEL National School Connectivity Data Dashboard 7 554 (5.5%) out of a total of 138 355 schools still had no Internet access when the national strategy for connected schools in Brazil was launched in 2023. The vast majority were located in rural areas (6 116 schools), predominantly in the north and northeast of the country. Moreover, 3 031 (2,2%) schools were identified as having no reliable access to electricity.

In addition to connecting the remaining schools in Brazil without Internet access, a further major challenge [7] – as indicated by data from the Connected Education Gauge tool on speed connection of the schools – will be to ensure connectivity that meets quality targets for the use of information and communication technologies (ICTs) for educational purposes.

The national strategy for connected schools

The national strategy for connected schools in Brazil was launched in 2023 as a joint project by the Ministry of Education, Ministry of Communications and ANATEL and coordinated by the Civil House of the Presidency of the Republic. Other stakeholders involved in developing the strategy included multilateral agencies, such as ITU and UNICEF, and civil society organizations.

As set out in Presidential Decree 11,713/2023[8], the strategy has three central goals that focus on the infrastructure necessary for the use of ICTs in schools.

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[4] The Fund's first financial operations were announced on October 26, 2023. Two projects were approved for the installation of 535 km of optical fiber cables, with more than 9 500 new connections, including 40 schools; 6 500 students are expected to benefit from these projects.

[5] In September 2023 there were approximately 74 000 schools with active "gauges". The dashboard is accessible to the public, including the entire school community, and is currently part of the input for mapping initiatives developed by the ITU and monitoring carried out by the Giga Initiative.

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[6] A compilation of these lessons learned was also presented in the study published as part of the ITU-FCDO project.

[7] Brazil does not currently have established, meaningful connectivity parameters; under the new strategy, such parameters must be established by the executive committee (see topic 5.4).

[8] Article 2, Presidential Decree 11,713/2023.

Table 1: Summary of challenges, lessons learned and previous recommendations

Theme	Lessons learned	Recommendations
Governance	Fragmented institutional coordination may hamper the implementation of public policies.	– Coordinate actions and initiatives of different national and regional institutional entities, creating synergies and preventing duplication. – Provide the specific human and material resources needed to ensure coordination of the plan.
Federative pact	Failure to respect the federative pact leads to duplication of efforts and waste.	– Ensure that there is no overlap between the activities of the Government of Brazil and other federal entities. – Ensure that states and municipalities have the capacity to implement connectivity policies, guided by national objectives and drawing on federal resources, if possible: – Directly support small municipalities and municipal consortia, focusing on the sustainability of initiatives.
Quality targets	Disparate targets tend to perpetuate inequalities and hamper engagement.	– Establish national quality targets that are consistent and aligned with current needs, as a reference for federal policies and federal entities. – Define mechanisms for revising goals.
Resources	Limited targeted, sustainable resources undermine efforts to address school connectivity gaps.	– Agree on investment needed to expand and upgrade school infrastructure. – Prioritize the Connected Education Innovation Policy (PIEC) for service maintenance, including by increasing the minimum resources allocated to each school and adopting other forms of transfer of resources.
Information and monitoring	Information gaps impede diagnosis, monitoring and policy-making.	– Ensure the universal use of the Connected Education Gauge tool. – Improve the quality of data on public policies for the ANATEL dashboard. – Establish a single, reliable infrastructure mapping exercise to define projects and set priorities. – Improve the school census.

It is important to note that the strategy is designed to link up with existing macro-policies, including those that promote quality content and teacher training. Nevertheless, it primarily focuses on infrastructure, namely telecommunication services providing access to the Internet, and access to suitable devices, as described in section 5.1 below.

The three main strategic goals are:

1   To promote universal connectivity in all educational establishments in the public education system[9].
2   To promote equal opportunities access to digital technologies for educational purposes.
3   To contribute to digital learning and better management by expanding access to the Internet and digital technologies for students, teachers and public education system managers.

The new strategy also seeks to address previously identified key challenges, including the need to:

• define the scope and establish adequate connectivity criteria;
• ensure governance of different ongoing initiatives;

• set out the responsibilities and ensure cooperation between different levels of government;
• establish national quality of service targets;
• establish service monitoring obligations.

Purpose and scope of action

The strategy defines connectivity suitable for educational purposes as that which facilitates:[10]

• learning and administrative activities online;
• the use of educational and management resources;
• access to educational audio, videos, games and streaming platforms;
• the availability of a wireless network in the school environment, comprising classrooms, libraries, laboratories, teachers' rooms, common and administrative areas.

The Presidential Decree 11,713/2023 defined the scope of action of the strategy, stipulating that it is designed to

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9   To connect all schools, in line with quality targets, by 2026 (but with no deadline to date for achieving those goals)

10   Articles 2 and 3 of Presidential Decree 11.713/2023.

simultaneously coordinate, execute and monitor actions relating to:

- access to electricity: to ensure access for schools to the public electricity grid or electricity from renewable sources;

- adequate broadband access: to expand high-speed Internet access through the deployment and maintenance of fibre-optic networks, satellites and other high-speed solutions;

- digital connectivity for educational purposes: to contract services that enable the use of videos, educational platforms, audio, games, and other resources for educational purposes;

- Wi-Fi in schools: to provide a secure wireless network for Internet access in schools, allowing entire classes to connect simultaneously to the wireless network for educational purposes;

- availability of devices: to support Internet access and pedagogical use, providing portable electronic equipment and devices for Internet access, in line with appropriate targets.

Governance

Research at the national level, examining previous policies or those currently in the initial implementation stage, has revealed that it is crucial to coordinate the different initiatives in a comprehensive and effective way in order to generate synergies, develop universal and equitable approaches, and avoid duplication of efforts.

To that end, a national coordination network was established for the national strategy for connected schools in Brazil, led by an executive committee composed of 13 members[11].

The executive committee, coordinated by the Ministry of Education and supervised by the Civil House of the Presidency of the Republic, will be responsible[12] for coordinating policies, programmes, initiatives and the allocation of resources related to school connectivity, and for setting goals to achieve the proposed objectives. In addition, the committee will define technical parameters (such as connection speed and latency) for contracting Internet access services and for WiFi infrastructure in schools. Finally, the executive committee will establish mechanisms to monitor service quality and, more broadly, to monitor and evaluate the strategy outputs.

Responsibilities of different levels of government

The new strategy also sought to address a major connectivity challenge by defining the responsibilities

of federal administrative departments and the division of responsibility among the government, states and municipalities (which are directly responsible for the administration of schools). The absence of clearly defined responsibilities can lead to overlaps and the duplication of efforts.

At the federal level, the strategy defined the role of the Ministry of Communications, which must propose parameters to the executive committee for choosing the most efficient connectivity solutions, with technical support from ANATEL, Telebras and RNP. It also defined role of the Ministry of Education, which must, in addition to coordinating the committee, ensure synergies and coordinate with states and municipalities, while the Civil House of the Presidency of the Republic must supervise the implementation of the strategy[13].

Table 2: Responsibilities of government ministries

Department	Responsibility
Ministry of Communications	Propose quality targets to the executive committee, with the technical support of ANATEL, Telebras and RNP.
Ministry of Education	Coordinate the executive committee and coordinate with states and municipalities.
Civil House of the Presidency of the Republic	Supervise the implementation of the strategy.

States and municipalities will be able to participate in the strategy on a voluntary basis; in order to benefit from federal funding, they will have to submit an analysis of the schools under their responsibility and commit to installing and maintaining the Connected Education Gauge tool. In return, participating states and municipalities will be prioritized in federal government actions and programmes related to connectivity in schools.

Objectives for different initiatives

While Presidential Decree 11.713/2023 did not set parameters for contracting, managing and maintaining Internet access services and WiFi infrastructure in schools, the executive committee, established under article 6 of the aforementioned decree, has this responsibility.

Furthermore, as different initiatives are under way, it is important to ensure consistent parameters for all policies across the country. The same article of the decree therefore stipulated that the goals and technical documents approved by the executive committee shall serve as a reference for the actions of other institutions and bodies implementing connectivity initiatives, including

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[11] As defined in article 7 of Presidential Decree 11.713/2023, the executive committee will be composed of two representatives from the Ministry of Education, the Ministry of Communications and the Civil House of the Presidency of Republic; and one representative from the Ministry of Science, Technology and Innovation, the Ministry of Mines and Energy, the National Telecommunications Agency (ANATEL), the National Education Development Fund (FNDE); Telebras (state telecommunications company), the National Bank for Economic and Social Development (BNDES); and the National Education and Research Network (RNP).

[12] As defined in article 6 of Presidential Decree 11.713/2023.

[13] The responsibilities of the federal departments were defined in Articles 9 to 12 of Presidential Decree 11.713/2023.

the allocation of funding from the 5G auction to the Fund for the Universalization of Telecommunication Services[14].

Monitoring obligations

ENEC aims to ensure a universally applicable system for monitoring the quality of services provided to schools. Article 13 of the decree stipulated that federal entities (states and municipalities) participating in the strategy must install and maintain the Connected Education Gauge tool developed by NIC.br. The aim is to increase the number of schools providing active measurements, thereby fostering transparency and increasing the capacity of the executive committee, states and municipalities, and schools to monitor the quality of services, as the measurements are made available on a publicly accessible website.

Issues addressed by the national strategy for connected schools in Brazil

Table 3: Summary of main issues addressed by the national strategy for connected schools in Brazil

Previously identified challenges	How the national strategy for connected schools in Brazil addressed the issue
Lack of unified governance	Creation of an executive committee to manage the Strategy.
No definition of responsibilities	Measures to define the responsibilities of federal, state and municipal departments.
No definition of equitable quality targets	Definition of national quality targets by the executive committee, based on a proposal from the Ministry of Communications, to be integrated into different initiatives.
Lack of universal quality monitoring	Introduction of obligation to install the Connected Education Gauge.

Challenges in implementing the new strategy

The national strategy for connected schools in Brazil seeks to address some of the main challenges identified in assessments of previous policies. Implementing the strategy and achieving its goals will be a challenging task: the goal of connecting all schools to the Internet by 2026, while meeting quality targets relating to the use of ICTs for educational purposes, will be particularly challenging. The main challenges include:

- Establishing an executive committee, with a view to quickly setting quality parameters for contracting Internet access services and internal networks to guide all ongoing initiatives.[15]
- Expanding the responsibilities of federal departments implementing connectivity projects, as well as of states and municipalities. This includes identifying initiatives for connecting (or improving the quality of services in) each of the almost 140 000 schools in Brazil. Due to the high number of schools and the fact that states and municipalities are directly responsible their management, this is a very complex challenge; responsibilities need to be defined with a high level of precision to avoid overlaps and duplication of efforts, and also to ensure that no schools are left behind.
- Establishing a time frame that brings together existing initiatives, to facilitate monitoring by the executive committee and to ensure that the goals established for each phase are met so that, by 2026, all schools in the country are connected to the Internet, with services that meet the established quality targets.
- Providing the specific human and material resources required to ensure coordination and monitoring of the strategy. This is an extremely sensitive issue given that active coordination is essential to the success of the strategy, as successful international experiences, such as the Ceibal Plan in Uruguay, demonstrate.
- Developing strategies to ensure sustainable funding for and maintenance of services, especially through the Connected Education Innovation Policy (PIEC). This means developing a strategy to establish how states and municipalities can maintain active services and ensure sustainable funding for infrastructure projects after the end of the initial period (for example, three years for projects involving funding from the 5G spectrum auction) during which funding and services are guaranteed.
- Promoting awareness among states and municipalities to encourage them to participate in the, which includes circulating the established quality targets with a view to engaging all stakeholders with the strategy and its goals.

Conclusion

The national strategy for connected schools in Brazil can be viewed as an essential step towards developing an effective school connectivity strategy in Brazil. It seeks to unify governance, to establish consistent quality targets for the entire country, to set out the responsibilities of federal departments, states and municipalities, and to create the obligation to monitor initiatives. In this sense, the strategy can be considered a significant step forward, and a means of addressing the previous lack of coordination among initiatives.

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14   It is important to mention that quality targets already existed for certain specific policies. The Connected Education Innovation Policy (PIEC), for example, stipulated a target of 1 Mbit/s per student. However, this target was temporarily withdrawn by the Ministry of Education in October 2023, until the executive committee for the strategy established new targets that applied to all federal policies.

15   The Committee was established on October 19, when the members appointed by the departments took office and the internal rules were approved.

However, as the strategy is broad, it sets out general lines of action (to be defined in greater detail at a later stage, with reference to more specific regulatory instruments), there is a risk that implementation may stall. It is important to avoid any loss of momentum in the implementation of the strategy in order to achieve the objective of connecting all schools by 2026 in line with established quality targets.

In the light of this risk, which to some extent is common to strategies that seek broader coordination of existing initiatives, it is important to address the challenges connected with the implementation of the new strategy, including: establishing an executive committee without delay; increasing the scope of the responsibilities of the relevant federal departments and of ongoing initiatives; and establishing a time frame and general strategy for communicating and engaging with states and municipalities. Taking these challenges into account and effectively addressing them over the coming months will be essential to the success of the strategy and its stated objectives.

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