

# What are the next Steps in EdTech for **DOMINICAN REPUBLIC**

Insights from the EdTech Readiness Index



**THE WORLD BANK**  
IBRD • IDA | WORLD BANK GROUP



## ACKNOWLEDGEMENTS

*This report was prepared by Cristobal Cobo, Marie-Hélène Cloutier, Marta Conte Dominguez and Emma Lambert-Porter from the ETRI team, building upon the research conducted by Catherine Rodríguez Orgales. The work was carried out in collaboration with Monica Yanez Pagans, former task team leader of the World Bank's Dominican Republic Country office, Katia Marina Herrera Sosa (current task team leader), and the World Bank's consultant Paola Patricia Polanco Santos. We would like to express our gratitude to the Dominican Institute for the Evaluation and Research of Educational Quality (IDEICE), and especially to Magda Elizabeth Pepen Peguero, for leading the data collection process in schools. Our deep appreciation goes also to the Ministry of Education of the Dominican Republic (MINERD) for their unwavering support in granting us access to schools and facilitating the data collection process. Finally, we would like to thank Alberto Muñoz Najar for his guidance on the design of the document.*

*ETRI is result of a close collaboration between the World Bank's Education Global Practice and Imaginable Futures.*

# Acronyms

**DERs:** Digital Education Resources

**DR:** Dominican Republic

**ETRI:** EdTech Readiness Index

**ICTs:** Information and Communication Technologies

**IDEICE:** Dominican Institute for the Evaluation and Research of Educational Quality (Instituto Dominicano de Evaluación e Investigación de la Calidad Educativa)

**MESCyT:** Ministry of Higher Education, Science, and Technology (Ministerio de Educación Superior, Ciencia y Tecnología)

**MINERD:** Ministry of Education of the Dominican Republic (Ministerio de Educación de la República Dominicana)

**SELFIE:** Self-reflection on Effective Learning by Fostering the use of Innovative Educational Technologies. Free self-evaluation tool developed by the European Commission

**SIGERD:** Integrated System of Educational Management and Teacher Registry (Sistema Integrado de Gestión Educativa y Registro Docente)

**SGCE:** Educational Center Management System (Sistema de Gestión de Centros Educativos)

# TABLE OF CONTENTS

<b>I. EXECUTIVE SUMMARY</b>	<b>5</b>
<b>II. INTRODUCTION</b>	<b>7</b>
<b>III. HISTORICAL CONTEXT</b>	<b>9</b>
<b>IV. METHODOLOGY</b>	<b>11</b>
<b>V. RESULTS PRESENTATION</b>	<b>12</b>
PILLAR 1: SCHOOL MANAGEMENT	<b>13</b>
PILLAR 2: TEACHERS	<b>15</b>
PILLAR 3: STUDENTS	<b>18</b>
PILLAR 4: DEVICES	<b>20</b>
PILLAR 5: CONNECTIVITY	<b>22</b>
PILLAR 6: DIGITAL EDUCATION RESOURCES	<b>24</b>
<b>VI. RECOMMENDATIONS</b>	<b>26</b>

# I. EXECUTIVE SUMMARY

The aim of this report is to analyze the Dominican Republic's EdTech policies and practices to better understand the status of digital education programs and identify potential areas for further advancement in EdTech initiatives. This report is part of a broader initiative by the World Bank through the EdTech Readiness Index (ETRI). The ETRI serves as a monitoring instrument, assessing the quality of formal policies and the successful implementation of EdTech practices within various education systems worldwide. The implementation of ETRI in the Dominican Republic was made possible thanks to the support and collaboration of the Dominican Institute for Evaluation and Research of Educational Quality (IDEICE) and the Ministry of Education of the Dominican Republic (MINERD), in addition to an important number of principals and teachers who shared their time and commitment to make this study possible.

The report addresses the following key questions:

- 1. What is the status of EdTech programs in the Dominican Republic in terms of school management, teachers, students, devices, connectivity, and digital resources?**
- 2. How EdTech practices implemented in the Dominican Republic compare with de facto policies?**
- 3. How do de facto policies align with de jure policies?**

To tackle these key questions, IDEICE conducted a school survey between March and April 2022. Data for the school survey were collected by phone and informed the practices and de facto policy implementation at the school level. On the other hand, a policy survey served as the base for the information related to the de jure policies (i.e. existence of policies according to law). For the school survey, 272 principals participated from a representative sample of primary schools. For the policy survey, the information was gathered through a legislative review and follow-up interviews with public servants working at MINERD.

The report is divided into four parts: an introduction summarizing the main milestones for the implementation of EdTech programs in the country, a methodological section, and the ETRI results and recommendations for the Dominican Republic. Results are organized following six pillars (school management, teachers, students, devices, connectivity, and digital resources), and within each pillar, results are presented at both the policy and practice levels.

The ETRI results in the Dominican Republic led to **six main recommendations** that are summarized below:

**1. Elaborate and implement a national EdTech Strategy:** formalize the allocation of responsibilities for the integration of ICTs in schools through the definition of a national EdTech Strategy. At the school level, MINERD should introduce a policy that requires schools to create and implement their own digital strategy, in alignment with the national policy and tailored to the specific needs of each school. These digital strategies should also specify roles and responsibilities regarding EdTech implementation and maintenance, as well as provide guidance to teachers and principals.

**2. Improve monitoring systems: adopt a comprehensive system of regular monitoring strategies and assessment tools.** Despite the collection of diverse school-level information through the platform SIGERD, results indicate the lack of a policy governing the collection and use of information within MINERD, hindering the country from maximizing the potential of the available data. Strengthening the Education Management Information System (EMIS), together with ensuring the integration and coherence between the different systems and platforms, will enable a better assessment of EdTech programs and identification of areas for improvement.

**3. Provide better guidance for principals and teachers on how to integrate technology into the classroom:** The survey results in the Dominican Republic

show limited use of ICT in teaching, suggesting the need for better guidance and support for teachers. To achieve this, clear guidelines and support mechanisms should be introduced for teachers and school principals, accompanied by concrete examples of technology application in the classroom during professional training. By doing so, teachers' self-efficacy levels will improve, leading to more engaging learning experiences for students.

**4. Integrate digital competences in a systematic way:** Results highlighted the need for the country to establish and implement an official framework of competencies for both teachers and students. The competency frameworks should define the digital competences expected from teachers and students, along with strategies for evaluating them. By effectively aligning with professional development programs, competency frameworks play a pivotal role in scaling capacity-building efforts throughout the education system. At the same time, introducing a competency framework for students is a vital step to enhance and enrich their use of technology, particularly inside the classroom. Implementing evaluation tools and providing support programs are essential simultaneous measures that should accompany the introduction of the frameworks. In this way, the country can narrow the gap between device usage inside and outside the classroom, empower students and

teachers with digital skills, and promote effective ICT integration into education.

**5. Revise the national curriculum for a better integration of ICT:** MINERD should promote a smoother integration of ICT into the new national curriculum by equipping teachers with the necessary digital skills, providing guidelines about subject-specific uses of technology in the classroom, planning appropriate use of technology across existing lessons plans and increasing access to digital resources and devices. There are different possible approaches to doing so, such as integrating ICT “across” disciplines, allowing students to learn how to apply technology within each subject, or making ICT a “separate” subject that focuses on building students’ technical capabilities to use digital technologies effectively.

**6. Expand and improve connectivity for a more inclusive EdTech Policy:** The ETRI findings highlighted connectivity as the most critical challenge for the expansion of EdTech in the Dominican Republic. MINERD should continue working to equip all public schools with internet access and support ongoing initiatives for stable electricity service, particularly in rural regions. As the country focuses on expanding connectivity and enhancing network quality, the education sector can explore options for acquiring offline education platforms and content.



## II. INTRODUCTION

**During the pandemic, the closure of schools spurred a global push for digital technology adoption to ensure continuity of learning, underscoring the pivotal role of ICT in education and revealing both global and intra-country digital disparities.** Information and communication technologies (ICTs) are fundamental drivers of countries' development and income levels. In the education sector, the importance of ICT and the need to incorporate it effectively became evident during the COVID-19 pandemic. The health crisis, which led to the closure of schools around the world, highlighted the existence of digital divides between and within countries. More importantly, it also made clear the need to efficiently incorporate technology into education systems. The measures adopted in 2020 and the surge of remote learning contributed to a long-term transformation of education systems, as countries have leveraged the crisis as an opportunity to reflect and develop better EdTech strategies.

**The Dominican Republic (DR) vision on the role of technology in education has evolved over time from unstructured and localized measures to more comprehensive and integrated strategies, focused on reforming the education system.** The country faces two main challenges in education: low net enrollment rates, especially in secondary school (73%), and poor learning outcomes, particularly in mathematics, science and reading<sup>1</sup>. After the complications brought by the pandemic, and with the aim of strengthening the digital transformation of the education sector, the government is currently reflecting on how to address these challenges through a more comprehensive implementation of EdTech strategies. The concept of ICT was introduced in the DR during the 1990s, when the government formulated the first plans to build computer laboratories and

gradually provide internet connections to schools. These initiatives continued to grow steadily in these early years through the integration of ICT policies into legislation, and the design and implementation of the first ICT strategies and agendas. From 2000 to 2010, while continuing to equip schools with technological devices and internet access, the government also started delivering training programs for teachers, as well as designing and distributing teaching materials and resources on the use of technology for learning. An important change in the 2000s was the promotion of ICT as a tool for improving education management<sup>2</sup>. Some of the policy highlights from this period include:

- From 2012-2018, the government combined all the previous EdTech initiatives into a National Plan and identified concrete steps to incorporate the use of ICT into the school curriculum.
- The 2014 National Pact for Education Reform established the country's commitment to guarantee continuous training for teachers on the integration of ICT into teaching, with a particular emphasis on supervision, follow-up, and pedagogical support programs for teachers.
- The National Pact also launched "República Digital", a program which was implemented from 2016. This program complemented previous efforts to provide equipment with an in-school teacher training plan that sought to ensure the efficient use of the devices provided.

• With the change of government during 2020 and the health crisis caused by the COVID 19 pandemic, the DR developed a comprehensive short-, medium- and long-term digital transformation strategy, known as Agenda Digital 2030<sup>3</sup>.

<sup>1</sup> PISA 2018 results for the Dominican Republic <https://www.oecd.org/pisa/publications/pisa-2018-results.htm>.

<sup>2</sup> These efforts led to the creation of the Educational Center Management System (Sistema de Gestión de Centros Educativos, SGCE), which was subsequently replaced by the Information System for School Management in the Dominican Republic (Sistema de Información para la Gestión Escolar de la República Dominicana, SIGERD).

<sup>3</sup> Gobierno de la República Dominicana. (2021). *Agenda Digital 2030*: <https://agendadigital.gob.do/wp-content/uploads/2022/02/Agenda-Digital-2030-v2.pdf>

**Within the framework of a long-standing cooperation, the World Bank and MINERD carried out an assessment of the readiness of the school system to use ICT in education, to better understand the strengths and weaknesses of the current EdTech programs in the country and identify areas for improvement.** This assessment was conducted using the World Bank's EdTech Readiness Index (ETRI), a conceptual framework, data collection, and data analysis tool that evaluates how countries integrate

EdTech strategies into their education systems. The ETRI produces results in a short timeframe, and since other countries are also using this tool, MINERD can compare outcomes with other countries. These results allow the DR to identify areas of strength and detect aspects that require greater effort for a more efficient integration of ICT into the education system.



### III. HISTORICAL CONTEXT

To understand the results of ETRI in the DR, it is necessary to first present the structure of the education system and briefly review the key government plans regarding the incorporation of ICT into the education sector. As defined by the Organic Law No. 66 of 1997, the education system in the DR is divided into four levels: early childhood, primary, secondary, and higher education. The first three levels fall under the jurisdiction of the Ministry of National Education (MINERD), while the Ministry

of Higher Education, Science, and Technology (MESCyT) is responsible for the fourth level.

The recent investments made by MINERD are evidence of the regulatory efforts to incorporate ICT into the education system. The Dominican Republic has made significant efforts since the 1990s to clarify and improve the integration of ICT into the education system. Building upon the foundation of Law 66 of 1997, the government achieved

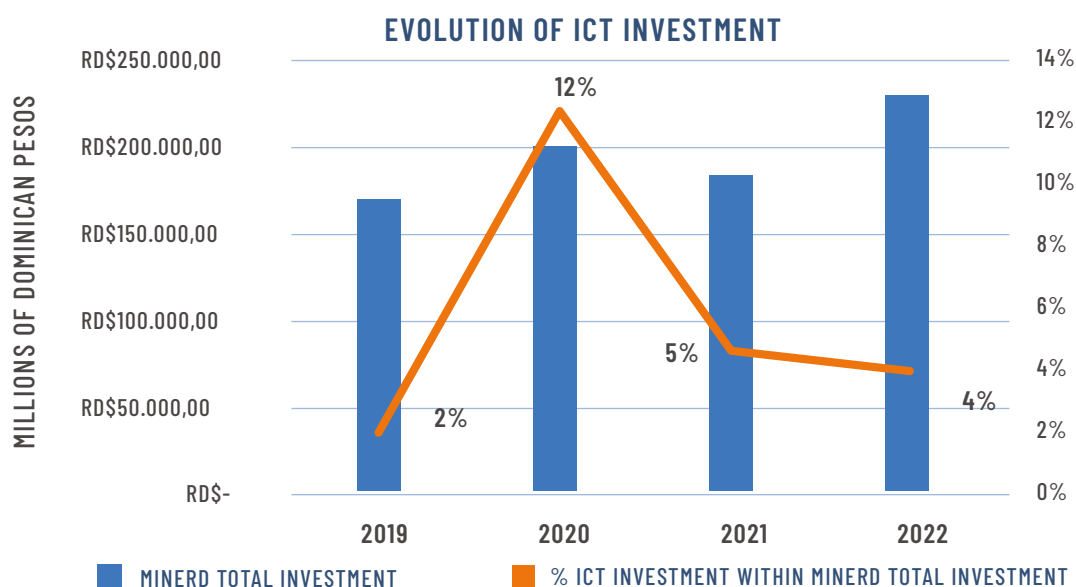
Table 1. Key legislative milestones for the integration of ICTs in the Dominican education system

NAME	YEAR	OVERVIEW	RELATED PROGRAMS
Plan Decenal 2008-2018	2008	<ul style="list-style-type: none"> <li>This law defines the initial specific objectives about the use of ICT in basic education.</li> <li>It includes a plan to expand internet access for secondary schools and support for the use of ICT in teaching.</li> <li>It also mandates regular review and integration of ICT into the curriculum.</li> <li>The plan's goal is to train 100% of teachers in the use of ICT by 2017.</li> <li>The plan's goal is to train 100% of teachers in the use of ICT by 2017</li> </ul>	<ul style="list-style-type: none"> <li>"Rincones Tecnológicos": With the support of the World Bank, this program incorporated between one and five computers in specific areas of the country's classrooms. Between 2010 and 2016, the program introduced approximately 1,000 technological corners in the initial level and 2,000 in the basic level.</li> </ul>
Estrategia Nacional de Desarrollo 2030	2012	<ul style="list-style-type: none"> <li>This plan promotes the use of ICTs as a management tool for the education system.</li> </ul>	<ul style="list-style-type: none"> <li>"PIM APRENDE": creation of a web portal with didactic resources. In addition, televisions and cable services were provided to 400 education centers with educational guides to promote learning through this medium.</li> <li>"La escuela conectada al Siglo XXI": OVER 6.500 school principals were provided with laptops, internet access, and training.</li> </ul>
Pacto Nacional para la Reforma Educativa	2014	<ul style="list-style-type: none"> <li>This act established continuous training for the integration of ICTs into the teaching process, through programs of supervision, monitoring, and pedagogical support.</li> </ul>	<ul style="list-style-type: none"> <li>"República Digital": This program aims to reduce the digital gaps in the country by ensuring the provision of technological infrastructure and teacher training. Between 2017 and 2018, 150 centers were equipped with devices and connectivity, 3,000 teachers were trained, personal computers were provided to 40,000 high school students and tablets were provided to 22,000 primary school students. Digital whiteboards and labs were installed, benefiting nearly 166,000 students.</li> </ul>
Agenda Digital 2030	2022	<ul style="list-style-type: none"> <li>This plan aims to improve digital infrastructure through a National Broadband Plan (PNBA)</li> <li>Plan to create a national framework for digital competencies</li> <li>It also includes a redesign of the educational curriculum at all levels, ensuring that technologies are included in teaching methods.</li> </ul>	<ul style="list-style-type: none"> <li>Creation of a digital transformation cabinet (Gabinete de Transformación Digital) with a specific sectoral table for education.</li> <li>Plan de Acción 2021-2024: addresses the sustained improvement of the quality of education but makes no mention of ICTs.</li> </ul>

several key legislative milestones regarding the introduction of ICT into schools. The most recent evidence and changes to the regulations are presented in the Table 1. Furthermore, Figure 1 shows how the investment in ICT saw a significant increase in 2020, rising from 2.1% of the MINERD budget to approximately 12.4%. The increase in ICT investment in 2020 was driven by the government's

efforts to provide technological devices to teachers and students during the pandemic. In 2021 and 2022, the level of funding decreased and represented around 5% and 4% of MINERD's total expenditure, respectively. Notably, beyond the surge prompted by the pandemic, the investment in 2022 doubles the figures of 2019.

Figure 1. Total investment budgeted by MINERD and the percentage of the investment in ICTs as a proportion of the total spending in the sector (2019-2022)





## IV. METHODOLOGY

The ETRI is an instrument of the World Bank that analyzes the practices, de facto policies, and de jure policies with regards to EdTech, offering a snapshot of how well EdTech is integrated into the broader education system. Policies and practices are organized under six pillars: school management, teachers, students, devices, connectivity, and digital resources. These six pillars aim to extend the analysis beyond the availability of devices and levels of connectivity, encompassing critical components of the broader education-technology ecosystem within a country. Data is collected using two different tools: a school survey and a policy survey. The school survey captures information related to practices and de facto policy implementation at the school level, while the policy survey focuses on information related to de jure policies (i.e., policies as defined in law).

In the DR, the school survey was conducted by IDEICE, the policy survey was completed by an individual expert, and the analysis was led by the World Bank in close collaboration with IDEICE and MINERD. This survey was completed by telephone with a representative sample of school principals across the country between March and April 2022. Specifically, 272 schools were selected, and responses from 272 school principals were collected. The policy survey was carried out by an individual consultant with strong knowledge of the education sector and of EdTech initiatives in the DR, based on an exhaustive review of laws, national plans, governmental programs, and academic research. This was complemented by 14 personal interviews with public servants working at MINERD. The implementation of ETRI and the analysis of the data is the result of a close collaboration between MINERD, IDEICE and the World Bank.

# IV. RESULTS PRESENTATION

## IV.1. ETRI RESULTS BY PILLAR

Results are presented by pillar (school management, teachers, students, devices, connectivity, and digital educational resources) and each pillar is broken down into policies and practices. The policies include how the system defines, articulates, and implements strategies to foster desired practices. Within policies, there are two different levels: (i) de jure policies, which refer to the existence of official regulations and/or policies that assign responsibilities and define strategies and programs on specific EdTech

topics; and (ii) de facto policies, which refer to the implementation of those regulations and/or policies at the school level, measuring the extent to which de jure policies are implemented. Practices encompass the activities and conditions associated with the use of ICT in schools, considering basic inputs and infrastructure (such as devices, connectivity and digital educational resources), and the conditions necessary to support and foster their integration into teaching, learning and education management.

Figure 2. The six pillars of the EdTech Readiness Index

SCHOOL MANAGEMENT	TEACHERS	STUDENTS	DEVICES	CONNECTIVITY	DIGITAL EDUCATION RESOURCES
<b>PRACTICE</b>					
STRATEGY	SELF-EFFICACY	SELF-EFFICACY	AVAILABILITY	CONNECTIVITY	ACCESS
LEADERSHIP	USE - PLANNING	USE - INSIDE	STUDENT ACCESS	STUDENT ACCESS	USE
PRIORITIZATION	USE - TEACHING	USE - OUTSIDE	TECH SUPPORT	QUALITY	QUALITY
<b>POLICY</b>					
RESPONSIBILITY	STANDARDS	FRAMEWORK	STANDARDS	PLAN	GUIDANCE
GUIDANCE	SUPPORT	CURRICULUM	MONITORING	MONITORING	STRATEGY
SUPPORT	EVALUATION	ASSESSMENT	RESPONSIBILITY	SUPPORT SYSTEM	STANDARDS

Under each pillar, the data collected are summarized using three practice and three policy indicators. Indicators are assigned specific colors according to the scores calculated based on the data collected to highlight areas of strengths and

areas for improvement using a traffic light color scheme. The colors are determined by comparing each indicator's value against a predefined threshold or cut-off:

**RED:** 1-2.99, Performance and quality of the practice/policy are not satisfactory, and a series of improvements are needed.

**YELLOW:** 3-3.99, Performance and quality of the practice/policy can be improved.

**GREEN:** 4-5, Performance and quality of the practice/policy are satisfactory to a great extent.



## 1. SCHOOL MANAGEMENT

### 1.1 WHAT DOES SCHOOL MANAGEMENT MEASURES?

**This pillar evaluates the readiness of school management to utilize and encourage the use of ICT in education.** At the policy level, the indicators for this pillar capture: (i) the responsibility assigned for the integration of the use of ICT if there is an ICT strategy, (ii) the presence of guidance for incorporating ICT into teaching and learning, and (iii) the provision of training support. At the practice level, the indicators refer to: (i) the existence of an ICT strategy, (ii) the adoption of

effective leadership practices to ensure that a wider range of stakeholders are involved in implementing the ICT strategy, and (iii) the prioritization of ICT in relation to its impact on student outcomes. It is fundamental to track these elements as evidence suggests that integrating ICT into schools' strategic plans and vision facilitates their efficient use and sustainability.

### 1.2 WHAT ARE THE RESULTS OF THE SCHOOL MANAGEMENT PILLAR IN THE DR?

**Overall, school management is the strongest pillar in terms of EdTech practices and policies in the DR.** The average score on the school management pillar for practices is 3.98, on de facto policies is 4.39, and on de jure policies is 2.33. This indicates that despite some lack of clarity at the de jure policy level, school principals believe a lot of the needed regulations are in place and ICT practices by school management across the country are relatively good.

**Despite the existence of a General Directorate of Technology and the perception by school principals that there is legislation in place that specifically addresses the need for an ICT integration plan, the de jure policy indicator reveals that there is no regulation for assigning responsibilities for the integration of ICT.** At the administrative level, the highest organ of the education system is the National Education Council, followed by the Ministry office, and then eight directorates including the General Directorate of Technology which is responsible for the design, admini-

stration, maintenance, and use of ICT at MINERD. However, the analysis of the legislation and the interviews with key actors of the sector indicates that there is no regulation that assigns specific responsibility for integrating the use of ICTs into the education system to any level (national, regional, or local) of government. This lack of clarity limits the ability to put standardized processes in place for monitoring progress around the effective integration of ICT into schools. Nevertheless, almost all school principals (97%) report that responsibilities for integrating ICT use into schools' strategic plans are assigned to some level of government. Thus, it can be appreciated that there is a disparity with regards to Responsibility between the policies outlined in current regulations (de jure) and the perspectives of school principals on the matter (de facto policies).

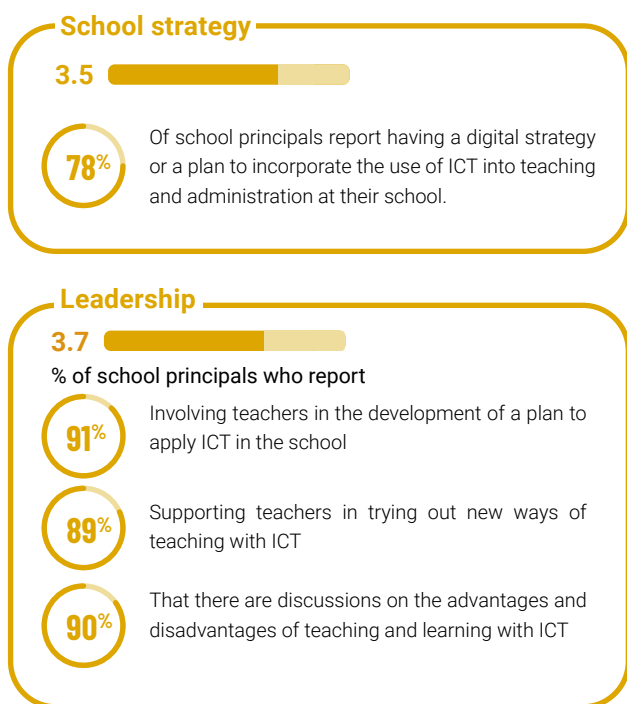
**Alignment between de jure and de facto policy indicators is somewhat better with regards to Guidance and Support, but there is substantial room**

**for improvement in providing support to schools and school principals to integrate ICT into their policies.** Guidelines for the incorporation of ICTs in teaching do exist (according to the policy survey) and most school principals are aware of these guidelines (89%) and find them useful (81%). MINERD issues detailed manuals to each level of the school system: regional, district and school level. These manuals contain general guidelines and indicate the functions and organization that each school must follow to ensure high quality education. These manuals should also clarify the ICT responsibilities at each level of government, so that there is a clear delineation of roles and specific tasks are assigned at the right level. However, most manuals omit any reference to ICT, while others lack clear instructions. In terms of support, the lack of mandatory training for school principals on ICT for teaching and learning means that too few of them are participating in these types of professional development activities.

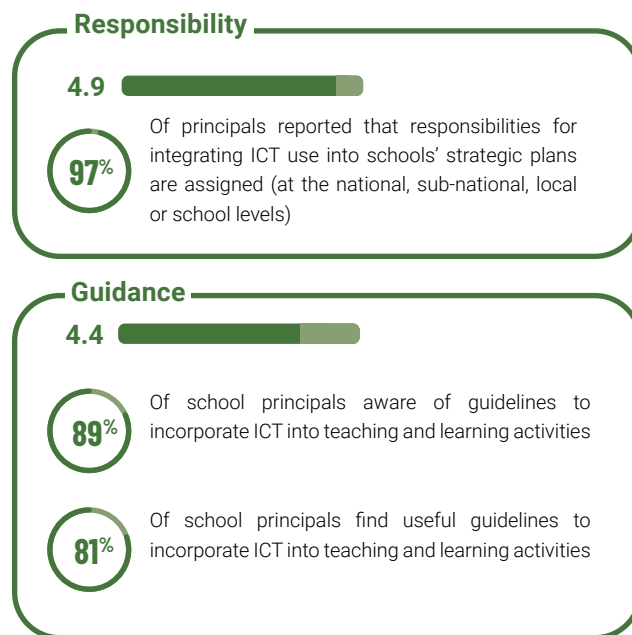
**At the practice level, the school management pillar also presents generally favorable scores with some room for improvement on making sure that all schools have a strategy or plan to incorporate the use of ICT.** 78% of the respondents reported having a digital strategy or plan to incorporate ICT into the classroom, indicating the potential for further improvement in this area. However, more than 95% of school principals believe that different ICT skills are of high importance for students and 91% of schools reported that the process of designing a school strategy on the use of ICT in teaching and learning involved teachers and encourage them to experiment with ICT and discuss the advantages and disadvantages of using technology for teaching and learning. It is worth noting also the consensus among school principals around the relevance of ICT to enhance learning. In fact, almost all principals rate as very important the need for students to have digital abilities (95%) and to learn to use digital devices safely (97%).

**Figure 3. ETRI results for the school management pillar**

**Practices**



**Policies**



## Support

3.9

79%

Of school principals report attending or participating in training on the use ICT in school over the last 12 months

60%

Of school principals report a training was required

## Prioritization

4.8

% of school principals who report ensuring students have the skills to use ICT is important for

95%

Basic computer functions

96%

Accessing and using information

97%

Using digital devices safely and appropriately

96%

Improving their learning generally



## 2. TEACHERS

### 2.1 WHAT DOES THE TEACHERS' PILLAR MEASURES AND WHY DOES IT MATTER?

**This pillar assesses the existence of key elements in the policies that enable teachers to efficiently use and teach ICT in education, and the readiness of grade 5 teachers to integrate ICT into their class instruction.**

At the policy level, the EdTech Readiness Index measures three aspects of teacher involvement with ICT: (i) the existence of standards or a competency framework for teachers, (ii) the presence of a support system for teachers through training and professional development, and (iii) the presence of an evaluation

system for teachers. At the practice level, this indicator tracks three aspects: (i) self-efficacy in the use of ICT, (ii) the use of ICT to prepare for lessons and (iii) the use of ICT for teaching and assessment. Research has shown that teachers are key drivers of effective use of technology in the classroom. Specifically, teachers' self-efficacy (that is, their perception of their own ability to use technology) and their capacity to collaborate with each other are key factors for an efficient integration of ICT into schools.

### 2.2 WHAT ARE THE RESULTS FOR THE TEACHERS' PILLAR IN THE DOMINICAN REPUBLIC?

**The teachers' pillar in the DR presents generally favorable outcomes, with weaker results observed in the context of ICT utilization for teaching.** The average score on the teachers' pillar for practices is 3.59, on de facto policies is 3.66, and on de jure policies is 2.33. These results suggest a lack of clarity with regards to the existence of a competency framework for digital competences and evaluations mechanisms, which ultimately impacts teachers' practices in the country.

**The first policy indicator captures the lack of a de jure official digital competency framework for teachers. Despite the absence of a formalized framework, the de facto policy indicator reflects a widespread belief by school principals that such a framework already exists.** In the DR, the primary document regulating the teaching profession is the Professional Performance Standards (Estándares Profesionales de Desempeño,

2014), which mentions ICT. These standards guide teaching performance and classroom approach, specifying that teachers should promote the responsible use of interactive technologies to support student learning. In addition to these standards, the DR defined in 2015 the Profile of the Dominican Teacher (Perfil del Docente Dominicano) which details the standards that a competent professional teacher should meet. This profile develops frameworks for competency areas, but does not cover ICT and digital competencies. Hence, some of the building blocks necessary for the development of an official digital competency framework for teachers are present, but the framework itself is not yet available. Turning to the de facto policy indicator, it is noteworthy that most school principals (84%) believe that such a document exists. This belief may be attributed to possible confusion with the Professional Performance

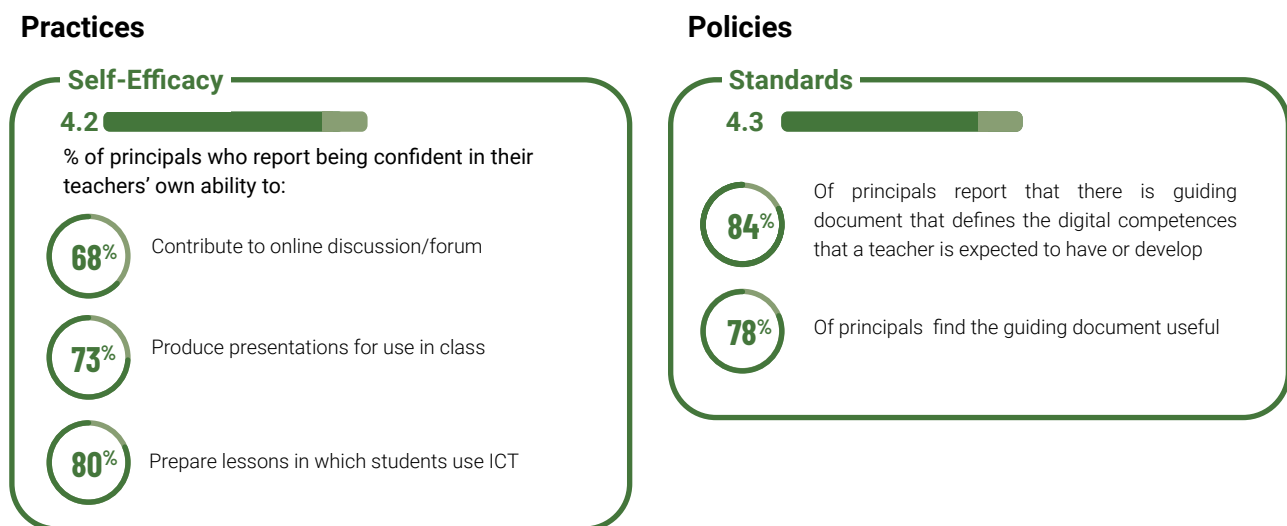
Standards, which mentions ICTs but does not systematize a competency framework. Therefore, when considering the aspect of Standards, a general mismatch arises between the lack of a formalized competency framework in the current regulations (de jure policies) and the viewpoints of school principals regarding this issue (de facto policies).

**There are noticeable differences between the de jure and de facto policy indicators (especially when it comes to Evaluation and not so much with regards to Training which shows a greater alignment) and strengthening the assessment of ICT competencies for teaching would also have a positive impact on training programs.** Given the lack of a defined competency framework, it is no surprise that there is not de jure mechanisms to evaluate digital teaching competencies. Although the country evaluates teachers at different stages of their career through performance evaluations, none of the current evaluation systems includes the specific measurement of ICT competencies. However, about half of the school principals (51%) report that teachers have been formally evaluated on their use of ICT during the last school year, pointing to the existence of some informal evaluation mechanisms. These results, as in the case of the existence of the digital competency framework, are not aligned with de jure policies. Regarding training, the country does have a specific regulation outlining the requirements for achieving high quality teaching that incorporates ICT. Perceptions regarding the regulations related to teacher training are quite aligned with these de jure findings: more than half of the school principals

report that teachers' initial training covers ICT in general (68%) and that the initial training addresses learning how to incorporate ICT into teaching (71%).

**At the practice level, the teachers' pillar presents more unfavorable results, suggesting that additional efforts are needed to increase teachers' self confidence in the use of digital devices and that teachers require more support in the use of ICT in the classroom and for planning purposes.** In fact, for the aspect of Self-efficacy, although school principals consider their teachers to be quite capable of integrating ICT in their lessons (80%) and assessing students' learning with the support of technology (75%), their ability to contribute to online forums and discussions is considered lower (64%). These results highlight that additional training for teachers is needed, particularly in the usage of spreadsheets and for collaboration with peers. These limitations are reflected in the very low use of ICT for teaching, planning and managing data. In fact, only about a quarter of school principals believe teachers use ICT for classroom management and student assessment (27%), or ask their students to use ICT for schoolwork (29%). The most common activity that teachers carry out while preparing classes is searching for educational content to use in the classroom (47%), while an area that requires significant improvement is the use of digital devices for administrative management of the class, where the lowest results are obtained (27%). Overall, the very low use of ICTs for teaching, planning, and processing information could be addressed by increasing the offer of teacher training on EdTech (pre and in-service).

Figure 4. ETRI results for the teachers' pillar





61%

Use spreadsheet for keeping records

75%

Assess student learning using ICT

67%

Collaborate with colleagues using shared resources

### Use - Planning

3.1

% of principals reporting teachers doing the following using digital devices while preparing/ planning their lessons

66%

Searching for content to use during class

52%

Sharing educational content with other teachers

52%

Participating in project developed with other

61%

Preparing presentations to use for teaching

62%

Expanding your knowledge about the use of ICT

51%

Carrying out administrative class management

### Support

3.7

% of principals reporting that teachers' initial training included the following:

68%

Learning how to use ICT generally

71%

Learning how to use ICT in teaching

### Evaluation

3.1

51%

Of principals report teachers have been formally evaluated on their use of ICT during the last school year

### Use - Teaching

2.9

% of principals reporting teachers doing the following during direct class instruction:

47%

Using ICT to search for information for discussion

45%

Using ICT to present information during instruction

27%

Using classroom management tools

37%

Asking students to search for information

29%

Asking students to present results using ICT

28%

Using digital tools to assess students' learning



## 3. STUDENTS

### 3.1 WHAT DOES THE STUDENTS' PILLAR MEASURE AND WHY DOES IT MATTER

**This pillar assesses the performance of grade 5 students in using ICT in and outside school.** At the policy level, the EdTech Readiness Index measures three aspects of student engagement with ICT: (i) the existence of a competency framework for students, (ii) the integration of ICT into activities in the curriculum and outside the school, and (iii) the existence of an assessment of ICT competencies. It is relevant to measure these aspects as many countries are now adding digital competencies to their national curriculum. At the practice level, the EdTech Readiness

Index evaluates the performance of grade 5 students in using ICT inside and outside of school. The three sub-indicators covered under student practices are: (i) the self-efficacy of students in using ICT, (ii) the use/frequency with which students use ICT inside the school and (iii) the use/frequency with which students use ICT outside the school. Measuring these aspects is important because research has shown a strong correlation between students' use of ICT devices at home and their level of Computer and Information Literacy (CIL).

### 3.2 WHAT ARE THE RESULTS OF THE STUDENTS' PILLAR IN THE DOMINICAN REPUBLIC?

**In the DR, the students' pillar reflects intermediate outcomes, with primary areas for improvement identified in the integration of ICT within the classroom and the assessment of students' digital skills.** The average score on the students' pillar for practices is 3.43, on de facto policies is 3.86, and on the de jure policies is 2.33.

**The de jure policy indicator reflects the absence of an official digital competency framework for students while the de facto policy indicator indicates a prevalent conviction among school principals that such a framework is already in place.** In 2012, The National Council of Education of the DR requested a thorough review and update of the curriculum at all levels, with the aim of introducing a competency-based approach. This comprehensive reform included an explicit mention of technological resources as part of the tools for learning, encompassing computers, educational software, and other apps, such as word processing software and spreadsheets. Since the creation and implementation of the new curriculum, students in the country no longer have a separate technology (or computer science) subject; instead, these competencies are incorporated into the learning of all subjects and at all levels. Although technology is now recognized as a cross-cutting component, the review of the legislation revealed that the country has not yet introduced a specific framework of digital competences for students. The absence of a formalized competency framework contrasts with

the findings of the de facto policy indicator, where the majority of school principals (84%) report the existence of the mentioned framework. At the same time, most school principals (86%) recognize that the educational curriculum recommends the use of ICT, in alignment with the current regulation.

**At the normative level, the absence of a digital competency framework for students implies that these competencies are not being evaluated, which is consistent with school principals' perception on the lack of a formal evaluation process.** Consequently, regarding Evaluation, the de jure and de facto policy indicators are quite aligned: only half of the school principals believe that students' digital competences are being adequately assessed (50%). Overall, introducing a competency framework is the initial step toward gaining clarity on the skills that students need to develop and designing appropriate assessment mechanisms.

**At the practice level, the students' pillar underscores additional areas of improvement, especially in relation to the use of ICT inside the classroom.** The sub-indicators for student practices present lower scores compared to the de facto policy ones, reflecting the practical effects of the lack of standards and specific guidelines for students' ICT usage. According to the school principals, self-efficacy measures of students suggest 71% can perform basic tasks such as open new tabs, save content or revisit webpages. As expected, a lower percentage

of 5th graders can discriminate information (61%). A significant mismatch is observed in the use of devices in the classroom and outside of the school, as students tend to use ICT more frequently at home. School principals report that the most frequent use outside of school is browsing the internet and using learning apps and websites (82% and 80%), followed by doing homework using devices (79%). In contrast, all types of usage of ICT devices inside the classroom can be improved, particularly the use of

technology to communicate with other students and to share assignment results (67%). Overall, the use of ICT devices in the classroom is the sub indicator that needs the greatest attention, being in the red category. Undoubtedly, the low levels of device usage in schools and the not-so-high results in terms of students' self-efficacy can be partly explained by the lack of a nationally defined framework for digital competencies.

Figure 5. ETRI results for the students' pillar

### Practices

#### Self-efficacy

3.5

% of principals who report thinking that at least half of the students can perform the following independently:

- 73% Open a new tab in a browser
- 76% Save a photo that they find online
- 73% Find a website they have visited before
- 61% Check if information found online is true

#### Use - Inside

2.9

% of principals who report students use digital devices while in school in most/every lessons for:

- 84% Searching for information for lesson exercises
- 67% Communicating with students on projects
- 67% Sharing assignment results with students
- 68% Submitting completed work for assessment
- 72% Evaluating information resulting from a search
- 69% Producing documents, presentations or videos

### Policies

#### Framework

4.2

83% Of principals report that there is a guiding document defining the digital competences that a student is expected to have or develop

#### Curriculum

4.5

86% Of principals believe that the educational curriculum recommends using ICT in teaching

#### Assessment

2.9

50% Of principals report that the digital competences of students were formally assessed

### Use - Outside

3.9

% of principals who believe students use digital devices outside of school at least once a week for:

82%

Browsing the internet for schoolwork

89%

Communicating with teacher (social networks or email)

79%

Doing homework on a digital device

80%

Using learning apps/websites



## 4. DEVICES

### 4.1. WHAT DOES THE DEVICES PILLAR MEASURE AND WHY DOES IT MATTER

**This pillar evaluates the standards for digital devices and connectivity in teaching and learning and their availability within schools, as well as the presence of policies to allow effective integration of such devices.**

At the policy level, this indicator captures three aspects: (i) the application/use of device availability standards, (ii) the application/use of monitoring tools and (iii) the assignment of responsibilities. At the

practice level, this indicator evaluates three aspects: (i) students' access to the devices, (ii) students' use of the devices and (iii) the existence of technical support. The evaluation of these sub-indicators is highly informative as it has been demonstrated that one of the primary obstacles to the integration of ICT into teaching is the insufficient access to digital devices.

### 4.2. WHAT ARE THE RESULTS FOR THE DEVICES' PILLAR IN THE DOMINICAN REPUBLIC?

**The devices' pillar in the DR presents a mixed spectrum of results, signaling that the areas that require the greatest attention are students' usage of digital devices inside the classroom and technical support at the school level.** The average score on the devices' pillar for practices is 2.96, on de facto policies is 3.66, and on the de jure policies is 2.33.

**The school survey results suggest that, with respect to de facto policy indicator, although there is no specific regulation in place, school principals' perception on the existence of standards reflects the efforts made by the government to equip most**

**students in public schools with a digital device for permanent use.** Since the early 1990s, when the government started to install the first computer labs in schools, the Dominican Republic has advanced enormously in increasing the availability of and access to digital devices for education. The efforts made during the COVID-19 pandemic and the successive adoption of the digital transformation strategy, Agenda 2030, reinforced the digitalization of schools, including the incorporation and provision of technological equipment, programs, and applications for educational purposes<sup>5</sup>. Despite these efforts for

5 According to IDEC (2021), in recent years the government has acquired 1.3 million tablets, 1.1 million notebooks, nearly 130,000 computers for teachers and 57,000 tablets for primary schools. As a result of these effort every student enrolled in public schools should already have access to a technological device for its permanent use (tablets for primary students and laptops for secondary students).

equipping all public schools with digital devices, the de jure policy indicator reveals that the country does not have a specific regulation that codifies the right of students to have access to digital devices. The only aspect covered by the current legislation is the access to devices for students with special needs, as the country's legislation explicitly mentions that the use of these devices must be viable for all students and teachers. Apart from students with special needs, this lack of codification undermines the ability to develop standardized processes for monitoring the effective use and availability of the devices provided. Despite this lack of clarity in the current regulations, most school principals believe that there is a policy that guarantees that students from public schools have access to digital devices (68%). They also report the existence of specific legislation that assigns responsibility to MINERD to provide technical support (77%), even though it is not in place.

**The opinions of school principals on Monitoring are more aligned with the findings of the de jure indicator.**

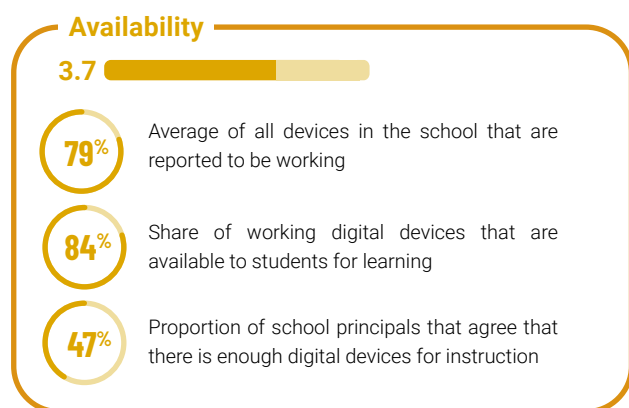
Just over half of the school principals report knowing of the existence of a monitoring system to measure that schools have access to functioning digital devices (57%). Similarly, 57% report the existence of a monitoring system to track whether digital devices and connectivity are used by students. In light of these results, the government could consider designing a monitoring system at the central level to track the availability of devices and provide authorities with accurate information on the effective use of devices by students in all public schools.

**The devices indicator at the practice level revealed that one area in which greater efforts should be made, in addition to technical support, is ensuring that digital devices are adapted for students with disabilities.**

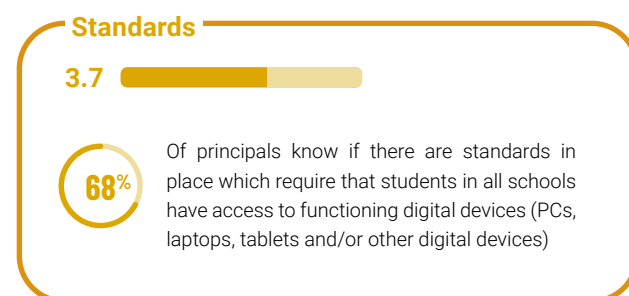
While the availability of equipment is at an appropriate level of development, access to devices adapted for students with disabilities and technical support present unsatisfactory results, appearing priority areas for the country. The school survey shows positive outcomes for the aspect of availability, but results decline significantly with regards to the existence of an adequate number of devices for instruction. This low percentage (47%) is not consistent with the information gathered in the de jure policy indicator, as nearly all public schools' students should have some type of device at their disposal. It is also worth noting that a very low percentage of school principals (17%) responded that their schools have devices adapted for students with disabilities, and even fewer agreed that schools receive sufficient technical support to maintain the equipment (37%). These results suggest that work should be focused primarily on monitoring devices and connectivity, but also on increasing the technical support to maintain the devices fully functional. In summary, to ensure that the efforts to provide devices to all public schools are truly realized, MINERD needs to reinforce its technical assistance systems in areas such as training, monitoring, maintenance and repositioning. Only then can the country ensure that ICT devices are adequate for usage (and learning).

Figure 6. ETRI results for the devices pillar

**Practices**



**Policies**



### Student usage

2.5

17%

Of principals report that the school has digital devices adapted for use of students with disabilities

58%

Of principals report that digital devices available at the school were used in class at least once or twice a week

### Tech Support

2.7

37%

Of principals agree that there is sufficient technical support to maintain ICT resources so that they are fully functional

### Monitoring

3.2

% of principals who report that there is someone or any institution or mechanism that monitors:

54%

That all schools have access to functioning digital devices

57%

If digital devices and connectivity are used by the students

### Responsibility

4.1

77%

Of principals report that there is a government legislation that assigns responsibility to MINERD for maintaining school ICT infrastructure and for providing technical support



## 5. CONNECTIVITY

### 5.1. WHAT DOES THE CONNECTIVITY PILLAR MEASURE AND WHY DOES IT MATTER

The connectivity pillar assesses the presence of essential elements in the policies that enable efficient connectivity for all public schools, as well as the readiness of schools to connect students to the internet. EdTech policies should define strategies to ensure equitable and high-quality access to the internet. The connectivity indicator at the policy level

assesses precisely (i) the existence of a connectivity plan, (ii), the application or use of monitoring tools and (iii) the availability and use of technical support. At the practice level, this indicator also tracks three aspects: (i) the availability of connectivity, (ii) students' access to the internet and (iii) the perceived quality of the connectivity.

### 5.2. WHAT ARE THE RESULTS FOR THE CONNECTIVITY PILLAR IN THE DOMINICAN REPUBLIC?

Overall, connectivity is the weakest pillar, reflecting the need for substantial improvements. The average score on the connectivity pillar for practices is 2.83, on de facto policies is 2.90, and on the de jure policies is 2.33.

The results of the de jure and de facto policy indicators show a general alignment, as many public schools still lack connectivity and just over half of the public schools' principals report knowing of the existence of a plan to ensure connectivity in their schools. According to the institutional memory of MINERD (Memoria Educativa), in 2021, approximately 64% of public schools lacked an internet connection. Subsequently, relevant efforts have been made

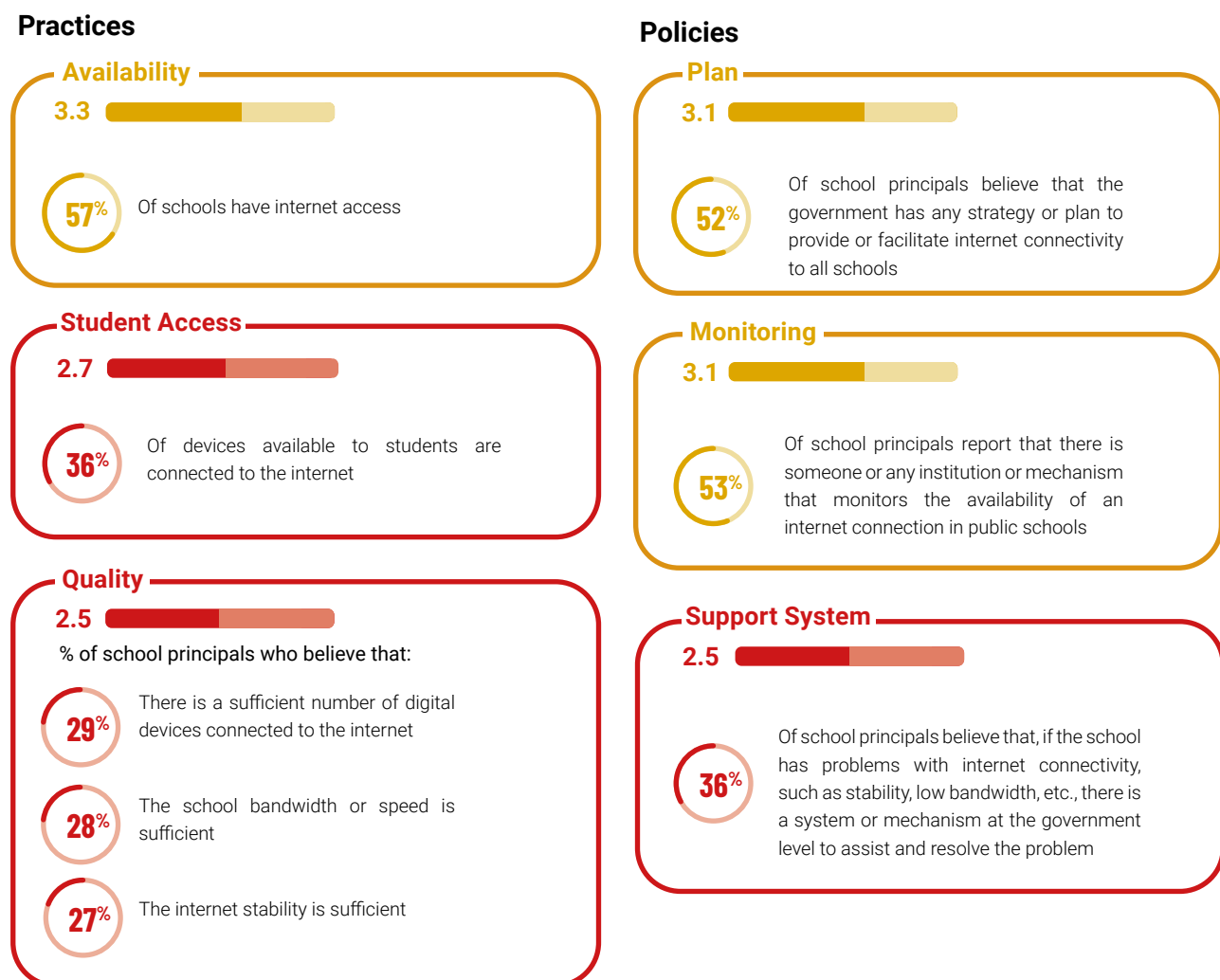
through the Educational Connectivity Program (Conectividad Educativa), to ensure that the majority of public schools in the country are now connected to the internet. However, use of the internet is currently available only for school principals and administrative management staff. The next phase being carried out by MINERD aims to provide internet access to teachers and students. MINERD is also working on a monitoring system where each school will be able to report failures through a central office within the Ministry. Due to the very recent implementation of the connectivity plans in schools, the de jure policy indicator for the connectivity pillar reveals that the country still needs to define a monitoring system and troubleshooting mechanisms

for internet use. In fact, despite the existence of the connectivity plans mentioned in the Agenda 2030, just over half of the public schools' principals report knowing of the existence of a plan to ensure connectivity in their schools (52%). Similarly, only 53% report that there is a mechanism to monitor the availability of internet connection in their school. When asked if there is a responsible entity that provides support to schools regarding internet connectivity, the percentage drops below half, in line with what the de jure index informs (36%). The responses from school principals suggest that overall improvements are needed at the policy level, particularly regarding technical assistance.

**The connectivity indicator at the practice level reveals that internet access and quality of the connectivity are the primary challenges, as only half of the principals report their school is connected to the internet and less than a third believe the bandwidth, stability and speed is sufficient.** The lack of proper monitoring and

support at the policy level leads to poor practices, with Availability of internet connection being the only sub-indicator scoring above 50%. In fact, despite the efforts that are being carried out following Agenda 2030, only slightly more than half of public schools seem to be connected to the internet (57%). Moreover, despite the availability of devices, the school survey underscores that only 36% of devices available to students are connected to the internet. Quality of the connection appears as another priority area. In fact, only 29% of school principals believe that there are enough digital devices connected to the internet to support daily activities and 27% consider that internet stability is sufficient to support teaching and learning effectively. According to the responses given by school principals, the access, availability, and quality of the internet that their schools currently have are inadequate and do not allow for effective teaching and learning.

Figure 7. ETRI results for the connectivity pillar





## 6 . DIGITAL EDUCATION RESOURCES

### 6.1. WHAT DOES THE DIGITAL EDUCATION RESOURCES PILLAR MEASURE AND WHY DOES IT MATTER

**The Digital Education Resources (DERs) pillar is focused on analyzing the existence of key elements in the policies that promote the use of quality digital resources and the readiness of schools to use them.**

At the policy level, the indicators for this pillar refer to: (i) the presence of guidance to ensure alignment with the curriculum, (ii) the existence of a strategy to ensure access to digital education resources and (iii) the existence of a legislation/policy defining quality

standards for digital education resources. As for the practice level, the indicators capture (i) access to digital education resources, (ii) the use of digital education resources and the (iii) quality of them. In addition to having an adequate supply of digital educational resources, these resources must meet minimum requirements, including technical quality, inclusivity, compatibility with multiple devices, and alignment with the curriculum.

### 6.2. WHAT ARE THE RESULTS FOR THE DIGITAL RESOURCES PILLAR IN THE DOMINICAN REPUBLIC?

**The DERs pillar presents intermediate results, highlighting the need to improve access and use of DERs at both policy and practice levels.** The average score on the DERs pillar in the DR for practices is 2.86, on de facto policies is 3.50, and on the de jure policies is 2.33.

**Existing policies in the DR are designed to ensure that all students have access to digital resources of suitable quality. Despite the existence of clear regulations regarding DERs, the responses provided in the school survey indicate a significant lack of awareness on the subject.** According to the current regulation (Ordinance 26-2017), the allocation of DERs is intended to promote the development of curriculum-based competencies, complement and support the teaching process, and be accessible for teachers and students. The de jure policy indicator reveals that, while there is no specific mention of students with special needs, the current criteria include usability for all students and teachers. This general acknowledgement implies that students with special needs are considered during resource selection. However, the responses provided for the de facto policy indicator do not align closely with the written regulations. For instance, just over half of school principals state that there is a norm or policy ensuring public schools' access to DERs (62%). While 71% believe that policies assure that DERs are aligned with the curriculum, a lesser proportion considers that they are adapted to local culture (63%). Moreover, less than half of the principals believe that the regulations on DERs consider

students with disabilities (49%). The discrepancy between de jure and de facto policies indicates a general lack of awareness among school principals regarding DER regulations in the country. Even though appropriate regulations exist, it appears that principals are either unaware of them or do not perceive the current legislation as adequate. Therefore, it is necessary to enhance the principals' understanding of existing policies in order to define and select DERs more efficiently at the school level. Ultimately, the definition and adoption of quality standards for DERs need to be improved.

**Finally, the DERs indicator at the practice level presents more negative results and the lowest percentages are shown in relation to access and use.** Less than half of the school principals (49%) believe that students have sufficient access to DERs, and just 45% think these resources are adequately adapted for students with disabilities. Usage is high for textbooks, Office (Word and Power Point), but lower for games, collaborative software and graphing (63% and 64%). There is room for improvement also regarding the quality of the resources provided. The share of principals that agree that the available DERs are of adequate quality is 61%, aligned with the curriculum is 68% and adapted to the local context is 67%. These results suggest that the country needs to focus its efforts on improving the access to and availability of DERs. The data also indicates that use of DERs related to digital learning games, collaborative software, and graphic or drawing software, is the lowest among all sub-indicators.



Defining competencies, aligning initial and ongoing teacher training, as well as improving access to and use of DERs, are critical steps for fostering clarity at the policy level and, consequently, generating a positive impact on educational practices.

Figure 8. ETRI results for the digital education resources pillar



# VI. RECOMMENDATIONS

## 1. DEFINITION OF A NATIONAL EDTECH STRATEGY

The DR should create an EdTech Strategy which summarizes the vision of the country regarding the use of ICT in education, the main challenges that the system faces and the objectives to be achieved. The ETRI results for the Dominican Republic indicate that there is a general misalignment between the policies outlined in the current regulations and the perception in schools regarding the use of ICT in education. This is primarily due to a lack of clarity regarding which level of government in the education system is responsible for integrating ICT into teaching and learning. This is simultaneously linked to the absence of a national EdTech strategy.

The main recommendation, from a legal standpoint, is to formalize the allocation of responsibilities for integrating the use of ICT into schools. The country could benefit from a strategy and action plan to define how technology should be incorporated into teaching

and learning and which level of government is responsible for ensuring that the necessary steps are taken. This strategy would help MINERD to establish specific goals and ensure that all actors in the system are working in the same direction.

At the school level, MINERD should introduce a mandate that explicitly requires schools to have a digital strategy or plan to incorporate the use of ICT into each school. The guidelines could assume the form of a digital agenda that each school would develop, setting specific goals and main milestones to be achieved. Creating a national EdTech strategy that is aligned between MINERD and the schools, coupled with school-level guidelines, would enable stakeholders in the system to better understand their role in the integration of ICT into education and to better organize human capacities.

Table 8. List of resources to develop an EdTech Strategy at the national level and guidelines for schools

	AUTHOR	RESOURCE	LINK
STRATEGY	Centro Ceibal, 2020	Uruguay Strategic Plan 2021 - 2025	<a href="https://rb.gy/7e2qf">https://rb.gy/7e2qf</a>
	Ministerio de Educacion de la Republica de Ecuador, 2021	Agenda Educativa Digital 2021-2025	<a href="https://rb.gy/xuzi0">https://rb.gy/xuzi0</a>
ACTION PLAN	European Commission, 2020	Digital Education Action Plan (2021-2027)	<a href="https://rb.gy/zonq5">https://rb.gy/zonq5</a>
DIGITAL AGENDAS AT THE SCHOOL LEVEL	NetSupport, 2021	A Guide to Creating a Digital Strategy in Education	<a href="https://rb.gy/kow98">https://rb.gy/kow98</a>

## 2. IMPROVE MONITORING SYSTEMS

To ensure the successful implementation of the national EdTech strategy, it is recommended to adopt a comprehensive system of regular monitoring strategies and assessment tools, rather than relying solely on a single approach or methodology. The monitoring process, which should be continuous and produce easily interpretable results, relies on effective data collection methods that capture how digital devices are being used in the classroom

In the Dominican Republic, the school management pillar showed the strongest results. This suggests that the country should leverage existing strengths to improve its monitoring systems. Thanks to SIGERD, the country has a platform that allows for the collection of diverse information at the school level throughout the academic year. The country also promotes the use and analysis of this information

through IDEICE and makes it available to other government institutions and interested citizens.

**However, the review also identified that the country still lacks a policy governing the collection and use of information within the Ministry of Education, which prevents the country from making the best use of**

**the collected data.** Working towards a strengthened EMIS would allow the country to assess the impact of the implemented programs and understand how they can be improved to achieve the goals set forth in the Digital Agenda 2030.

Table 9. List of resources about Education and Management Information Systems

AUTHOR	RESOURCE	LINK
World Bank, 2022	EMIS 2.0: Learning And Accountability System Architecture (LASA)	<a href="https://rb.gy/02u87">https://rb.gy/02u87</a>
Education Department in Gujarat, Government of India, 2023	Command and Control Centre (CCC) for schools	Samagra Shiksha ( <a href="http://ssagujarat.org">ssagujarat.org</a> )
Government of Sierra Leone	Government of Sierra Leone Education Data Hub	DSTI Education Data Explorer – Welcome to the Government of Sierra Leone Education Data Hub

### 3. PROVIDE BETTER GUIDANCE FOR PRINCIPALS AND TEACHERS ON HOW TO INTEGRATE TECHNOLOGY INTO THE CLASSROOM

The results in the Dominican Republic revealed a very low use of ICT in teaching, suggesting the need for more guidance and supportive measures to orient teachers. Professional development is a critical factor for empowering teachers to successfully integrate ICT into their teaching, and both pre-service and in-service training play a vital role. Teachers’ proficiency using educational technologies enables them not only to determine the most appropriate ways to adopt and adapt technology, but also to feel motivated and eager to try new methodologies. Creating support mechanisms in the DR would be crucial to strengthening teachers’ capacity to integrate technology into their instructional practices.

**The introduction of clear guidelines and support mechanisms for both teachers and school principals, together with concrete examples on the application of technology in the classroom delivered as part of the professional training would gradually improve their levels of self-efficacy and**

**help create more engaging learning experiences for their students.** Another recommendation is to strengthen teacher learning communities that are focused on ICT-related topics. In fact, teachers’ learning communities have positive impacts on teachers’ engagement and are cost-effective in terms of sustainability. Research indicates that combining high and low-tech approaches in teacher professional development can be scalable, flexible, and inclusive.

**Additionally, by incorporating a competency framework, the Dominican Republic will be able to evaluate teachers’ progress effectively and track the results of its professional development initiatives.** This systematic approach enables a more targeted and impactful training experience, ultimately enhancing the integration of technology into the classroom.

Table 10. List of resources for teacher professional development and the effective use of EdTech

AUTHOR	RESOURCE	LINK
Education Endowment Foundation, 2021	Effective Professional Development	<a href="https://rb.gy/b45xd">https://rb.gy/b45xd</a>
World Bank, 2022	Effective Teacher Professional Development Using Technology	<a href="https://rb.gy/vsak6">https://rb.gy/vsak6</a>
World Bank, 2022	Technology for Teacher Professional Development Navigation Guide	<a href="https://rb.gy/jxc9e">https://rb.gy/jxc9e</a>
EdTech Hub, 2023	Curated Tools for Teacher Continuous Professional Development	<a href="https://rb.gy/x672n">https://rb.gy/x672n</a>
World Bank, 2023	Coach: tools to improve in-service teacher professional development (TPD).	<a href="https://rb.gy/4wqtf">https://rb.gy/4wqtf</a>
Ceibal, Uruguay	Red Global de Aprendizajes	<a href="https://redglobal.edu.uy/">https://redglobal.edu.uy/</a>

#### 4. INTEGRATING DIGITAL COMPETENCES IN A SYSTEMATIC WAY

**The results from the Dominican Republic highlight the need for the country to establish an official framework of competencies for teachers.** While the Knowledge and Competency Standards for Teachers (Estandares de Conocimiento y Competencias Docentes) and the Teacher Profile (Perfil Docente) acknowledge that teachers should be capable of integrating ICT into their teaching practices, there is currently no detailed framework in place.

**A competency framework should define the digital competences that are expected of teachers and the strategies to evaluate them.** In fact, apart from specifying concrete sets of skills, a competency

framework serves as standard to evaluate teachers' proficiency and provide support mechanisms where needed. When effectively aligned with professional development programs, skills frameworks contribute to scaling capacity-building across the education system.

**1. Choice of the competency framework:** Instead of building a framework from scratch and without references, it is advisable to choose among existing frameworks that have already proved to be effective and easy to implement. The table below provides examples of some of the most widespread frameworks for digital skills:

Table 11. Examples of Teachers Digital Competency Frameworks

AUTHOR	RESOURCE	LINK
ProFuturo, 2021	ProFuturo Global Framework for Competence in the Digital Age	<a href="https://rb.gy/u6j8l">https://rb.gy/u6j8l</a>
UNESCO, 2021	UNESCO ICT Competency Framework for Teachers	<a href="https://rb.gy/w38ln">https://rb.gy/w38ln</a>
European Union, 2020	Digital Competence Framework for Educators (DigCompEdu)	<a href="https://rb.gy/7c2uy">https://rb.gy/7c2uy</a>

**2. Design an execution plan for pre-service and in service teachers:** In the case of pre-service training, the execution plan should focus on the integration of digital competences in teacher education programs. This can be achieved by offering modules that

focus on digital literacy, pedagogical integration of technology, and effective use of educational technologies. The courses should prioritize a practical approach, allowing pre-service teachers to apply their digital skills in real classroom settings. For

in-service teachers it is necessary to provide targeted and tailored professional development options based on incentives.

### 3. Implementation of Monitoring Mechanisms:

effective monitoring of the applied competency framework involves formal evaluation of the required skills. There are two main ways for carrying out the evaluation process:

- **Self-evaluation tools:** SELFIE (Self-reflection on Effective Learning by Fostering the use of Innovative Educational Technologies) is a free online tool developed by the European Commission, aimed at

schools to self-assess their level of digital readiness and identify areas for improvement. This tool allows individuals to assess their own level of digital skills proficiency.

- **National certification mechanisms:** National certification mechanisms provide a standardized framework for evaluating digital competences. An example of a national certification mechanism for digital competences is the initiative that is being implemented in Spain. The objective is to accredit the digital competences of at least 80% of 700,000 non-university teachers by 2024.

## 5. INTRODUCING A COMPETENCY FRAMEWORK FOR STUDENTS

**Defining a framework for student competencies, like in the case of teachers, could contribute to improving and optimizing the use of technologies by students, especially inside the classroom.** After the introduction of the framework, appropriate evaluation tools need to be introduced to assess the attainment of the selected competencies and introduce support programs where needed. By adopting these comprehensive measures, the country can bridge the gap between device usage inside and outside the classroom, equip students with essential digital competences, and promote effective integration of ICT into education.

**An interesting case study is El Salvador, one of the countries included in the Digital Economy for Latin America (DE4LAC) project at the World Bank.** As in the case of the Dominican Republic, El Salvador still

lacks a digital competency framework for students, but important progress has been made to address the demand and supply gap in digital skills. By enhancing collaborations with the private sector and providing digital skills programs, the country is trying to increase the number of students that choose technology-related carriers.

**It is worth mentioning that Agenda 2030 emphasizes the creation of a National Digital Competence Framework, which is expected to outline the digital skills that the entire population, including teachers and students, should acquire to be considered digitally competent.** As in the case of the competency framework for teachers, it is recommended to choose and adapt an existing framework, instead of designing a new one.

Table 12. Examples of digital competency frameworks for students

	AUTHOR	RESOURCE	LINK
COMPETENCY FRAMEWORKS	World Bank, 2020	Digital Skills: Frameworks and Programs	<a href="https://rb.gy/pb5s4">https://rb.gy/pb5s4</a>
	ISTE, 2018	The International Society for Technology in Education (ISTE) Standards for students	<a href="https://rb.gy/vxhgz">https://rb.gy/vxhgz</a>
EVALUATION	ICDL Global, 2000	ICDL International Computer Driving License	<a href="https://icdl.org/">https://icdl.org/</a>
COMPILATION OF FRAMEWORKS AND EXAMPLES	UNESCO UNEVOC	Database with global reference of how digital competencies are being defined for learners and educators	<a href="https://rb.gy/100iq">https://rb.gy/100iq</a>

## 6. REVISE THE NATIONAL CURRICULUM FOR A BETTER INTEGRATION OF ICT

**The comprehensive curriculum reform carried out in the Dominican Republic during 2018 focuses on a competency-based model and includes a plan for the integration of digital technologies into education.** According to the new curriculum, digital resources are explicitly mentioned as part of the learning tools available to students and teachers. Since the implementation of the new curriculum, students in the country no longer have a separate subject for technology. Instead, these competencies are now incorporated into the learning process across all subjects and at all levels. However, this transversal model is unlikely to have a positive impact on learning outcomes without a competency

framework and a defined assessment strategy.

**Investments in ICT can effectively benefit students when accompanied by the fulfillment of other fundamental conditions.** The main aspects to consider are equipping teachers with the necessary digital skills and planning an appropriate integration of ICT into the school curriculum. To reinforce its transversal model, the country should provide guidelines to teachers about subject-specific uses of technology in the classroom and increase access to digital resources and devices. Language and content adaptations would foster inclusiveness and would represent an important step ahead in the integration of Edtech into the country's education system.

Table 13. Examples of national curriculums and digital literacy

AUTHOR	RESOURCE	LINK
Common Sense, USA	Digital Citizenship Curriculum	<a href="https://rb.gy/1hf65">https://rb.gy/1hf65</a>
The Artificial Intelligence (AI) for K-12 initiative (AI4K12)	AI for K-12 guidelines	<a href="https://ai4k12.org/">https://ai4k12.org/</a>
Organisation for Economic Cooperation and Development (OECD)	Curriculum Overload: A Way Forward	<a href="https://rb.gy/gh2k0">https://rb.gy/gh2k0</a>

## 7. EXPAND AND IMPROVE CONNECTIVITY FOR A MORE INCLUSIVE EDTECH POLICY

**EdTech policies need to provide schools with stable and affordable internet connectivity.** The ETRI results show that connectivity is the weakest pillar in the Dominican Republic, representing a major challenge for the expansion of EdTech at the national level. MINERD should strengthen its efforts to provide all public schools with internet connections and should also support continued initiatives to ensure stable electricity service, especially in rural areas.

**An interesting example to consider is Giga, an initiative created by UNICEF and the International Telecommunication Union, aiming to connect all schools worldwide by 2030.** The 2021 Giga report outlines the steps to design a strategy for improving connectivity, considering the minimum infrastructure

requirements students currently need (20Mbps, according to the report), the costs –including initial infrastructure investments and ongoing operational costs–, the financing structure of the service, and the operational model (maintenance and troubleshooting strategies) of the investments. While connectivity has become the “lifeline for digital education,” it is still a major challenge for many schools.

**Finally, while the Dominican Republic works to expand connectivity and improve network quality, the education sector could also procure education platforms and content that could be used offline** (see an example of offline-first learning platform in the table below).

Table 14. Examples of policy guidelines for connectivity in education

	AUTHOR	RESOURCE	LINK
POLICY GUIDELINES FOR CONNECTIVITY IN EDUCATION	UNICEF & Business Consulting Group, 2022	Meaningful school connectivity: An assessment of sustainable business models	<a href="https://rb.gy/ajngn">https://rb.gy/ajngn</a>
	The Inter-American Dialogue, together with the World Bank and the Inter-American Development Bank	Consolidating the digital connectivity in education	<a href="https://rb.gy/7vbgs">https://rb.gy/7vbgs</a>
	UNESCO & EdTech Hub, 2020	Guidance Note 7: Ensuring resilient connectivity	<a href="https://rb.gy/3976p">https://rb.gy/3976p</a>
OFFLINE SOLUTIONS	EdTech Hub, 2020	Effective Teacher Education in Low-Connectivity Settings: A Curated Resource List	<a href="https://rb.gy/srjkd">https://rb.gy/srjkd</a>
	EdTech Hub, 2021	Low-Tech Devices and Connectivity for Learning in Lebanon	<a href="https://rb.gy/rmg11">https://rb.gy/rmg11</a>

If you are interested in ETRI or would like to explore the possibility of applying ETRI in your project, please contact the ETRI team: [ETRI@worldbank.org](mailto:ETRI@worldbank.org)

