THEDIALOGUE
Leadership for the Americas

JULY 2021

TECHNOLOGY AND EDUCATIONAL INNOVATION POST-PANDEMIC

A Call for Educational Transformation

Working Group on Innovation and Technology in Education

First Edition

Inter-American Dialogue

1155 15th St. NW, Suite 800 Washington, DC 20005

Tel: + 1 202-822-9002 / Fax: 202-822-9553

Email: education@thedialogue.org

Front cover photo: Nenad Stojkovic. Online teaching. Little girl working on the laptop. Flickr. bit.ly/36w5LOB (CC BY 2.0). This image was edited to black and white with a blue cover.

Back cover photo: Bruno Cordioli. Robotica2010. Flickr. bit.ly/3xAr8Kt (CC BY 2.0). This image was edited to black and white with a blue cover.

Layout: Daniela Saez

Context

Ensuring quality education for all is still a major challenge for countries throughout Latin America and the Caribbean. Massive school closures during the Covid-19 pandemic have only intensified this challenge and emphasized the need for a concerted effort to transform education in the region. Undoubtedly, technology can help innovate education systems, as it plays a significant role in solving the issue of quality – by transforming ineffective pedagogical methods and updating obsolete didactic tools in the classroom, as well as in the management of educational processes system-wide. The pandemic has shown that the incorporation of technology in education is inevitable and urgent, not only to meet the demands of a new model of distance education, or a future hybrid system, but also to improve the quality of teaching and the effectiveness of educational systems in the long-term.

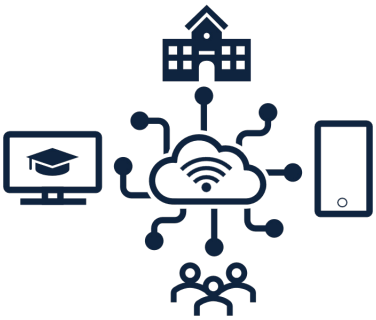
The mission of the *Technology and Innovation in Education Working Group* is to contribute to the creation of an ecosystem of educational innovation in which public and private sector stakeholders collaborate effectively to expand the use of new technologies in education. From its inception, the group *identified three areas* in which the effective use of technology can transform education: quality learning experiences, effective teaching, and effective systems management.

In the context of the pandemic, all three thematic areas gained relevance and took on new meanings. The gradual reopening of schools will highlight the deepening inequities that already existed in the region's education systems and that have worsened in the last year, as well as the urgent need to invest in the quality of education through the appropriate incorporation and use of technologies.

The members of the group call on educational authorities, teachers and administrators, organized civil society, businesses, and the educational community as a whole, to strengthen the innovative efforts that have been observed during this difficult period and to turn them into long-term transformational strategies.

As a result of their joint work of more than two years, the group identified five priority and cross-cutting issues to be resolved in order to facilitate the effective incorporation of new technologies in the region's education systems.

1. Ensuring access to quality, permanent, and affordable connectivity in all schools, homes, and communities.



Connectivity is a *key prerequisite* for bringing educational technology to scale. It is difficult to imagine a strategy that seeks to transform the learning experience for all students without ensuring connectivity in schools and homes, regardless of their geographic location or the characteristics of students and their communities. Without adequate access to connectivity, the productivity of investments in devices and applications is very low, and access to educational resources available online is naturally limited.

One-third of the population in Latin America and the Caribbean does not have *access to the internet*. Even in countries in the region with high average connectivity rates, the gap between the most privileged and the most vulnerable communities is still very significant. In addition, connectivity speed is a challenge for many connected households. At least 77 million people who live in rural areas of Latin America and the Caribbean do not have access to internet services that meet minimum quality standards. The same is true for many families in urban areas, particularly those with low incomes.

Before the pandemic, the goal of the states was to connect more schools and provide them with the necessary devices to enable the integration of new educational technologies. Indeed, currently, only *33 percent of schools in Latin America* have access to broadband or

sufficient internet speed; less than half the average of the Organization for Economic Cooperation and Development (OECD) countries. School closures forced by the pandemic have expanded the connectivity agenda to ensure that both students and teachers have access to affordable and reliable internet connections at home.

The pandemic undoubtedly accelerated the development of new measures to facilitate access to existing infrastructure and prompted, in most cases, immediate investment in connectivity. Furthermore, along with governments, ***telecommunications companies initiated several very valuable efforts in the short-term to expand access to educational data***. However, several challenges complicate the scalability and sustainability of these actions. One of the biggest operational difficulties is the lack of updated data needed to assess the access gap at the household level and develop concrete initiatives - such as the distribution of devices or telephone agreements for reduced-cost data plans in specific localities.

Even with public-private partnerships and low-cost collaboration, connecting all households and schools would mean a large-scale investment of resources and time. Most countries have not been able to mobilize the necessary financing plan to sustainably respond to the infrastructural and connectivity needs that the pandemic crisis brought to light. Based on these experiences, the combined use of ***first-generation technologies*** (such as radio or television) accessible in remote areas, together with a long-term investment plan in the country's connectivity infrastructure, would result in a greater and more consistent increase in national coverage.

2. Involve teachers and managers in the planning and implementation of technological strategies for education and invest in their initial and ongoing development of analytical, technological, and communication skills.

The technological transformation of systems cannot take place without the support and involvement of teachers. The pandemic has emphasized the ***key role of teachers*** in the effective deployment of new technology initiatives - as well as the demands for training, specifically in Information and Communication Technologies (ICTs). Indeed, the introduction of technology in the classroom (in-person or virtual) will not generate improvements in learning if it is not accessible and useful for teachers or if they do not have the necessary competencies to make effective use of it in their practice.

Close collaboration is required to increase the usability and relevance of technological tools between the various stakeholders in the educational ecosystem, especially teachers and managers. Thus, tools can be designed to better meet the practical needs of teachers, through a process of feedback in the design, creation, and curation of content.

Extremely sophisticated platforms were developed during the pandemic but were not used due to their complexity. On the one hand, social platforms or networks became even more relevant in the educational sphere due to their high level of usability and familiarity among teachers. On the other hand, countries should prioritize initial and continuous training strategies that update teachers' digital and analytical skills regularly. To this end, it is crucial to have digital competency frameworks and corresponding assessment systems that allow mapping the skills of all teachers. Training programs should be aligned to the gaps and needs identified through the assessment systems.

As is the case with infrastructural data, to develop effective training strategies, it is imperative to map the training needs and skill gaps that exist among teachers in each country. In the context of the pandemic, countries have recognized their initial mistake in assuming that all teachers have the same skill level in technological use or had completed the same number of

trainings, when in fact, this was not the case. Some countries and organizations have developed *tools for self-assessment* of competencies, which produce an immediate diagnosis so that teachers can identify their gaps and enroll in the necessary courses.

In order to design an appropriate training plan that responds to the assessed needs, the group recommends collaborating on the development of a single, regional, actionable competency framework by using and adapting existing resources and frameworks. It is essential to have a framework that outlines the digital skills needed to train teachers in ICT effectively. This will make it easier to create a national evaluation and training plan that responds to these requirements. For the development of these competency frameworks, it is not necessary to start from scratch; a framework at a regional level can be built from existing ones.

3. Foster bold leadership that defines a strategic vision for educational technology innovation, a long-term financing scheme, as well as a coordination plan with all key stakeholders in the education ecosystem.

To scale innovative educational technologies and improve the learning experience, it is critical to have a *clear national vision* that guides the education system and engages all relevant stakeholders from the public and private sector, *civil society*, foundations, and universities, among others. This vision must have a high level of consensus and be expressed in a long-term strategy that includes specific and measurable objectives, a concrete action plan that includes responsibilities and a long-term financing plan, as well as the institutional framework to support it.

Governments should also avoid fragmentation of leadership across functional areas and among different ministries or institutions. It is essential to promote collective leadership, involving all the necessary stakeholders - inside and outside the public sector - to define strategic, common, and cross-cutting objectives for all the technological attributes of the education system, including the expansion of connectivity and availability of devices, the creation of new virtual and first-generation content platforms, the training of teachers, managers and educational personnel in the use of new technologies, and the automated management of educational processes at the school, national, and regional levels.

In the context of the pandemic, many countries were faced with a conflict between the need to implement new initiatives to address the immediate demands caused by the crisis and the need to continue advancing the existing education agenda established with long-term financing plans. To resolve this conflict, leadership needed to focus on decongesting and adapting existing initiatives to the current situation, as well as rethinking the validity of certain models already in place. Strong leadership will also be essential to integrate and institutionalize the changes and lessons learned resulting from the crisis into future plans.

Going forward, the biggest challenge countries face is the lack of political support needed to maintain educational technology as a key investment area. To foster political interest, it is imperative to make visible the impact of previous investments in educational innovation and technology, even in the medium- or short-term. For example, *innovative initiatives* that emerged to respond quickly to student needs in the context of the pandemic, such as the management and distribution of devices or the digitization of most teaching processes, can attract funds to sustain and scale these efforts in the long-term.

Finally, upgrading and integrating educational technology on a large scale, including all of its services, requires a robust budget. At the same time, one-time investments generally contribute to the development of isolated processes within a disjointed and inefficient system and are just as costly in the long run. It is therefore imperative that governments define strategic and permanent financing plans that support technological innovation and protect them from abandoning investments during management changes.

4. Promote partnerships with the private sector to accelerate quality technological transformation and strengthen the technical and financial capacity of governments.

The region's authorities cannot, and should not, undertake the technological transformation processes in their educational systems without the support of the private sector. Undoubtedly, the private sector has a critical role to play in promoting innovation and integration of technology in education systems through several venues: (a) the ***expansion of access to connectivity*** and necessary devices, (b) the production and distribution of ***educational content across multiple media*** (virtual, radio or television), (c) the design and implementation of new ***tools or platforms for teacher use*** and training thereon, and (d) the creation and implementation of ***new systems for automated educational management***.

In the last year, the pandemic confirmed that it is very difficult to implement a remote learning plan at scale without the cooperation of different government sectors and collaboration with private institutions. Certain key services to maintain the relationship between students and teachers during the pandemic, such as access to connectivity or the production of multimedia educational content, tend to be provided by private sector stakeholders.

Maintaining a collaborative relationship with telecommunications companies can also accelerate and increase the level of connectivity in classrooms and throughout the country in the long-term. Going forward, it is essential to leverage and expand existing public-private partnerships to promote technological transformation.

Most ministries of education in the region do not have their own infrastructure to maintain the educational television and radio options that many have developed and implemented during the pandemic. Countries have collaborated with ***private production companies or non-governmental content providers***, and even private channels and broadcast networks. During the crisis, many of these partnerships have been low-cost or financed by multilateral funds. For multichannel strategies to be economically viable in the long-term, ministries should invest in outsourcing to private stakeholders rather than in developing their own expensive national infrastructure for content creation, production, and distribution.

One of the biggest challenges faced by governments in the region is the lack of capacity to develop effective online platforms and to respond to the high demand for teacher training. The private sector manages effective and certified platforms that can be scaled efficiently. In addition to facilitating remote teaching through existing platforms, governments should consider outsourcing part of the teacher training strategy in ICTs. In the pandemic, there has been a proliferation of teacher training opportunities outside the realm of ministries and public entities, highly specialized both in subject matter and in particular technological capabilities or tools. These courses have proven to be very useful in responding to the specific needs of teachers that are generally not met through more generalized training.

Finally, the automation of educational management is a critical area and a monumental task for governments in the region, which requires the intervention of the private sector. In order to modernize education management at scale, governments can

engage the private sector through formalized collaboration channels and standards for data modeling. Countries should focus on procuring existing, quality software that can respond to the changing needs of the education system without requiring large investments of resources and their own technical capacity to develop. To protect user data and ensure system interoperability, some governments have developed data and cybersecurity standards that define the conditions for educational data management and provide data usage models to guide the actions of private providers.

5. Invest in technology to modernize and improve educational management processes.

Educational management is a critical area for the integration of new technologies. In recent years, countries in the region have made a technological leap to advance in the transition from digital information systems to automated educational information and management systems (EMIS). Although most countries currently have existing educational management information systems that store student and teacher data, integrating this information and promoting its use to make informed decisions in real-time is still a major challenge throughout the region.

According to the experiences of the countries, and to the technology available to improve management processes, there are *four elements* that determine the effectiveness of EMIS:

• ***Interoperability***. Having a well-connected system is essential to facilitate decision-making and educational management. In the region, information systems and their databases are interoperable - but in many cases, management processes are still compartmentalized in specialized ministries or management units.

• ***Accessibility***. The effectiveness of technology for educational management depends on the actors of the educational system and the way they utilize EMIS. In order to promote effective use and overcome staff resistance, it is essential to have a system that is accessible, highly usable, and secure.

• ***Sustainability***. To ensure that progress toward automated management is sustained, EMIS relies on guidelines to ensure their sustainability. One of the biggest challenges to ensuring sustainability is to promote the adaptability of EMIS to the constant reorganization and complexity of the education system.

• ***Capacity***. To maintain EMIS that can be interoperable, accessible, and sustainable, countries depend not only on their human capacity but also on the infrastructural capacity of the education system itself. Implementing a sustainable EMIS generally requires significant investment in recruiting technicians and training education personnel, as well as strengthening the infrastructure of the systems.

To maximize the effectiveness of EMIS, countries must invest in technologies, strategies, and partnerships to develop systems that are more interoperable, accessible to the different stakeholders in the system, sustainable over time, and with sufficient human and infrastructural capacity to continue upgrading their functions.

The lessons learned and the goodwill generated during the pandemic offer a unique opportunity to aggressively advance an agenda for modernizing education systems through the introduction and use of technologies, with the ultimate goal of improving the quality of education. The five cross-cutting themes identified by the group are critical in the development and implementation of effective strategies for the technological transformation of the education sector in the region. Given the opportunity, states must strategically lead this transformation, promoting the collaboration and participation of civil society and the private sector, as well as teachers and other educational personnel.

ANNEX

Participant List

Lucía Acurio
Executive Director
Grupo EduTec

Roberto Araya
Researcher
Universidad de Chile

Elena Arias Ortiz
Education Specialist
Inter-American Development Bank

Luciano Braverman
Senior Director of Education
Microsoft Latin America

Melania Brenes Monges
Viceminister
Ministry of Public Education
Costa Rica

Héctor Bouzón
Executive Director of Institutional Management
ANEP
Uruguay

Lidia Camacho
General Director
TV Educativa
Mexico

Brenda Campos
Director of Social Impact
LATAM
Sesame Workshop

Martha Castellanos
Academic Vice Chancellor of Fundación Universitaria del Área Andina

Marbellis Castillo
Senior Project Manager
International Society for Technology in Education (ISTE)

Andrés Ernesto Chiriboga Zumarraga
Viceminister of Management
Ministry of Education
Ecuador

Cristobal Cobo
Education Specialist
World Bank

Julián Cristia
Lead Economist
Inter-American Development Bank

Giselle Cruz Maduro
Minister
Ministry of Public Education
Costa Rica

Richard Culatta
CEO
International Society for Technology in Education (ISTE)

José Escamilla
Director of Educational Innovation
Tecnológico de Monterrey

Héctor Faya
Director of Policy Programs and Government Outreach, LATAM
Facebook

Íñigo Fernandez
Head of Public Policy, Mexico and Central America
Facebook

Ariel Fiszbein
Director, Education Program
Inter-American Dialogue

Leandro Folgar
President
Plan Ceibal

Rocío Fontana
Project Coordinator
Quality Assessment Unit and Educational Equity
Government of the City of Buenos Aires

Sandra Garcia Jaramillo
Non-Resident Senior Fellow
Inter-American Dialogue y Associate Professor
Government School
Universidad de los Andes

Arantxa Guillén
Manager of Public Policy LATAM
Facebook

Robert Hawkins
Senior Education Specialist
World Bank

Anna Herrero
Research Associate, Education Program
Inter-American Dialogue

Ryan Johnson
Senior Director – Global Market Access & Government Affairs
Viasat

Mariana Maggio
Academic Program Manager
Microsoft Latin America

Mónica Maruri
Executive Director
Instituto Iberoamericano del Patrimonio Natural y Cultural

Sebastian Marambio
Director of the Innovation Center
Ministry of Education
Chile

Sandro Mesquita
Vicepresident of Social Responsability and Sustainability
AT&T | DIRECTV for Latin America

Diego Molano
President
Consejo Superior Fundación
Universitaria del Área Andina

Mariana Montaldo
Institutional Link
Plan Ceibal

William Montoya
Digital Strategy Advisor
Ministry of Education
Colombia

Leda Muñoz
Executive Director
Omar Dengo Foundation

Robert Murray Meza
President of the Board of Directors
AGRISAL Group

Jana Nelson
Latin America Lead
Amazon Web Services Institute

Arturo Pereira
Aid in charge of SIGE
National Coordination Division
in Technology, Planification and
Budget
Ministry of Education
Chile

Christian Pinto
DIGEIBIRA Advisor
Ministry of Education
Peru

Agustin Porres
Regional Director
LATAM
Varkey Foundation

Roger Quirama Garcia
Chief of Technology Office and
Information Systems
Ministry of National Education
Colombia

Sebastian Rodriguez
Vicepresident of Sales Operations
Pearson

Germán Ruiz
Executive Coordinator
Espacio Común de la Educación
Superior en Línea (ECESELI)

Paula Sacchini
Director of Marketing & Corporate
Issues
Pearson

Daniela Sáez
Program Assistant, Education
Program
Inter-American Dialogue

Mateo Samper
Head
Public Sector Partnerships
Ibero-America
Coursera

Gabriel Sánchez Zinny
Former minister of Education
Buenos Aires Province
Argentina

Karen Scott
Global Government Marketing
Coursera

Eugenio Severin
Executive Director
Tu clase, Tu país

Diana María Silva Lizarazo
Chief of Education Innovation
Ministry of National Education
Colombia

Sarah Stanton
Senior Associate
Education Program
Inter-American Dialogue

José Thomas
General Director of Schools
Mendoza
Argentina

Fernando Valenzuela
Partner
Global EdTech Impact Alliance

Denise Vaillant
Director of Doctorate Program in
Education
Universidad ORT

María Alexandra Velez
Senior Director
Government Issues and Regulation
SBA

Luis Villegas
Support Staff
National Coordination for
Technology
Ministry of Education
Chile

Katharine Yasin
Director of ELA (English for Latin
American) y International Technical
Advisor
Education Development Center

Ricardo Zapata
Chief
Office of Technology Information
and Communication
Sistema Nacional de Evaluación
Acreditación y Certificación de la
Calidad Educativa
Sineace

WITH SUPPORT FROM:

AT&T Foundation

coursera

Discovery EDUCATION

facebook

Microsoft

imaginable futures

Pearson

SBA

Viasat

THEDIALOGUE
Leadership for the Americas

Inter-American Dialogue
1155 15th Street NW, Suite 800
Washington, DC 20005
Email: education@thedialogue.org
thedialogue.org/education