Compilation of the EdTech Readiness Index (ETRI) Pilot

Design, Implementation, and Results

May 2023
Compilation of the EdTech Readiness Index (ETRI) Pilot

Design, Implementation, and Results

© 2023 International Bank for Reconstruction and Development / The World Bank

1818 H Street NW, Washington, DC 20433

Telephone: 202-473-1000; Internet: www.worldbank.com

Some rights reserved.

This work is a product of the staff of The World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent. The World Bank does not guarantee the accuracy of the information included in this work.

Nothing herein shall constitute or be considered to be a limitation upon or waiver of the privileges and immunities of The World Bank, all of which are specifically reserved.

Rights and Permissions

This work is available under the Creative Commons Attribution 4.0 International license (CC BY 4.0) https://creativecommons.org/licenses/by/4.0/, with the following mandatory and binding addition:

Any and all disputes arising under this License that cannot be settled amicably shall be submitted to mediation in accordance with the WIPO Mediation Rules in effect at the time the work was published. If the request for mediation is not resolved within forty-five (45) days of the request, either You or the Licensor may, pursuant to a notice of arbitration communicated by reasonable means to the other party refer the dispute to final and binding arbitration to be conducted in accordance with UNCITRAL Arbitration Rules as then in force. The arbitral tribunal shall consist of a sole arbitrator and the language of the proceedings shall be English unless otherwise agreed. The place of arbitration shall be where the Licensor has its headquarters. The arbitral proceedings shall be conducted remotely (e.g., via telephone conference or written submissions) whenever practicable, or held at the World Bank headquarters in Washington, DC.

Attribution – Please cite the work as follows: World Bank, 2023. Compilation of the EdTech Readiness Index (ETRI) - Pilot: Design, Implementation, and Results at the World Bank. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 4.0 IGO.

Translations – If you create a translation of this work, please add the following disclaimer along with the attribution: This translation was not created by The World Bank and should not be considered an official World Bank translation. The World Bank shall not be liable for any content or error in this translation.

Adaptations – If you create an adaptation of this work, please add the following disclaimer along with the attribution: This is an adaptation of an original work by The World Bank. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by The World Bank.

Third-party content: The World Bank does not necessarily own each component of the content contained within the work. The World Bank therefore does not warrant that the use of any third party-owned individual component or part contained in the work will not infringe on the rights of those third parties. The risk of claims resulting from such infringement rests solely with you. If you wish to reuse a component of the work, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright owner. Examples of components can include, but are not limited to, tables, figures, or images.

All queries on rights and licenses should be addressed to Coach, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; e-mail: coach@worldbank.org.

Cover and interior design: Alejandro Scaff, Washington, DC, USA.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgments</td>
<td>4</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>5</td>
</tr>
<tr>
<td>Introduction</td>
<td>6</td>
</tr>
<tr>
<td>Conceptual Framework</td>
<td>10</td>
</tr>
<tr>
<td>Data Collection Instruments and Methodology</td>
<td>15</td>
</tr>
<tr>
<td>School Survey</td>
<td>17</td>
</tr>
<tr>
<td>Policy Survey</td>
<td>17</td>
</tr>
<tr>
<td>Indicators and Reporting</td>
<td>18</td>
</tr>
<tr>
<td>ETRI Implementation Process</td>
<td>21</td>
</tr>
<tr>
<td>System-level Implementation, Results, and Lessons</td>
<td>25</td>
</tr>
<tr>
<td>Implementation Summary</td>
<td>25</td>
</tr>
<tr>
<td>Pilot System Implementation Process and Results</td>
<td>27</td>
</tr>
<tr>
<td>Ho Chi Minh City (HCMC), Vietnam</td>
<td>27</td>
</tr>
<tr>
<td>Nepal</td>
<td>30</td>
</tr>
<tr>
<td>Dominican Republic (DR)</td>
<td>33</td>
</tr>
<tr>
<td>Lessons Learned</td>
<td>36</td>
</tr>
<tr>
<td>Contributions to Global Knowledge</td>
<td>37</td>
</tr>
<tr>
<td>General Recommendations</td>
<td>38</td>
</tr>
<tr>
<td>Critical Actions for Policymakers</td>
<td>39</td>
</tr>
<tr>
<td>Enabling Conditions</td>
<td>39</td>
</tr>
<tr>
<td>Digital Transformation</td>
<td>40</td>
</tr>
<tr>
<td>ETRI 2.0</td>
<td>42</td>
</tr>
<tr>
<td>Closing Remarks</td>
<td>45</td>
</tr>
<tr>
<td>References</td>
<td>47</td>
</tr>
</tbody>
</table>
Acknowledgments

The Compilation of the EdTech Readiness Index (ETRI) Pilot: Design Implementation, and Results note was led by Cristobal Cobo and Marie-Helene Cloutier and co-authored by Jayanti Bhatia. Colleagues including Emma Catherine Lambert-Porter, Marjorie H Chinen and Sergio Venegas Marin provided comments, feedback, and inputs on the note. Alejandro Scaff Herrera designed the note. We would also like to extend our gratitude to the various teams from the Global Education Practice and the staff members who supported the implementation of the instrument in different countries.

This guidance note is part of a series of products by the EdTech Team. Overall guidance for the development and preparation of the note was provided by Halil Dundar, Practice Manager for the Global Education Practice.
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-19</td>
<td>Coronavirus Disease 19</td>
</tr>
<tr>
<td>DER</td>
<td>Digital education resources</td>
</tr>
<tr>
<td>DOET</td>
<td>The Department of Education and Training (Vietnam)</td>
</tr>
<tr>
<td>ECE</td>
<td>Early Childhood Education</td>
</tr>
<tr>
<td>EdTech</td>
<td>Education and technology</td>
</tr>
<tr>
<td>EMIS</td>
<td>Education Management Information System</td>
</tr>
<tr>
<td>ERIC</td>
<td>Educational Resources Information Center</td>
</tr>
<tr>
<td>ETRI</td>
<td>EdTech Readiness Index</td>
</tr>
<tr>
<td>GEPD</td>
<td>Global Education Policy Dashboard</td>
</tr>
<tr>
<td>GPG</td>
<td>global public good</td>
</tr>
<tr>
<td>HCMC</td>
<td>Ho Chi Minh City (Vietnam)</td>
</tr>
<tr>
<td>IADB</td>
<td>Inter-American Development Bank</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>IDEICE</td>
<td>Instituto Dominicano de Evaluación e Investigación de la Calidad Educativa (Dominican Institute for Quality Assessment and Research, Dominican Republic)</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>IHfRA</td>
<td>Innovative Hub for Research in Africa</td>
</tr>
<tr>
<td>LMICs</td>
<td>Low- and Middle-Income Countries</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management Systems</td>
</tr>
<tr>
<td>MBSSE</td>
<td>Ministry of Basic and Senior Secondary Education (Sierra Leone)</td>
</tr>
<tr>
<td>MDRI</td>
<td>Mekong Development Research Institute (Vietnam)</td>
</tr>
<tr>
<td>MINERD</td>
<td>Ministry of Education (Dominican Republic)</td>
</tr>
<tr>
<td>NDRI</td>
<td>Nepal Development Research Institute</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>SABER</td>
<td>Systems Approach for Better Education Results</td>
</tr>
<tr>
<td>TPD</td>
<td>Teacher Professional Development</td>
</tr>
<tr>
<td>TTLs</td>
<td>Task Team Leaders</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
</tbody>
</table>
Introduction
Introduction

Education and technology (EdTech) policies and investments can make education systems more resilient to future shocks by helping reform and reimagining the way education is delivered. The world faces a deep learning crisis. In late 2019, 53 percent of 10-year-old children from low- and middle-income countries (LMICs) were unable to read and understand a simple text. The crisis deepened with extended school closures and sharp economic recessions associated with the COVID-19 pandemic. As a result of the long school closures and the varying quality and effectiveness of remote learning, learning poverty – already over 50 percent in LMICs before the pandemic – is expected to rise sharply, potentially up to 70 percent in LMICs. At the same time, the world is amid a technological revolution. Yet students, especially in LMICs, are not being adequately prepared to thrive in this rapidly changing world. The COVID-19 pandemic has exposed the fragility of the long-standing model of education service delivery; and has placed the learning crisis and the digital divide in the spotlight. But it has also offered us an opportunity to rethink, reimagine, and rebuild our education systems.

As countries and international partners gear toward catalyzing the power of EdTech to unlock education’s promise, a clear need has risen for global tools to inform policy and investment decisions and monitor related progress (or lack thereof). Standardized measures need to be developed to allow for benchmarking and to set targets that are globally comparable; this is the motivation behind the EdTech Readiness Index (ETRI). As a result of a close collaboration between the World Bank’s Education Global Practice and Imaginable Futures, ETRI – a multi-dimensional tool – was designed to support countries in assessing where they stand on education technologies. The tool was tested on three different continents. ETRI captures key elements of the ‘ecosystems’ within the education and technology sectors in a country whose development is considered critical if investments in ‘EdTech’ are likely to bear fruit. In other words, ETRI offers critical data on whether the enabling conditions for EdTech to thrive are present.

In line, ETRI was designed to inform existing EdTech policies with the aim to reduce inequalities and increase learning opportunities. ETRI collects and reports information on the extent to which EdTech is integrated into the broader education system (policies and practices) of the participating countries. The tool provides a comprehensive overview which articulates the efforts of multiple actors. The goal of ETRI is to offer a rich source of information to countries (e.g., ministries of education, multilateral organizations, and local administrations) making investments in EdTech, enabling them to (a) identify good practices and areas where EdTech policies can be strengthened, and (b) monitor progress and the status of implementation as countries act. Moreover, if implemented several times over a certain period, ETRI longitudinal data could be used to track progress over time as well as for the multiple phases of a project (e.g., preparation, diagnostics, implementation) depending on project needs and demands. For example, ETRI can be a valuable instrument to assess the enabling environment at the project preparation stage, or to monitor the implementation of EdTech investments over time during the project implementation/closing stage.

2 The World Bank, UNESCO and UNICEF (2021)
Box 1. EdTech Readiness

**What is EdTech Readiness?**

EdTech Readiness refers to a country’s enabling conditions and environment that can support or hinder implementation of EdTech investments. This can include mindset, buy-in, budget, technical infrastructure, human and technical capacity among others.

ETRI measures this readiness but was designed to take away a lot of heavy lifting and to simplify its replication, so is meant to be light touch and thus does not serve as a full diagnostic tool for the educational system. The tool can aid cross-country analysis as more and more countries implement it but is not meant to serve as a country ranking mechanism. Presently, the ETRI team contextualizes outputs for each country, considering the specific country context without ranking countries, which would require complex comparisons across multiple dimensions and might be more relevant with a more in-depth tool. That said, the tool can still serve as an actionable instrument to collect valuable information, which can then motivate actions and signal a country’s level of EdTech readiness to high-level policymakers.

Since its launch in 2020, the ETRI initiative has produced different open-source resources to guide policy design and implementation in the EdTech (figure 1). First, informed by an extensive literature review and consultations of experts in the field, a framework was developed to better understand the enabling conditions for EdTech to be effective in promoting learning. ETRI goes beyond measuring the availability of devices and the level of connectivity to capture key elements of the larger education-technology ecosystem in a country, guiding efforts to reduce inequalities and increase learning opportunities. Second, ready-to-use survey instruments to collect the needed information remotely or in-person were developed. Third, a flexible and cost-effective data collection approach that leverages best practice was designed and documented. Fourth, evidence was collected in 5 pilot countries to help inform country-level strategies and push the global knowledge frontier. So far, ETRI has been implemented in Dominican Republic, Ho Chi Minh City (Vietnam), Nepal, Niger, and Sierra Leone. Fifth, the plan is to leverage ETRI results to inform national EdTech strategies and support funding for the same. Capacity building will be at the heart of these efforts for a successful implementation.

This compilation note provides an overview of the design, implementation, results, and recommendations of the EdTech Readiness Index pilot (2020-2023) and serves as a one-stop-shop for anyone interested in implementing ETRI in their context by providing access to all the necessary resources. The note is structured around the produced open-source resources as described in figure 1. It outlines technical aspects of the essential building blocks of ETRI such as field work protocols, methodology, instruments, indicators, and scores to facilitate ETRI’s adaptation and implementation in new contexts. ETRI is a global public good (GPG)³, and its affiliated resources and documentation requires no written permission for use; with proper citation, institutions or interested individuals are welcome to use resources (compiled in the ETRI Operational Toolkit) and implement or adapt ETRI for their purposes.

---

³ Global public goods (GPGs) are not limited to a specific region or country meaning that their consumption by one person or country does not diminish their availability to others. The World Bank recognizes that GPGs are essential for sustainable development and poverty reduction, and that they require collective action and international cooperation. A GPG benefits all countries and, therefore, all persons.
This note is divided into 5 main sections that cover the: 1) Conceptual framework; 2) Data collection instruments and methodology; 3) System-level implementation, results, and lessons; 4) Contributions to global knowledge; and 5) ETRI 2.0. At the end of each section, a box provides links to key documents the text refers to.

**Figure 1. Value-added of ETRI - 5 Key Open-Source Resources**

<table>
<thead>
<tr>
<th></th>
<th>A Framework</th>
<th>A Set of Instruments</th>
<th>An Approach to Data Collection</th>
<th>Country-Level Data</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A sound framework to understand the enabling conditions for EdTech to be effective in promoting learning.</td>
<td>Ready-to-use survey instruments to collect the needed information remotely or in-person.</td>
<td>A flexible and cost-effective data collection approach that leverages best practice for remote and in-person data collection.</td>
<td>Evidence collected or being collected in 5+ pilot countries* to help push global knowledge frontier and inform country-level strategies.</td>
<td>Support funding for national EdTech strategies.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Capacity Building</strong></td>
<td><strong>An Approach to Data Collection</strong></td>
<td><strong>Country-Level Data</strong></td>
<td><strong>Policy</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Country-Level Data</strong></td>
<td>Evidence collected or being collected in 5+ pilot countries* to help push global knowledge frontier and inform country-level strategies.</td>
<td><strong>Policy</strong></td>
<td>Support funding for national EdTech strategies.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Capacity Building</strong></td>
<td><strong>An Approach to Data Collection</strong></td>
<td><strong>Country-Level Data</strong></td>
<td><strong>Policy</strong></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><strong>Country-Level Data</strong></td>
<td>Evidence collected or being collected in 5+ pilot countries* to help push global knowledge frontier and inform country-level strategies.</td>
<td><strong>Policy</strong></td>
<td>Support funding for national EdTech strategies.</td>
<td></td>
</tr>
</tbody>
</table>

*Pilot Countries: Dominican Republic, Ho Chi Minh City (Vietnam), Nepal, Niger, and Sierra Leone.

---

**DEEP DIVE RESOURCES**

- Scan the QR Code or click [here](#) for ETRI Overview Video
- Scan the QR Code or click [here](#) for ETRI Operational Toolkit
Conceptual Framework
To develop the framework, we conducted a systematic review of the literature addressing the access, use and impact of information and communication technology (ICT) in education, the different components education and EdTech policies, and related frameworks proposed by reputable institutions and experts in the field of ICT and education. The literature review was carried out between May and June 2020, and it was based on academic literature published in indexed journals (WoS, Scopus, among others) and policy documents written in English. The search focused on documents published from 2010 to the present day, prioritizing those published in the last 5 years, with the exception of a few key sources. Multiple sources were consulted to search for articles and documents, including academic databases (Web of Science, Educational Resources Information Center -ERIC, Google Scholar) and institutional repositories (Commonwealth of Learning, IADB, IEA, International Society for Technology in Education, International Telecommunication Union, National Bureau of Economic Research, OECD, Publications Office of the European Union, UNESCO, UNESCO Institute for Statistics, World Bank, and alike). The search process was done using different sets of keywords depending on the area, this is, the impact of ICT in education, teachers’ ICT standards, teacher professional development, digital education resources, equipment, and connectivity, etc. Regarding the impact of ICT in education, the review focused mainly, but not exclusively, on metanalyses and structured or systematic literature reviews, avoiding drawing on articles reporting results of small-scale interventions. For the policy components, the sources were institutional repositories, focusing on institutional documents (i.e., frameworks, reports), rather than position papers of individuals. Regarding the devices, the search included articles and documents referring to the use of a variety of digital devices, including desktop computers, notebook or laptop computers, netbook computers, tablet devices or smartphones. Finally, it is important to note that the review was conducted from an inclusion/equity point of view, prioritizing perspectives that apply to middle- and low-income countries.

The resulting ETRI framework is organized around the EdTech practices (or service delivery) and policies that could impact a country’s quality of education services and resulting learning outcomes. Practices and policies are two of the three dimensions of the World Bank’s Global Education Policy Dashboard (GEPD). The practice dimension includes the activities and conditions associated with the use of ICT in schools, considering basic inputs and infrastructure (devices, connectivity and digital education resources), and the conditions to support and foster the integration of ICT into teaching and learning associated with the school management team, teachers and students. The policy dimension includes how the system defines, articulates, and implements strategies to foster desired practices. ETRI captures both de jure policies in place, i.e., the legislation that exists and de facto policies, i.e., to what extent policies, strategies and laws are known and implemented by actors at the school level.

The practice and policy dimensions are broken down across 6 overarching pillars, which are believed to play a role in the education ecosystem: School Management, Teachers, Students, Devices, Connectivity and Digital Education Resources (figure 2). The 6 pillars under the dimensions of practice and
policy are further disaggregated into 3 components. In essence, ETRI identifies and measures the different factors that are key for EdTech to be effective, which can help governments pinpoint where there is room for improvement, and signal to countries their overall level of readiness to deploy effective EdTech policies. The different pillars and their components are further described below figure 2.

**Figure 2. ETRI Pillars and Components**

<table>
<thead>
<tr>
<th>De jure Policies</th>
<th>De Facto Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Management</strong></td>
<td>** Teachers**</td>
</tr>
<tr>
<td>- Leadership</td>
<td>- Use — Inside</td>
</tr>
<tr>
<td>- Prioritization</td>
<td></td>
</tr>
</tbody>
</table>

**Practice**

1. **School Management:** At the school level, the evidence points to two key elements in fostering the use of digital technologies in teaching and learning: (i) the integration of ICT into the school’s vision and strategic plans, and (ii) principals’ leadership approaches and practices, which together define the goals for e-learning as well as the use and integration of digital technologies into teaching and learning.

1.2. **Teachers:** The key factors associated with the use of ICT in the classroom are teachers’ perception of their ability to use ICT for pedagogies (planning and preparation, teaching and learning, and learning assessment), strategies to teach digital competences to the students, and the extent of collaboration among teachers.
1.3. **Students**: Based on the evidence, the student’s indicator assesses students’ performance in using ICT in and outside school as well as their self-efficacy.

1.4. **Devices**: Based on the evidence, the device’s indicator assesses maintenance and the readiness for using and use of digital devices (e.g., desktops, laptops, tablet devices, or smartphones) in teaching and learning and their availability within schools.

1.5. **Connectivity**: The availability of and access to good quality Internet connection, especially by the teachers and students, is a basic condition to realize the potential of ICT in teaching and learning.

1.6. **Digital Education Resources (DERs)**: Another key factor associated with the use of ICT in the classroom is the availability of digital education resources (e.g., teaching, learning, and research materials; educational platforms; or digital learning games) that are of good quality, inclusive, responsive (can be used on multiple devices), and aligned with the curriculum and pedagogical practices defined by the school.

2. **Policy**

2.1. **School Management**: The roles and responsibilities of the school management team are to: (a) define the role of ICT in the schools’ strategic plans; (b) implement strategies for the organization wide integration and effective use of digital technologies in respect of its educational mission and activities; and (c) monitor implementation.

2.2. **Teachers**: A key driver for the effective use of digital technologies is teachers’ ability to integrate them meaningfully into daily teaching practice and tailor them to specific subjects and specific activities within those subjects. Supporting teachers and strengthening their capacity to do so requires policies that a) define a framework of digital competencies for teachers, b) implement effective teacher professional development (TPD) programs to support teachers to acquire those competencies, and c) incorporate incentives for teachers to participate in TPD programs.

2.3. **Students**: To support the use of EdTech by students, policies should define a competency framework. It is relevant to incorporate 21st century skills, particularly digital competencies in the curriculum (across grades and subject areas) and define strategies to develop them and a mechanism to evaluate them.

2.4. **Devices**: EdTech policies should provide guidance on the expected standards that schools should meet to ensure enough availability and access of ICT devices, including: (i) type of organizational arrangements to ensure the availability of devices, (ii) conditions for the provision of technical and pedagogical support; and (iii) requirements for the administration and maintenance of technological infrastructure.

2.5. **Connectivity**: EdTech policies should define strategies to ensure equitable and quality access to Internet, including: (i) definition of strategies to ensure the availability of Internet in both, urban and rural schools; (ii) mechanism/strategy to moderate the cost of its use in education to make it affordable; and (iii) standards for the quality of the connectivity to Internet and a strategy to meet them.

2.6. **Digital Education Resources (DERs)**: For the provision of digital education resources, countries should define robust but flexible standards that ensure their quality and ongoing mech-
anisms/processes to evaluate them. Some of the key aspects to consider are: (i) technical quality: functional and usability aspects; (ii) inclusiveness: free of any cultural, gender or other form of bias; (iii) responsive: possible to be used in multiple devices, including mobile phones; and (iv) curriculum alignment: content and pedagogy.

DEEP DIVE RESOURCES

Scan the QR Code or click here for Doc1. Framework
Data Collection Instruments and Methodology
Two instruments are used to collect data and populate the country-level ETRI: A School Survey and a Policy Survey (figure 3). The School Survey collects information relating to practices and de facto policy implementation at the school level, and the Policy Survey collects information relating to de jure existence of policies. The questionnaire for the Policy survey is available in English while questionnaires for the School Survey are available in Arabic, English, French, Nepali, Spanish, and Vietnamese. Additional translations can be made available as part of the implementation in each country as needed. Further details can be found in the ETRI technical note.

ETRI was developed at the beginning of the pandemic when in-person data collection was no longer recommended. This context motivated the ETRI team to attempt other COVID-19 friendly data collection methodologies such as phone-based surveys. In each of the pilot countries, the ETRI team hired a local firm with extensive experience not only in the field of education but also conducting surveys in-person and remotely. Protocols were adjusted slightly following the advice from the local teams to improve data collection, build verbal rapport and trust with respondents.

Figure 3. ETRI Instruments – Measuring Practices and Policies

**School Survey**
- Captures school practices and de facto policies implementation at school level related to the 6 pillars of ETRI
- Designed for basic education levels (primary or secondary)
- Administered in-person or remotely (CATI)
- To school principals and/or teachers
- In 200-300 primary schools (representative at the system level) with strata (urban/rural; public/private)
- Multiple languages: English, Spanish, Vietnamese, Nepali, Arabic
- Approx. 47-51 questions

**School Survey**
- Captures de jure policies related to the 6 pillars of ETRI
- Completed by consultant expert(s)
- Through a legislative review and (if needed) key stakeholder interviews
- Self-administered and shared electronically.
- Approx. 33 questions + a brief context report, particularly highlighting the pre/post COVID-19 results.
School Survey

The **School Survey** collects (remotely or in-person) information about (i) school practices and the (ii) application of specific policies (de facto understanding and implementation of the policy frameworks) that are believed to play an important role in ensuring EdTech is well integrated within the education system. The school survey includes about 45 questions (depending on the data collection modality) structured around 6 sections, following the 6 pillars, and is expected to take ~40 minutes to administer.

The approach to data collection at the school level varies depending on the country’s context. School-level data can be collected in-person through a school visit or remotely through the phone. A phone-based data collection can be preferable because, for example, of social distancing restrictions due to COVID-19, or budget constraints. For in-person data collection, ETRI questions were integrated into the GEPD schools survey instrument and collected as part of the GEPD school survey. However, countries can also consider implementing ETRI in-person without the rest of the GEPD (as a standalone, or along with other school survey tools). The grades targeted can be late primary (grade 4-6) and/or secondary education. The bulk of ETRI questions apply to any of these grades while a small number of questions are more appropriate for older students attending secondary education. When targeting more than one grade, grade specific questions should be collected for all targeted grades offered by the school. Interviews can be carried out with the principal only, or with the principal and relevant teachers (in charge of math or language in the relevant grades or in charge of teaching). To allow for better data, when feasible, it is recommended to collect data from both principals and teachers.

The sample of schools for the survey is representative (at the national or subnational level) of the target population of schools (offering the targeted grades) and stratified to allow for comparison between rural and urban schools (at a minimum). The sample is drawn from the sampling frame i.e., the government EMIS data base to allow the detection of changes over time at a minimum power of 80% and at a 0.05 significance level. In the case of remote data collection, the sampling frame is dependent on the quality of phone records in the EMIS data. If this is of key interest to the client, the quality of the sampling frame allows, and sufficient funding and implementation capacity is available, the sample may be structured to be representative at the regional/provincial/state level, but this would require a larger sample and increase the cost of data collection. The resulting sample size is between 200 and 330 schools. When teacher(s) are respondents, one teacher at the targeted grade level(s) must be randomly selected in a second stage.

Policy Survey

The **Policy Survey** collects information about the existence of specific policies that are believed to play an important role in ensuring EdTech is well integrated within the education system. In doing so, the Survey captures the comprehensiveness of the policy frameworks as it relates to education and technology. This Survey does not consider the extent to which these policies are implemented, their de facto implementation, but rather focuses on de jure existence of these policies. The Policy Survey has a total of 33 questions across 9 sections.
This Policy Survey collects data about the most recent policies adopted, passed, enacted, and implemented in each country around ICT in education. The policies considered should be the most recent at the date when the questionnaire is being completed. In most countries, the policy framework assessed will be that of the central government. In large countries (with populations above 150 million) and/or federal states, where the implementation of ETRI is limited to one province/state, the policies considered/reviewed will be those governing that province/state.

The Policy Survey is complemented by a brief context report that is related to the national education context and the role of EdTech within this environment. The report highlights pre/post COVID-19 results with the aim to give a qualitative sense of how the system has evolved since COVID-19 or because of the pandemic. The context report is structured according to key themes outlined in the guidelines, including national background, governance, students, teachers, EMIS, and platform and devices.

In each country, a national expert on ICT education is identified. The expert, hired as a consultant, independently completes the self-administered policy survey. Ideally, to ensure consistency, only one person (consultant) completes the Policy Survey and context report by conducting a thorough legislative review. In questions where the answer is not easily found or the consultant can benefit from further clarification, the consultant may reach out to relevant public officials, as needed. The completed survey must include existing documents (law, regulation, policies, strategies, guidelines, etc.) or links to such documents to support the selected answers.

The methodology for the Policy Survey is based on the Systems Approach for Better Education Results (SABER). SABER is a World Bank initiative that produces comparative data and knowledge on education policies and institutions, with the aim of helping countries systematically strengthen their education systems and promote Learning for All. This methodology has been applied and used over 400 times across more than 130 countries and across multiple education policy domains.

The data collected is reported as aggregate scores that are averaged across schools in the sample (all or per applicable strata) for a total of 18 indicators. These 18 indicators cover all 6 pillars for the practice and policy dimensions, where the policy dimension is further broken down into a De Facto and a De Jure. Each indicator has a value range between 1 and 5, which is computed using answers to questions mapped to this indicator. Scores are grouped and broken down accordingly by strata (e.g., rural vs. urban). More details on the indicators are provided in table 1. Detailed computation of each indicator score is described in the Metadata document.

---

5 For the policy survey, when possible, it is recommended to explore the possibility of including other stakeholders in the Ministry to complete the questionnaire.

## Table 1. ETRI Indicators

<table>
<thead>
<tr>
<th>Pillar</th>
<th>Level</th>
<th>Questionnaire</th>
<th>Definition</th>
<th>Aspects tracked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Practices</td>
<td>School Survey</td>
<td>Readiness of the school management to use and promote the use of ICT in education.</td>
<td>1) existence of a school-level ICT <strong>strategy</strong>&lt;br&gt;2) presence of <strong>leadership</strong> practices to ensure a broader set of stakeholders are part of the ICT strategy&lt;br&gt;3) <strong>prioritization</strong> of ICT as it relates to student outcomes.</td>
</tr>
<tr>
<td>2</td>
<td><strong>De Facto Policies</strong></td>
<td>School Survey</td>
<td>The principals’ awareness of the role of school management in using and promoting the use of ICT in education.</td>
<td>1) recognition of <strong>responsibility</strong> for the integration of the use of ICT if there is an ICT strategy&lt;br&gt;2) application/use of <strong>guidance</strong> for incorporating ICT into teaching and learning&lt;br&gt;3) participation in <strong>support</strong> through training.</td>
</tr>
<tr>
<td>3</td>
<td><strong>De Jure Policies</strong></td>
<td>Policy Survey</td>
<td>The existence of key elements in the policies that enable school management to use and promote the use of ICT in education.</td>
<td>1) assignment of <strong>responsibility</strong> for the integration of the use of ICT if there is an ICT strategy&lt;br&gt;2) existence of <strong>guidance</strong> for incorporating ICT into teaching and learning&lt;br&gt;3) offer of <strong>support</strong> through training.</td>
</tr>
<tr>
<td><strong>Teachers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Practices</td>
<td>School Survey</td>
<td>The readiness of grade 5 teachers to integrate ICT in their class instruction.</td>
<td>1) teacher’s <strong>efficacy</strong>&lt;br&gt;2) use of technology for lesson <strong>preparation</strong>&lt;br&gt;3) use of technology for teaching and assessment.</td>
</tr>
<tr>
<td>5</td>
<td><strong>De Facto Policies</strong></td>
<td>School Survey</td>
<td>The principals’ awareness of grade 5 teachers ICT skills and teachers’ professional development.</td>
<td>1) application/use of <strong>standards/competency framework</strong>&lt;br&gt;2) application/use of a <strong>support</strong> system for teachers through training and professional development&lt;br&gt;3) application/use of an <strong>evaluation</strong> system.</td>
</tr>
<tr>
<td>6</td>
<td><strong>De Jure Policies</strong></td>
<td>Policy Survey</td>
<td>The existence of key elements in the policies that enable teachers to efficiently use and teach ICT in education.</td>
<td>1) existence of standards/competency framework&lt;br&gt;2) presence of a support system for teachers through training and professional development&lt;br&gt;3) presence of an evaluation system.</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Practices</td>
<td>School Survey</td>
<td>The performance of grade 5 students in using ICT in and outside school.</td>
<td>1) <strong>self-efficacy</strong> of students in using ICT&lt;br&gt;2) use/frequency with which students use ICT inside the school&lt;br&gt;3) use/frequency with which students use ICT outside the school.</td>
</tr>
<tr>
<td>8</td>
<td><strong>De Facto Policies</strong></td>
<td>School Survey</td>
<td>The principals’ awareness of key elements in the policies that enable students’ performances on ICT and their assessment.</td>
<td>1) application/use of a competency <strong>framework</strong> for students&lt;br&gt;2) integration of ICT in activities in the <strong>curriculum</strong> and outside the school&lt;br&gt;3) application/use of an <strong>assessment</strong> of ICT competencies.</td>
</tr>
<tr>
<td>9</td>
<td><strong>De Jure Policies</strong></td>
<td>Policy Survey</td>
<td>The existence of key elements in the policies that enable students to efficiently use and by assessed by and on ICT.</td>
<td>1) existence of a competency <strong>framework</strong> for students&lt;br&gt;2) existence of guidance/tools to integrate ICT in activities in the <strong>curriculum</strong> and outside the school&lt;br&gt;3) existence of an <strong>assessment</strong> of students’ ICT competencies.</td>
</tr>
<tr>
<td>11</td>
<td>De Facto</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>School Survey</td>
<td>The principals’ awareness of key elements in policies related to digital devices in schools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>De Jure</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Policy Survey</td>
<td>The existence of key elements in the policies related to digital devices in schools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Practices</td>
<td>School Survey</td>
<td>The readiness of schools to connect students to the internet.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>De Facto</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>School Survey</td>
<td>Principals’ awareness of key elements in the policies related to internet connectivity in schools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>De Jure</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Policy Survey</td>
<td>The existence of key elements in the policies that enable all public schools to be connected efficiently to the internet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Practices</td>
<td>School Survey</td>
<td>The readiness of schools to use quality digital education resources.</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>De Facto</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>School Survey</td>
<td>Principals’ awareness of key elements in policies related to the use of quality digital education resources.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>De Jure</td>
<td>Policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Policy Survey</td>
<td>The existence of key elements in policies that promote the use of quality digital education resources.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Indicators are given a color based on their scores to pinpoint areas for improvement and descriptive statistics related to the underlying questions are provided. The color coding follows a traffic light color scheme and is determined by the cut-off/threshold in the value of each indicator (table 2). These thresholds could be reassessed after the ETRI pilot phase (2023).

**Table 2. Color Coding According to Scores**

<table>
<thead>
<tr>
<th>Score</th>
<th>Color</th>
<th>Data indicates that performance and the quality of the practice/policy...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2.99</td>
<td><strong>Needs improvement</strong></td>
<td>are not satisfactory, and a series of improvements are needed.</td>
</tr>
<tr>
<td>3-3.99</td>
<td><strong>Caution</strong></td>
<td>can be improved. Although it is not in a critical stage, a series of actions will be needed to achieve a satisfactory level.</td>
</tr>
<tr>
<td>4-5</td>
<td><strong>On target</strong></td>
<td>are satisfactory to a great extent.</td>
</tr>
</tbody>
</table>

**ETRI Implementation Process**

Implementing ETRI is a collective effort that involves several actors and stakeholders (figure 4). In addition to the government and school leadership support, ETRI requires a national coordination team, survey implementation agency, and a data processing team.

**Figure 4. Key Actors and Stakeholders**

**The Government**
- Participates in the pilot, grants necessary **approvals**, and engages education officials to support and participate in piloting the EdTech Readiness Index.
- Provides **sample frame** consisting of the national EMIS school directory and contact information.

**The World Bank Country and Global Teams**
- Coordinate with the Government to **implement** the Index and access school contact information.
- Centrally manage the project and **contract a local survey firm** to implement the data collection.
- **Supervise** the implementation and process and **analyze** the collected data.

**Local Survey Firm**
- Implements **data collection** for the **School Survey** at 200-300 primary schools.
- Trains and manages **enumerator** teams and coordinates any data collection logistics.

**Survey Participants**
- School survey: **Principals and/or teachers** at operational primary and/or secondary schools.
- Policy survey: **Expert Consultant** with knowledge of education and EdTech-related **policies and legislation**.
The process of implementing ETRI involves multiple steps to ensure usefulness of the exercise. Training sessions and materials are essential to build the capacity of all practitioners engaged in the implementation of ETRI (refer ETRI Operational Toolkit to access the training materials). In the absence of country capacity to run the ETRI process, several tasks and activities can also be outsourced to local agencies as needed. The key steps are illustrated in Figure 5 and are defined as follows:

» **Securing interest and political support from local stakeholders** (e.g., local administration, Ministry of Education, development partners, etc.) is a pre-requisite for implementing ETRI. Governments/administrations should be engaged in a dialogue around EdTech and understand how the outputs of ETRI can be useful to inform their work. Initial conversations should consider relevance as well as technical considerations such as the implementation format (e.g., remote vs. in-person, principal vs. teacher input), appropriate sample size, funding, etc. All relevant stakeholders should be invited to ask questions to ensure that the information produced by ETRI is needed, and the model is fit for implementation in their context.

» After securing approval and funding, **the instruments should be reviewed and adapted (if necessary) to the local context** considering the appropriateness of questions in relation to capabilities of students and school staff, targeted grade levels (primary and/or secondary), national EdTech guidelines, local infrastructure/capacities, activities measured by the instruments, etc.

» **A technical team (e.g., survey firm or data collection agency) should be recruited to administer the school survey** according to the TORs provided. A suitable consultant or policy expert should also be identified and hired for the policy survey. Finally, if outsourced, an analysis team should be identified to process the outputs of the instruments.

» For the school survey, **a sampling frame should be shared by local authorities**, ideally from the government EMIS database. The sampling frame includes a list of targeted schools with some basic information such as name, identification number, location, contact information (especially phone numbers if implementing remotely), number of teachers per grades, number of students per grade.

» **A nationally- (or sub nationally-) representative sample should be drawn from the sample frame**, accounting for relevant statistical power considerations and to allow for comparison between relevant strata (e.g., rural and urban schools, public and private schools, etc.) A replacement sample should also be drawn. If appropriate, the technical team/survey firm should validate the school contact information.

» The technical team/survey firm should **monitor the quality of data** during data collection. The data should be thoroughly checked, and any anomalies should be resolved prior to final delivery.

» The final cleaned dataset is shared with the analysis team, **producing an output of indicators (in the form of the traffic light system) using the school and policy survey data and more detailed results and recommendations**, considering the country context report delivered with the policy survey. Any outcomes should be discussed in detail with government stakeholders.

» **Final outputs and results should be shared** with a larger set of relevant stakeholders and country administration and made publicly available in digital format.
Figure 5. Roadmap to Implement ETRI

1. **Confirm the interest** from WB Country Teams & relevant authorities (institutional support and buy-in)
2. **Revise and adapt ETRI** as needed to suit the local context
3. **Recruit and prepare** the technical teams (e.g., survey firm or data collection team, policy expert, analysis team)
4. **Source a sample frame** of appropriate schools from the local authorities
5. **Check the data for inconsistencies** and corroborate any anomalies
6. **Conduct the data collection**
7. **Communicate with school principals** and plan the data collection
8. **Draw and validate a random sample**, with replacement schools
9. **Conduct analysis** and produce outputs (e.g., traffic light) and more detailed results
10. **Elaborate on indicators** by pillar, also use policy survey and country context report
11. **Share final outputs and results**
12. **Check the data for inconsistencies** and corroborate any anomalies
13. **Conduct the data collection**
14. **Communicate with school principals** and plan the data collection
15. **Draw and validate a random sample**, with replacement schools
16. **Conduct analysis** and produce outputs (e.g., traffic light) and more detailed results
17. **Elaborate on indicators** by pillar, also use policy survey and country context report
18. **Share final outputs and results**
19. **Revise and adapt ETRI** as needed to suit the local context
20. **Recruit and prepare the technical teams** (e.g., survey firm or data collection team, policy expert, analysis team)
21. **Source a sample frame** of appropriate schools from the local authorities
22. **Check the data for inconsistencies** and corroborate any anomalies
23. **Conduct the data collection**
24. **Communicate with school principals** and plan the data collection
25. **Draw and validate a random sample**, with replacement schools
26. **Conduct analysis** and produce outputs (e.g., traffic light) and more detailed results
27. **Elaborate on indicators** by pillar, also use policy survey and country context report
28. **Share final outputs and results**

**DEEP DIVE RESOURCES**

Scan the QR Code or click [here](#) for Doc. 2 ETRI Technical Note

Scan the QR Code or click [here](#) for Doc3. Remote School Survey

Scan the QR Code or click [here](#) for Doc4. Policy Survey

Scan the QR Code or click [here](#) for Doc5. Metadata Document
System-level Implementation, Results, and Lessons
This section presents an overview of the implementation process, results, and lessons learned from the pilots. It focuses mainly on the experience in the Ho Chi Minh City (Vietnam), Nepal, and Dominican Republic. The results for Niger and Sierra Leone are not yet available.

**Implementation Summary**

Before diving deeper into each of the five pilot systems processes and results, Table 3 provides a summary of high-level implementation process in the five pilot systems.
<table>
<thead>
<tr>
<th>Table 3. Summary of Implementation in the Five Pilot Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government counterparts</strong></td>
</tr>
<tr>
<td>Department of Education and Training.</td>
</tr>
<tr>
<td><strong>Grades of implementation</strong></td>
</tr>
<tr>
<td><strong>Survey platform</strong></td>
</tr>
<tr>
<td><strong>Respondents</strong></td>
</tr>
<tr>
<td><strong>Sharing questionnaire</strong></td>
</tr>
<tr>
<td><strong>Training</strong></td>
</tr>
<tr>
<td><strong>Training material</strong></td>
</tr>
<tr>
<td><strong>Policy Consultant</strong></td>
</tr>
</tbody>
</table>
Ho Chi Minh City (HCMC), Vietnam

Background. The ETRI pilot in Ho Chi Minh City (HCMC), Vietnam, was launched in response to a request from the city Department of Education and Training (DOET) for support in designing the digital transformation plan for education (ECE, primary, and secondary). To inform their plan, DOET needed to have a better understanding of the status of digital transformation of schools in the city. Implementing the ETRI was proposed as one approach to respond to this request.

Stakeholders. ETRI team provided technical support and the World Bank team leading the education portfolio in Vietnam coordinated with the head of office at the DOET, who led the administration and the logistics around the implementation of ETRI. There was little involvement at the earlier stage of the director of education of DOET. In addition to the DOET, HCMC People’s Committee played a critical role in driving DOET forward. They also approved the annual financial plan for DOET.

Data collection. The Mekong Development Research Institute (MDRI), an external vendor, was hired to administer the survey. The HCMC team at the World Bank, with continuous support from the ETRI team, coordinated with DOET and MDRI throughout the process. The school survey was adapted to target Grades 5, 8 and 11. It was administered by phone to principals and teachers (who answered teacher- or student-related questions) in separate interviews. The principal and teachers were familiar with the paper-based survey, and the remote data collection (via phone) was new in Vietnam, so this posed bit of a challenge to begin with. The ETRI team provided minimal training to the MDRI team, sharing a training manual which was translated into Vietnamese. Unlike the other countries, the SurveyCTO platform was used to administer the survey, at the request of MDRI. The policy survey was completed by a local consultant who was hired by the World Bank HCMC team. DOET shared a final school survey dataset with the ETRI team for analysis and conducted their own analysis with the data.

Results. Results were presented virtually in a large conference titled “Digital Transformation of Education - From the Core to the Comprehensive” organized by DOET in October 2022. In attendance at the conference were representatives from Ministry of Education and Training, the National Digital Transformation Department, Ho Chi Minh City People’s Committee, City Digital Transformation Department, as well as hundreds of teachers and it was well covered in the local media. The summary of the results and recommendation are below (figure 6 and 7). The full presentation can be found here.

Figure 6. HCMC – City Level Results

School Management
- Responsibility
- Guidance
- Support
- School strategy
- Leadership
- Prioritization

Teachers
- Standards
- Support
- Evaluation
- Self-Efficacy
- Use - Planning
- Use - Teaching

Students
- Framework
- Curriculum
- Assessment
- Self-Efficacy
- Use - Inside
- Use - Outside

Devices
- Student access
- Standards
- Student use
- Monitoring
- Tech Support
- Responsibility

Connectivity
- Availability
- Plan
- Student access
- Monitoring
- Quality
- Support system

Digital Education Resources
- Access
- Guidance
- Use
- Strategy
- Quality
- Standards
Figure 7. HCMC - Key Recommendations

1. **EDTECH STRATEGY**
   Plan, revise and improve the coherence and quality assurance in the EdTech strategy.

2. **HUMAN CAPACITIES**
   Place teachers and students at the center of the EdTech strategy (building capacities, providing guidance, and support).

3. **DEVICES**
   Include and prioritize in the EdTech strategy the acquisition, distribution, and effective use of digital devices in the schools.

4. **DIGITAL EDUCATION RESOURCES**
   Take actions to secure effective use and adaptation of digital resources.

5. **CONNECTIVITY**
   Consider connectivity as an opportunity (if the quality is secured).

6. **CONSISTENCY**
   Assign special attention to the earlier grades of education.

7. **MANAGEMENT**
   Build on the existing school management to support the planning, implementation, and monitoring of the EdTech policies.

8. **INEQUALITIES**
   Continue working towards bridging the urban and rural divide.
Nepal

Background. The World Bank’s Nepal country team sought to get an understanding of the situation, gaps, and the challenges around the use of EdTech in Nepal’s school system to support their dialogue in-country and inform the Ministry of Nepal’s school sector plan. The ICT master plan which focuses on expanding (includes building where necessary) ICT in schools was at the backbone of the school sector plan along with improvements to the teacher competency framework. These two are important areas highlighted in the survey and accordingly, the study aimed to provide recommendations for these two, particularly for the ICT component. Additionally, the aim was for the results to inform the government’s yearly programming – e.g., allocating money to build ICT labs as and if needed. Therefore, instead of recreating another tool, the country team decided to implement ETRI because of its relevance to the operational objectives and Nepal context.

Stakeholders. The Department of Education (DoE, Ministry of Nepal) was the primary stakeholder who was informed/involved throughout the process. To begin with, it shared the list of primary and secondary schools to be part of the study and reviewed the study results once made available. In addition, the data collection vendor and the study schools were other stakeholders. Moreover, multiple development partners supported the governments’ school sector plan and were also kept informed throughout the process.

Data collection. Owing to capacity and time constraints, Nepal Development Research Firm (NDRI) was hired to collect data from a representative sample of 327 primary and secondary schools. The school survey was administered to principals, however in some cases, they consulted with a Mathematics, Language or ICT teacher in order to answer teacher- or student-related questions. The remote data collection (via phone) was not new to Nepal, so it did not pose challenges as with other pilot countries. The Nepal country team at the World Bank coordinated with DoE and NDRI throughout the process. In doing so, the Nepal team had continuous support of the ETRI team – e.g., running the data quality checks and adapting the questionnaire to Nepalese context and secondary grades. To facilitate the survey implementation, the country team provided an in-depth training on administering the survey through the World Bank Survey Solutions platform, where the questionnaire was hosted. NDRI developed a training manual for their own enumerator team, which was reviewed by the ETRI team before being translated into Nepali. The ETRI team provided a calling protocol for the enumerators, which was incorporated into the training manual. Lastly, the country team hired a policy consultant with extensive experience working with the Nepal MoE to complete the policy survey. NDRI shared a final school survey dataset with the ETRI team for analysis.

Results. The analysis was recently completed, and the results shared with the World Bank task team. Dissemination at the country level will take place in the first quarter of 2023. A snapshot of the results and recommendation are below (figure 8 and 9). The full presentation can be found here.
Figure 8. Nepal - Country Level Results

Policies

School Management
- Responsibility
- School strategy
- Leadership
- Prioritization

Practices

Teachers
- Standards
- Self-Efficacy
- Support
- Use - Planning
- Evaluation
- Use - Teaching

Students
- Framework
- Curriculum
- Assessment
- Self-Efficacy
- Use - Inside
- Use - Outside

Devices

- Student access
- Standards
- Student use
- Monitoring
- Tech Support
- Responsibility

Connectivity

- Availability
- Plan
- Student access
- Monitoring
- Quality
- Support system

Digital Education Resources

- Access
- Guidance
- Use
- Strategy
- Quality
- Standards
**Figure 9. Nepal - Key Recommendations**

1. **EDTECH STRATEGY**
   Set accompanying policies with clear guidelines, standards and accountability mechanisms.

2. **TEACHERS**
   Empower teachers by providing the frameworks, training, guidance and tools to use ICT effectively within classrooms.

3. **STUDENTS**
   Define and integrate ICT frameworks into the curriculum for various subjects and grade levels to support students’ learning.

4. **DEVICES**
   Improve practices and policies to support students with disability.

5. **CONNECTIVITY**
   Enhance quality of connectivity by improving bandwidth, speed, and internet stability.

6. **DIGITAL EDUCATION RESOURCES**
   Support teaching and learning through quality standards and alignment with the national curriculum.

7. **INEQUALITIES**
   Increase efforts to ensure that rural schools receive the needed attention to reduce existing gaps.
Dominican Republic (DR)

Background. The World Bank team leading the education portfolio in the DR were highly committed to participating in the piloting of ETRI to support the dialogue in the EdTech space. The aim is to use ETRI results as a key input to the upcoming EdTech strategy.

Stakeholders. The primary stakeholder involved in the ETRI process was the Instituto Dominicano de Evaluación e Investigación de la Calidad Educativa (IDEICE), a decentralized public body, attached to the Ministry of Education, Dominican Republic (MINERD), which oversees managing the evaluation and research of educational quality.

Data collection. IDEICE played a key role in the sampling process and led the administration of the phone survey in a representative sample of 274 schools. The respondents were the principals, after consultation with grade 5 Mathematics and/or Language teachers. The ETRI team provided in-depth training to the IDEICE staff on setting up, assigning, and running surveys with the World Bank Survey Solutions platform, where the questionnaire was hosted. The ETRI team provided an introductory Spanish video and calling protocol for enumerators, which was translated into Spanish. The sample data was uploaded to the platform by the ETRI team. The policy survey was completed by an international consultant with local expertise, hired by the ETRI team. The ETRI team managed and exported the raw school survey dataset and led the analysis.

Results. The analysis was recently completed, and the results shared with the World Bank task team. Dissemination at the country level will take place in the first or second quarter of 2023 and will include representatives from MINERD, development partners, as well as teacher unions. A snapshot of the results and recommendation are below (figure 10 and 11). The full presentation can be found [here](#).
Figure 10. Dominican Republic - Country Level Results
**Figure 11. Dominican Republic - Key Recommendations**

<table>
<thead>
<tr>
<th>1</th>
<th>SCHOOL MANAGEMENT</th>
<th>Develop a policy that defines ICT integration at the school level.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>TEACHERS</td>
<td>Define official digital competency framework to guide teacher training and practices.</td>
</tr>
<tr>
<td>3</td>
<td>STUDENTS:</td>
<td>Define an official digital competency framework to increase students' digital proficiency.</td>
</tr>
<tr>
<td>4</td>
<td>DEVICES</td>
<td>Design and implement a monitoring and technical service support system.</td>
</tr>
<tr>
<td>5</td>
<td>CONNECTIVITY</td>
<td>Continue the efforts to connect all schools and implement a monitoring and technical service system.</td>
</tr>
<tr>
<td>6</td>
<td>DIGITAL EDUCATION RESOURCES</td>
<td>Increase usage of DER and knowledge of existent policies.</td>
</tr>
<tr>
<td>7</td>
<td>INEQUALITIES</td>
<td>Enhance practices in public and rural schools. Enhance information on policies in urban and private schools.</td>
</tr>
<tr>
<td>8</td>
<td>DE JURE POLICIES</td>
<td>Design additional policies for all pillars, except for DERs.</td>
</tr>
</tbody>
</table>
Lessons from the pilots in Ho Chi Minh City (Vietnam) and in Nepal were compiled through interviews with the task teams. These are summarized in table 4 below.

**Table 4. Lessons learned from the pilots in Ho Chi Minh City and Nepal**

<table>
<thead>
<tr>
<th>Ho Chi Minh City (HCMC), Vietnam</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What worked (+)</strong></td>
<td></td>
</tr>
<tr>
<td>• Easy to use and cost-effective tool accompanied by a great support team of ETRI.</td>
<td>• The data collection approach (phone-based surveys) worked well as it was not new to Nepal, and NDRI had worked with the Nepal country team on several of those, so were equipped to navigate through the usual challenges.</td>
</tr>
<tr>
<td>• Comprehensiveness of the ETRI tool to capture the essential aspects of EdTech.</td>
<td>• Training NDRI on using the ETRI tool was an essential first step so they understood what each of the questions meant and could communicate the same while training their enumerators.</td>
</tr>
<tr>
<td>• Commitment of DOET to conduct ETRI and use the results to inform the plan. DOET was concerned about accountability not only to its leadership but also to the People’s Committee.</td>
<td>• Data quality assurance was an integral part of the process and the fact that ETRI performed it helped as it had the required technical expertise.</td>
</tr>
<tr>
<td>• MDRI, the external vendor, respected all deadlines.</td>
<td>• There were no unforeseen delays owing to good coordination and commitment from all stakeholders. Also, anticipated delays were carved well into the planning owing to having worked closely before (data collection firm, ministry, and Nepal country team).</td>
</tr>
<tr>
<td>• Data collection approach (collecting data via phone) although novel in Vietnam worked well</td>
<td>• Flexibility to contextualize the tool (questionnaire) to not only secondary grades but also to Nepalese context, and the fact that ETRI team supported this process.</td>
</tr>
<tr>
<td>• Instant results once the data was available in the format set by ETRI and MDRI.</td>
<td></td>
</tr>
<tr>
<td>• The (future) availability of comparable data to understand where HCMC would lie on a scale.</td>
<td></td>
</tr>
<tr>
<td>• Training by HCMC team to build the capacity of DOET was greatly appreciated.</td>
<td></td>
</tr>
</tbody>
</table>

**DEEP DIVE RESOURCES**

Scan the QR Code or click here for Doc6. HCMC results and recommendations

Scan the QR Code or click here for Doc7. Nepal results and recommendations

Scan the QR Code or click here for Doc8. Dominican Republic results and recommendations
Contributions to Global Knowledge
From the results in Ho Chi Minh city (Viet Nam), Nepal, and the Dominican Republic, we can extract the following general recommendations and identify critical actions that should be considered to mitigate the challenges identified by ETRI.

**Contributions to Global Knowledge**

**General Recommendations**

**EdTech Investments are not Always Supported by a Strategic Approach.** The digital strategy for using technology to support education systems effectively should not only be a high-level blueprint, but also an actionable agenda that identifies the required implementation strategies and operational plans to guide the process, the necessary technical teams, funding, key areas of investment, and quality and monitoring actions, among other critical factors. It is key to define clear responsibilities supported by actionable policy guidance. This guidance is needed to operationalize and define the roles of the key actors, main priorities and milestones required for incorporating ICT effectively into schools.

**Enabling Conditions are a Critical Factor.** High-quality internet access is a problem in many schools (especially in non-urban, rural, or remote schools). However, the challenge is not limited only to the provision of the telecommunications or Internet infrastructure. Many schools lack a suitable monitoring system that regularly screens the existence and quality of a connection and provides necessary technical support (troubleshooting) when there are connection problems.

**Even When Digital Skills Frameworks Exist, Better Implementation Capacity is Needed.** Defining the standards and skills that maximize the impact of EdTech on learning is important, but not enough. For better implementation, it is recommended to provide guidelines on how to develop teachers’ digital skills and help teachers apply them in the classroom. This can be done by (i) ensuring that digital skills for teachers are covered during both pre-service training and in-service teacher professional development, (ii) integrating the use of educational technologies into the curriculum (both as a subject and as part of other subjects), and (iii) providing training opportunities, upskilling materials and access to coaches and other forms of support. These measures complement each other and apply to most of the countries studied in the pilot.

**Regular Monitoring is a Good Practice.** School management from the policy perspective was considered among the strongest dimensions in all the countries’ studies, but that is not sufficient. In the study countries, there is a lack of monitoring of the effectiveness of the EdTech policies (e.g., access to Internet and devices, clarity on the goals of national policies, quality of use, usefulness of resources, and training). Several actions can be taken to leverage existing investments in EdTech. An assessment plan with regular feedback will identify when specific measures are required (e.g., additional investment, training, or support). Systematic monitoring is also required for identifying (mis)alignment between de jure and de facto policies and implementing necessary corrective actions.
Opportunities for More Diverse and Advanced Technology Application. There is great scope for improving and expanding the access and use of devices, software, and learning platforms both inside and outside the classroom. Respondents in the pilot reported more common use of traditional software in the classroom (e.g., word processors or presentation software). The use of collaborative suites, graphing, or drawing software, however, appears much more limited. This leaves the opportunity for more transformative integration of digital technologies (e.g., adaptive, or personalized learning systems; collaborative learning experiences, the use of games for learning) inside and outside of the classroom.

Accessibility and Inclusion Require Better Planning. Education systems need a broader understanding of accessibility and inclusion. More inclusive standards are required for the selection of learning devices and provision of Digital Education Resources (DER) (e.g., locally relevant, indigenous language-based, and gender-responsive resources). In all the study countries, learning devices and educational technologies could be made more inclusive and adaptable for learners with special needs. Schools also need better planning (procurement, training), and quality parameters (e.g., principles, standards). For example, good practices for assistive devices for people with disabilities are needed to guide the procurement, training, and use of DERs.

Contexts with Limited Connectivity Need Adapted Resources. Reliable access to internet connectivity is part of the critical infrastructure. In addition, given the documented connectivity challenges, the education sector should choose education platforms and content that can be used in settings with poor connectivity (e.g., poor connection or simply no access to the internet). This should be considered when selecting, curating, or procuring curriculum relevant DERs, tools and apps, ensuring that they can work offline when teachers or students can’t reach the internet. Note that using digital materials offline requires downloading the materials either onto a local cloud or server, or onto the device itself, so it is also important to consider the device specifications.

Critical Actions for Policymakers

Critical actions should be considered to mitigate the challenges identified by ETRI and to potentially improve the contributions of education technologies to teaching and learning. These actions are structured under two main categories: (1) enabling conditions and (2) digital transformation. Enabling conditions are the preliminary tasks that should be prioritized. Digital transformation defines the necessary medium- and long-term changes. The actions under the second category require the provision of infrastructure, as well as operational changes, capacity development and implementation of quality standards to maximize the impact of EdTech on the education system.

Enabling Conditions

The education system requires an environment that is conducive to using education technology. Human capacity and technology infrastructure are critical. The enabling conditions here prioritize infrastructure (electricity, devices, and connectivity).
» Take measures to identify, mitigate, and monitor different digital divides (also known as digital access barriers). Infrastructure such as electricity, devices and connectivity are essential (although not sufficient) for technology-enabled education.

» Ensure a systemic approach to digital learning through national education ICT policies and EdTech strategies. ICT in education policies should be aligned with national priorities that focus on infrastructure and connectivity.

» Create, administer, and maintain the necessary resources for digital learning. National education budgets, among other sectoral budgets (e.g., telecommunication), should be aligned to ensure inclusion and equal opportunities for learning.

» Deploy a connectivity plan which includes schools both in urban centers and in rural or remote areas. Investigate the appropriate telecommunication technologies for different contexts. Define a minimum bandwidth target for internet connectivity (per school or per person). Provide coordination between the education administrators and the telecommunication operators.

» Ensure that teachers and students have access to teaching and learning devices. This approach will vary depending on the priorities and the context. Desktop computers, laptops, tablets, or other devices can be provided on an individual basis (one per person) or for collective use (computer lab or library). Monitor if devices are functional and provide helpdesk services for troubleshooting, maintenance, or replacement.

» Provide access to high-quality and relevant digital education resources and platforms. This can include learning software and content that supports teaching at the right level, with a specific focus on foundational literacy and numeracy. Repositories that aggregate digital content from other platforms and sources are available, as well as learning management systems (LMS) with digital materials courses for various grades and subjects. Adopt an inclusive approach and consider low-tech devices and DERs that have offline capability, allowing for content to be downloadable or used offline, with reduced file sizes.

Digital Transformation

The digital transformation of education is a gradual process where digital teaching and learning evolve from applying digital technologies in education to full digital transformation of operations, strategy, value, and new opportunities for learning. To achieve true digital transformation, education systems must provide more than basic inputs, such as electricity, connectivity, devices, or infrastructure. EdTech efforts will not achieve learning impact without a holistic approach that considers policy development, implementation, high-quality content, digital learning platforms, teacher training, digital literacy and more. Human transformation plays a central role in digital transformation.

» Develop and adopt ICT competency standards for teachers, which focus on both digital skills and pedagogical skills (digital literacy) that are required for technology integration. The education system should enable students and teachers to develop ICT competencies, by providing access to a range of group or individual courses, training, and other content. They should also deliver the necessary assistance, incentives, and support.
» Support, train, and empower teachers and school leaders. Provide training on the use of technology resources for in-person, online, or remote teaching and learning. Develop the institutional conditions to regularly upgrade the capacities of school leaders and teachers’ capacities to use ICT and integrate technology into the teaching and learning.

» Monitor, evaluate, and measure the impact of teacher professional programs, both on digital skills and digital pedagogies, to ensure their quality and scalability. Monitoring and evaluation mechanisms should be implemented to continuously reflect on lessons learned and improve. Quality assurance mechanisms should include minimum standards to evaluate digital learning content and platforms and measure their alignment with the curriculum. At the system level, interoperability between the different platform and management systems needs to be structured under a coherent and comprehensive Education Management Information System (EMIS).

» Go beyond technology in the classroom. Enable a holistic approach that enhances and transforms learning and goes beyond classrooms and structured learning environments, towards integrating learning within the spaces that attract the most students. Avoid replicating outdated and obsolete models of teaching and learning, even with the use of technology. Set the stage for more personalized learning by equipping students with a high level of agency, autonomy, choice, and ownership over their learning. Develop strategies to inform and keep parents in the loop as key learning partners. Ask staff for feedback on suitable apps, technologies, and ways of optimizing their use. Students should be encouraged to self-regulate their use of digital technologies and be encouraged by teachers and family members to engage with and follow digital guidelines.
ETRI 2.0
Based on the inputs from pilot country teams and comments received from the technical review meeting, ETRI team will keep open the possibility of considering new improvements to the instrument in future phases.

**Improve Reliability of Phone-Based Data Collection and Self-Reporting.** Despite the measures taken by the ETRI team to improve data collection, build verbal rapport and trust with respondents, phone-based data collection may be subject to additional inaccuracies/biases considering the limitations in ability to verify the information provided by respondents or observe non-verbal cues. Therefore, the team will explore additional mechanisms to improve the quality of the phone-based data. For instance, the team will consider verifying the phone-based data by visiting a random subset of schools; using pictures to collect information that is difficult to report with accuracy; and introducing additional non-monetary incentives before the data collection to encourage honest responses.

**Improve the Modality of Data Collection for the Policy Survey.** The team will continue hiring a local and experienced consultant to conduct the work; however, the scope of work will be expanded to conduct the following: first, the consultant will make a mapping of key stakeholders in the country that could respond about the country’s EdTech policies. Second, the consultant will conduct a series of interviews using a semi-structured protocol with a subset of stakeholders identified in the mapping. And third, the consultant will conduct (as is currently the case) a desktop review of ICT documents to complement and verify the information collected from the interviews. This will ensure that other key stakeholders in the ministry are involved as well, and the policy survey is not dependent just on the expertise of one individual.

**Reduce Survey Length to Improve Flow.** The team will conduct additional revisions of the school survey questionnaire with the aim to identify whether there are some questions that could be removed or merged.

**Add Questions on EdTech to the GEPD.** When implemented with the GEPD, the ETRI team will add questions on EdTech to the public official survey to understand how public servants at different levels understand and implement EdTech policies.

**Provide More Tailored Recommendations and Guidance on Prioritizing Actions.** In collaboration with the country counterparts, the ETRI team will continue working on improving the recommendations derived from data analysis along with a sense of policy prioritization to guide counterparts on how to improve their EdTech policies and practices. In this process, ETRI team will provide country teams with relevant resources such as “EdTech’s Knowledge Packs” and “EdTech Policy Academy” through which they can obtain concrete recommendations, technical guidance, and capacity building.

**Sensitivity Analysis of the Results (Using the Traffic Light System) to the Thresholds.** The ETRI team will explore the sensitivity of the results to the ordinal thresholds (table 2) and explore other visual representations of the data which are less sensitive to the “arbitrary” cut-off points of the thresholds.
For instance, the team will consider presenting the information, at least for some indicators, in a more continuous way (e.g., using a “rainbow” or grading of colors).

Furthermore, the ETRI team will explore the possibility of additional improvements in later iterations depending on the budget and capacity. Some of these include a) adapting the tool for TVET and higher education; b) exploring other modalities of data collection for the school survey e.g., web-based surveys, or platforms such as SMS and WhatsApp; c) exploring the feasibility of incorporating “benchmarks” (or standards against which quality can be measured) for specific questions to minimize subjective interpretations; d) expanding inclusivity questions beyond disability, for example to include refugees; e) exploring correlations (or the lack thereof) between technology deployment and learning; f) disseminating the results across participant schools (comparing the results with national averages); g) assessing the pros and cons of the ranking vs. a maturity model based multi-country comparability; and h) highlighting descriptive statistics (e.g., number of schools that have Internet access, electricity, etc.) to complement the traffic light approach, especially for countries with extensive “red”.
This document outlines the technical aspects of the EdTech Readiness Index (ETRI), including the framework, methodology, instruments, country reports, and lessons learned, and provides a toolkit for its implementation. This represents the first stage of ETRI initiative, namely laying the foundation for future data collection in new countries. As more evidence is collected and results are analyzed, the instrument is expected to evolve to meet the constantly changing needs of the education and technology sectors. The following closing remarks summarize the five EdTech principles adopted by the World Bank (“Reimagining Human Connections”)\(^8\).

**Ask why.** Educational technology can enhance education systems by improving access, facilitating communication between teachers and students, transforming pedagogies and optimizing school management, among other benefits. However, a successful EdTech policy requires a clear vision and strategy supported by adequate institutional capacities and quality assurance to ensure that policy components are articulated to create the necessary enabling conditions and/or the expected digital transformation. The ETRI can serve as a valuable resource for countries and policymakers, helping either to establish a baseline, to monitor implementation, and/or to gather high-quality, nationally representative data on the readiness of EdTech policies to support teaching and learning.

**Design and act at scale, for all.** Unlike other monitoring tools, ETRI places a special focus on gathering user experience data (e.g., gathering responses from principals or teachers) to understand their perception of EdTech readiness. This information provides valuable insights to help decision-makers improve existing EdTech policies. Reducing digital divides and ensuring inclusivity are critical components of any comprehensive EdTech policy. This requires addressing access to essential infrastructure, such as connectivity, devices, platforms, and content, as well as ensuring that the technology is accessible, locally adapted, and supported by technical assistance. ETRI can be a crucial tool for understanding the effectiveness of EdTech particularly in reaching and supporting those teachers and students who are difficult to reach.

---

\(^8\) Hawkins and others (2021)
Empower teachers. Teachers are crucial to the success of any educational technology policy. For technology to reach its full potential, teachers require access to devices, connectivity, and educational resources, as well as regular training to develop the digital and pedagogical skills necessary to maximize technology’s impact on teaching. ETRI sheds light not only on the alignment (or lack thereof) between national policies and classroom realities, but also on the extent to which teachers feel equipped with the guidance, support, and resources they need to effectively use technology for planning, reporting, and teaching. As documented by ETRI in various countries, there are several actions that must be taken to ensure that teachers are able to translate, adapt, and adopt high-level EdTech policies and strategies into practical, actionable pedagogy that can be implemented in the classroom.

Engage the ecosystem. The framework of ETRI highlights that a comprehensive and effective EdTech policy must address a range of factors related to various sectors, including telecommunications, device maintenance and repair, platform procurement, training, content creation, monitoring and evaluation, and others. As a result, Ministries of Education (or equivalent) face a significant challenge in coordinating these various components to develop a high-quality education and technology policy. ETRI delivers actionable and clear recommendations for the education system. This information could open opportunities for collaboration with various partner institutions and stakeholders from both the public and private sectors.

Be data driven. A lack of data can lead to a skewed and potentially inaccurate picture of current EdTech policies and their impact. The World Bank aims to address this issue with the launch of ETRI. This tool, developed in partnership with the Global Education Policy Dashboard, provides countries with access to high quality data to measure their readiness to use educational technology effectively. ETRI can serve as a baseline before executing large EdTech initiatives or as an assessment tool to evaluate the status of policy implementation. The data and resources provided by ETRI are intended to inform policymaking, facilitate analysis, and support both national and school-level priorities. The tool also provides insight into the extent to which countries are benefiting from existing education and information management information systems (EMIS), and highlights areas for improvement, which in many cases will be instrumental to designing, executing, monitoring, or improving how technology is being used to support teaching and learning.

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
References


