

WORKING PAPER

# Testing Digital Accessibility in Education

The Case of the Dominican Republic

# Contents

<b>I. Introduction</b>	<b>3</b>
<b>II. Methodology</b>	<b>3</b>
<b>III. Key findings</b>	<b>4</b>
RQ.1 To what extent are the participating teachers and students prepared to use technology in the classroom?	4
RQ.2 To what extent does the ICT infrastructure in the schools allow the use of technology in the classroom?	5
RQ.3 To what extent do children with and without disabilities interact with the ADTs?	5
RQ.4 To what extent do teachers use ADTs to foster inclusion in the classroom?	6
<b>IV. Conclusion</b>	<b>7</b>
<b>Annex</b>	<b>9</b>

# I. Introduction

In the Dominican Republic, children with disabilities have limited opportunities to access education. However, in recent years, several efforts have promoted a transition towards an inclusive education model to benefit all children. In this context, UNICEF and the Ministry of Education of the Dominican Republic (MINERD) tested the usability and suitability of accessible digital storybooks (ADTs, for the purposes of this document) with the aim of providing accessible digital learning materials to children with and without disabilities.

In the Dominican Republic, the Accessible Digital Textbooks initiative (ADT initiative) is anchored in two key education policies. The first, the Initial Literacy Programme to Build the Foundation for Learning (Con Base), is a nationwide programme that includes didactical guides and student booklets for learning. The second, the Inclusive Education Model, was legally established through a regulation approved by the National Education Council in July 2024.

In 2023/24, as part of the ADT initiative, the Dominican Republic developed two ADTs for first- and third-graders. These materials provide access to educational content in various formats such as audio narration, sign language videos and image description. Through these formats, printed books are made accessible, allowing children with disabilities to access the same content, participate in the same activities and learn in the same classroom as their peers.

To prepare for the implementation, a pilot was conducted in six schools in Santo Domingo and Santiago de los Caballeros, the country's two largest cities, in May 2024. Guided by UNICEF and supported by the MINERD, it aimed to test the introduction of ADTs in classrooms. Teachers identified the most suitable accessibility features to integrate into their teaching practices and lesson activities, considering available information and communication technology (ICT) infrastructure as well as children's access needs and learning preferences.

## II. Methodology

Research was embedded as part of the pilot to understand its implementation, including best practices, emerging challenges and additional support needs. Evidence from this research will provide valuable lessons learned to plan a phased expansion and scale-up of the ADT initiative throughout the country.

To do this, this research will address the following research questions:

- RQ.1 To what extent are the participating teachers and students prepared to use technology in the classroom?
- RQ.2 To what extent does the ICT infrastructure in the schools allow the use of technology in the classroom?
- RQ.3 To what extent do children with and without disabilities interact with the ADTs?
- RQ.4 To what extent do teachers use ADTs to foster inclusion in the classroom?

Through implementation research methods, quantitative and qualitative sources were triangulated to address the research questions. Sources included school assessment forms, pre- and post-implementation interviews with teachers, classroom observations and post-implementation focus group discussions with students (see Annex I). The data collection process involved UNICEF local consultants administering the instruments to 6 teachers, 4 children with visual and hearing disabilities, 14 children with intellectual disabilities, 17 children with autism and 63 children without disabilities. This was conducted across regular classrooms accommodating children with and without disabilities in regular schools, specific classrooms within regular schools that accommodate children with disabilities until they are ready to go into regular classrooms, and classrooms in special schools dedicated to children with disabilities. Each group of teachers and students had two sessions with the ADTs over a one-month period. All teachers had received formal training in inclusive education and Universal Design for Learning (UDL), supplemented by sessions to learn how to use the new technology in the classroom.

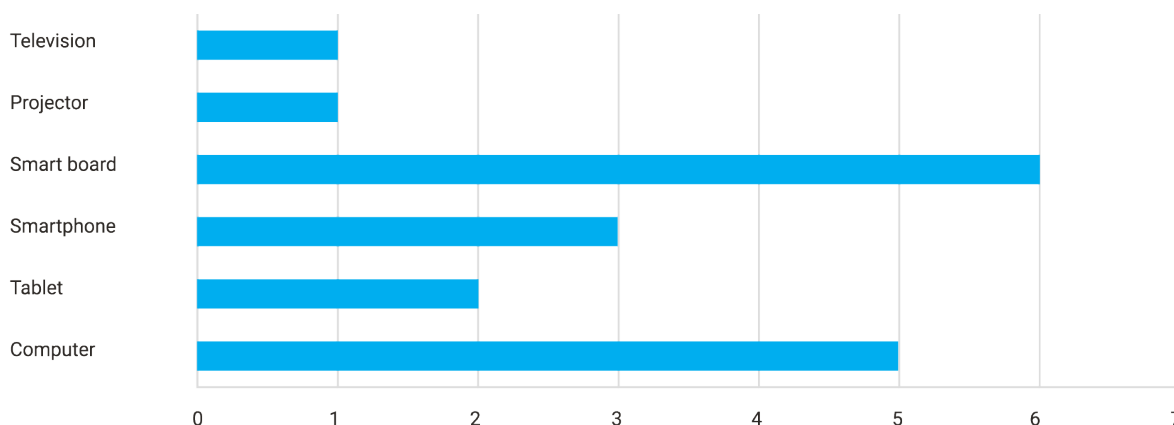
### III. Key findings

The following section presents the pilot’s key findings, which are organized by each research question presented above:

#### RQ.1 To what extent are the participating teachers and students prepared to use technology in the classroom?

**Teachers had received previous formal training on using technology for education, implemented through a blended approach in the classroom.** Teachers indicated feeling comfortable with using smartphones, tablets and computers, as well as smart boards to display educational content and interactive educational games. Additionally, teachers use lesson-planning strategies that can ease the integration of technology, such as ADTs, into their teaching practices and classrooms.

**Figure 1: Number of teachers that use digital devices during lessons**



Number of teachers (n) = 6

**Students indicated using digital devices such as smartphones, tablets and computers for entertainment and learning purposes.** Entertainment activities include playing games, watching videos, and calling family and friends. For learning, students use devices for homework. They also mentioned using smart boards in the classroom for educational games in subjects like maths. Additionally, students use devices with minimal assistance, further contributing to developing an environment in which technology is used in classrooms.

### **RQ.2 To what extent does the ICT infrastructure in the schools allow the use of technology in the classroom?**

**Schools' data showed the availability of digital devices for teachers and students, but inadequate internet connectivity.** Most schools have smart boards, and one has a television to project educational content. Tablets are provided for students but are not regularly used by those with disabilities due to concerns about their device-handling skills. Only one school has an ICT lab, and this school reported inoperative devices. Schools are on a good path towards supporting the use of technology in the classroom, but further improvements are needed.

**Schools' data showed the availability of accessible educational materials for students with disabilities, including kits for autism and multiple disabilities; however, these are not regularly used.** Teachers did not elaborate on the reasons for their limited use of these kits, despite having received training to support children with disabilities.

**Schools also have procedures for identifying and assessing different disabilities.** This information enhances understanding of schools' readiness, beyond ICT infrastructure, to support the use of technology such as ADTs in the classroom for students with and without disabilities.

### **RQ.3 To what extent do children with and without disabilities interact with the ADTs?**

**In most cases, students interacted with projected versions of the ADTs,** using a smart board or television. Due to limited access to digital devices, most students did not access the ADTs independently. There was one case where tablets were provided for individual use, and while students accessed the ADTs, independent navigation was uncommon. They relied on teacher guidance to navigate the content and accessibility features, as they were not yet familiar with the new technology.

**Most students engaged in the activities included in the ADTs, though with varying degrees of attention and focus.** Most students remained focused throughout the sessions. Those with intellectual disabilities were captivated by the colours, while for those with autism the audio narration served as a powerful stimulus. However, a few students, particularly those with more severe autism or intellectual disabilities, required additional assistance from teachers, as they struggled to stay calm and focused.

---

“A girl with Down syndrome was not paying attention, but when she heard the audio with the story’s narration, she became attentive.”

Local consultant

---

“One student with autism stayed with their support person the whole time, who helped them when he stood up.”

Local consultant

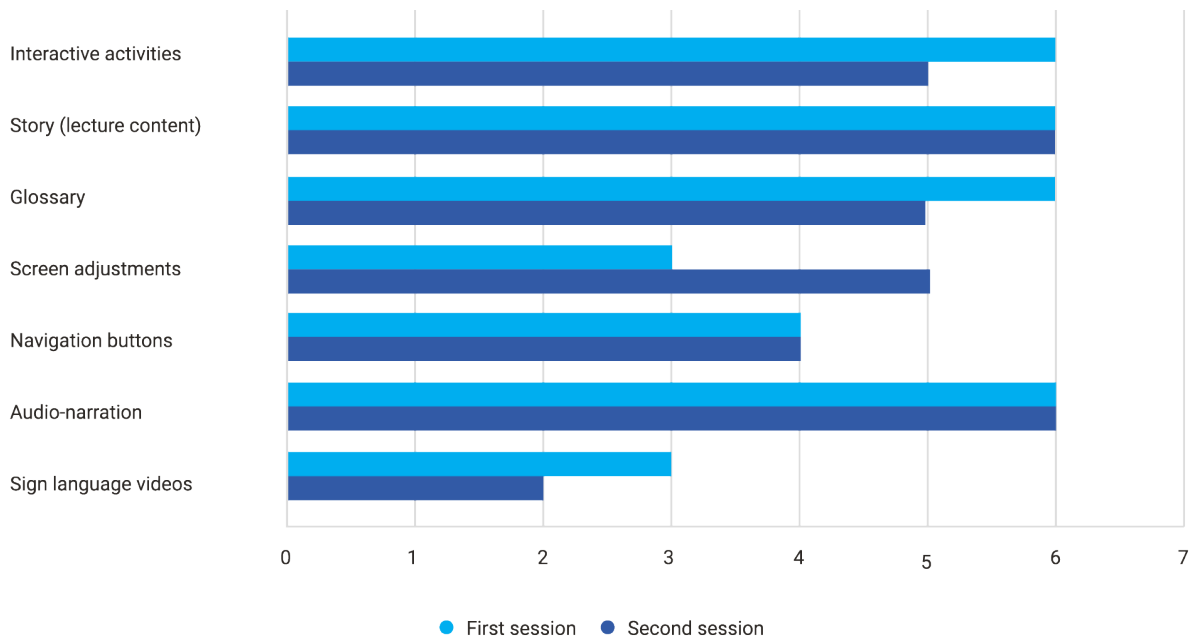
**Students also showed considerable interest in the ADTs and attempted collaborative work.** Students with intellectual disabilities enthusiastically repeated story words, while those with autism used supplementary materials like real objects to engage with the story. However, a student with hearing disabilities required teacher assistance, especially with sign language interpretation. Collaborative interaction was limited in the first session but improved throughout the second session.

#### **RQ.4 To what extent do teachers use ADTs to foster inclusion in the classroom?**

**In most cases, teachers facilitated the use of the ADTs through a projected version.** Teachers found these made classes more attractive and motivating, and mentioned their interest in continuing to use the new technology in the classroom. Outside the activities included in the ADTs, non-digital methods such as crafts, performances and games were implemented to enrich the learning experience for all students and provide specific support for those with intellectual disabilities and autism.

**Teachers used the audio-narration feature to guide the stories, alongside the navigation buttons, story-specific activities and glossary feature.** These practices significantly enhanced interactive learning experiences and addressed the diverse access needs and learning preferences of the children in the classroom, including students with disabilities. To support students with intellectual disabilities and autism, teachers adapted the content by simplifying language, providing visual aids and offering guided assistance within the ADTs to facilitate participation and comprehension.

**Figure 2: ADTs' features used by teachers**



Number of teachers (n) = 6

**Teachers found using the ADTs either easy or neutral, and provided valuable feedback to improve and ease their integration into regular teaching practices.** Difficulties were reported with the offline versions and adjusting screen contrasts, suggesting the need for a zoom feature for text. Some teachers also expressed an interest in expanding this tool to other texts. They also emphasized the importance of using real objects for students with intellectual disabilities, as well as visual aids such as pictograms for students with autism.

**Additionally, teachers felt confident using ADTs, though they needed assistance due to a lack of function in offline versions and inadequate internet connectivity for the online version.**

They effectively used the ADTs to guide the class, offering spontaneous individual assistance to students with disabilities by adjusting activities and ensuring comprehension through additional tasks. Teachers also encouraged student collaboration by celebrating their achievements and fostering their engagement in the lesson.

## IV. Conclusion

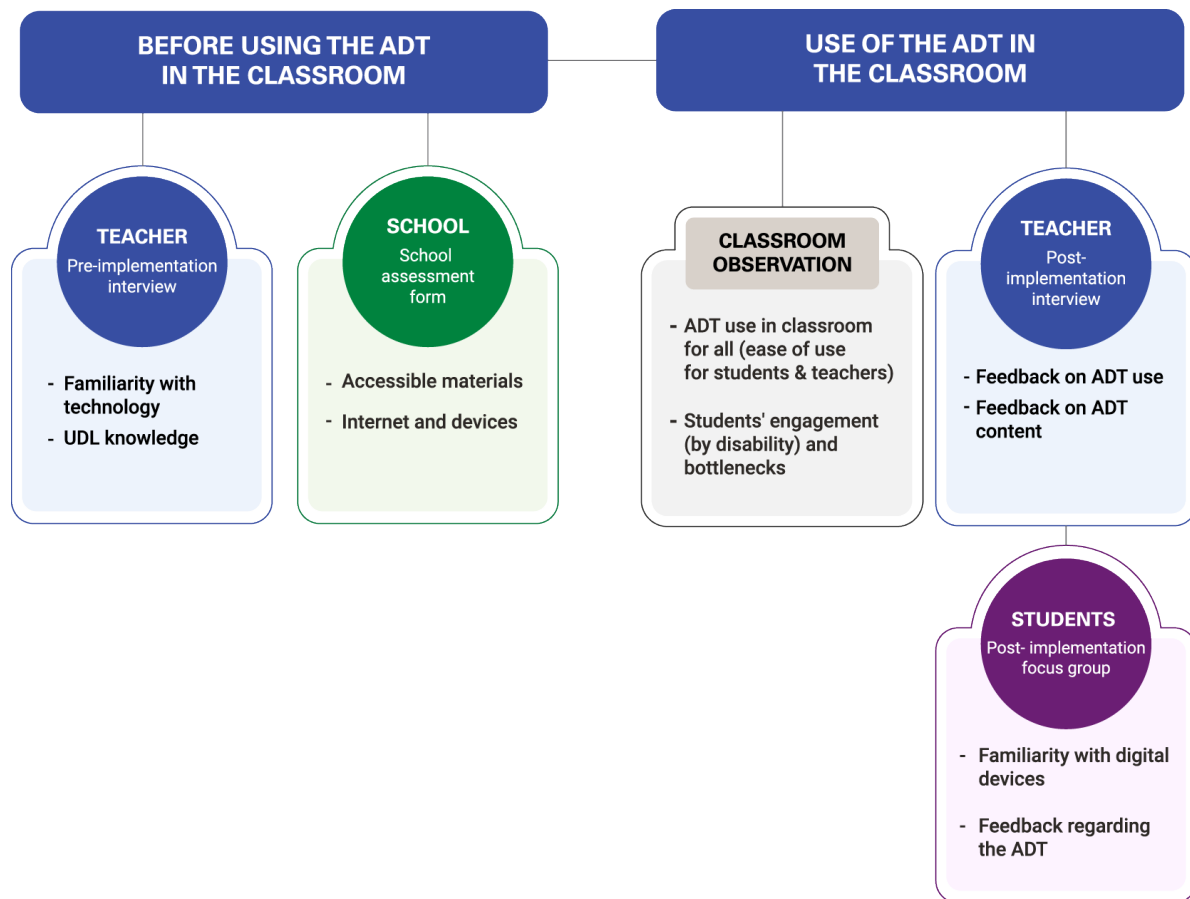
The pilot, supported by two key education policies, showed that ADTs can be useful tools to support teachers in their lessons for children with and without disabilities. However, it also highlighted ongoing challenges related to technical, pedagogical and ICT infrastructure. Teachers indicated that all children, particularly those with intellectual disabilities and autism, were more focused and more enthusiastic when using the new technology, facilitating the incorporation of inclusive practices in the classroom. Teachers also provided feedback to better incorporate accessible digital learning materials into their teaching practices, which complemented their prior training on UDL and inclusive education.

As for the challenges, recommendations are provided below to inform tangible actions in the following areas:

- **Consider improving ICT infrastructure and its management in schools, particularly internet connectivity to ease online navigation in the classroom.** Despite the availability of digital devices in most schools, they are not used regularly. Schools need support to effectively manage devices and promote digital learning. This requires device management plans covering maintenance, monitoring, ICT support and scheduling of technology use. Budgets should account for one-time and recurring ICT costs. Poor internet connectivity in pilot schools further hinders online learning tools and digital platforms.
- **Provide teachers with further practical training on how to use the ADTs with children with and without disabilities.** Teachers have shown their proficiency in using the new technology through both instructions and demonstrations. Therefore, these opportunities should enhance their understanding and skills in integrating ADTs into their teaching methods. This integration aims to address diverse access needs and learning preferences, fostering inclusive classrooms, improving pedagogical techniques and leveraging technology for inclusive education.
- **For technology developers, there are a few ways to improve the functionality and capability of the ADTs and similar tools.** Teachers that participated in the pilot recommended optimizing ADTs by incorporating a zoom-in feature for text, enhancing image-background contrast and improving the functionality of the offline versions to better address the current ICT infrastructure challenges faced by schools throughout the country. Additionally, based on classroom observations, both teachers and students could benefit from additional functionalities that adapt the educational content to students' levels, such as simplified text options.

# Annex

## Annex I: Data collection plan: Implementation research methodology



## Acknowledgements

This document was planned and developed by the UNICEF Latin America and the Caribbean Regional Office (UNICEF LACRO) and UNICEF Innocenti – Global Office of Research and Foresight, under the supervision and guidance of Linda Jones and Thomas Dreesen of UNICEF Innocenti and Julie de Barbeyrac and Tania González of UNICEF LACRO. This document was written by Sophia Torres (UNICEF Innocenti) and Marta Carnelli (UNICEF Innocenti). Qualitative and quantitative data were collected and consolidated by Roselys Eduardo and Angela Ventura with technical support from Lissette Nuñez (UNICEF Dominican Republic), Sophia Torres and Marta Carnelli.

Disclaimer: This is a working document. It has been prepared to facilitate exchange of knowledge and to stimulate discussion. The text has not been edited to official publication standards and UNICEF accepts no responsibility for errors. The statements in this publication are the views of the author(s) and do not necessarily reflect the policies or the views of UNICEF. The designations in this publication do not imply an opinion on the legal status of any country or territory, or of its authorities, or the delimitation of frontiers.

Copy-editing: Accuracy Matters

Layout: Afternorth

## About us

**UNICEF** works in the world's toughest places to reach the most disadvantaged children and adolescents — and to protect the rights of every child, everywhere. Across 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfill their potential, from early childhood through adolescence. And we never give up.

**UNICEF Innocenti – Global Office of Research and Foresight** tackles the questions of greatest importance for children, both current and emerging. It drives change through research and foresight on a wide range of child rights issues, sparking global discourse and actively engaging young people in its work.

UNICEF Innocenti equips thought leaders and decision-makers with the evidence they need to build a better, safer world for children. The office undertakes research on unresolved and emerging issues, using primary and secondary data that represents the voices of children and families themselves. It uses foresight to set the agenda for children, including horizon scanning, trends analysis and scenario development. The office produces a diverse and dynamic library of high-level reports, analyses and policy papers, and provides a platform for debate and advocacy on a wide range of child rights issues.

UNICEF Innocenti provides, for every child, answers to their most pressing concerns.

**Published by**

**UNICEF Innocenti – Global office of Research and Foresight**

Via degli Alfani, 58

50121, Florence, Italy

Tel: (+39) 055 20 330

Email: [innocenti@unicef.org](mailto:innocenti@unicef.org)

Social media: @UNICEFInnocenti on Instagram, LinkedIn and YouTube

**Suggested citation**

UNICEF Innocenti – Global Office of Research and Foresight, *Testing Digital Accessibility in Education: The Case of the Dominican Republic*, UNICEF Innocenti, Florence, January 2025.

© United Nations Children’s Fund (UNICEF), January 2025

for every child, answers