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UNICEF EDUCATION

Education Case Study

PARAGUAY

Harnessing the potential of inclusive digital education to improve learning

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All children, including those with disabilities, have the right to read and deserve equitable access to materials that support their learning. Often, however, having a disability can lead to exclusion from the education system: in Paraguay, only [36 per cent of children with disabilities](#) ages 6 to 18 years attend school. Moreover, while 95 per cent of the country's total population is literate, only [57 per cent of people with disabilities](#) can read or write.

To advance inclusive and accessible education for all students—with and without disabilities—in the same classroom, UNICEF Paraguay implemented the [Accessible Digital Textbooks for All \(ADT\) initiative](#), incorporating principles of the [Universal Design for Learning](#) that recognise the value of individualised and differentiated learning. The digital textbooks include accessibility features that allow children with different disabilities and learning preferences to engage with content in meaningful and appropriate ways. They include sign language, simplified text and interactive exercises to foster multiple means of engagement, representation and expression, [eliminating barriers and expanding opportunities](#) for all primary school students to improve their academic performance, regardless of their learning status or learning style.

In November and December 2021, UNICEF tested the ADT prototype in 10 educational centres with 133 students, 17 of whom had a disability. Acknowledging that teachers are essential for student learning, the Ministry of Education and Science, in collaboration with UNICEF, trained teachers, principals and other education staff on the UDL framework and the development and use of ADTs in classrooms. UNICEF conducted pre- and post-teacher training surveys to learn about teachers' familiarity with technology, experience with inclusive education and perception of technology-enhanced education. To gather direct feedback on challenges

and opportunities, UNICEF also engaged in direct classroom observations, conducted interviews and led focus group discussions with students.

[Results](#) from the prototype testing showed that the ADT initiative has the potential to heighten student motivation as well as usher positive, inclusive teaching in the classroom that paves the way for improved school results. Teachers found the ADT to be useful in their daily teaching practices, especially in its ability to make reading more interesting for students with features such as images, the glossary and sign language videos. Plans to scale up, with a sharper focus on evidence generation, are underway in Paraguay including rigorous research on how the ADT influences children's learning and inclusion. This case study is based on [research embedded in the ADT initiative](#) as a collaboration between [UNICEF Innocenti – Global Office of Research and Foresight](#) and [UNICEF Latin America and the Caribbean Regional Office](#).

RESULTS AND LESSONS LEARNED

- Since 2019, the ADT initiative in Paraguay has benefitted over 700 students ages 6 to 10 years, providing accessible educational content in alternative formats to improve the foundational learning of students with and without disabilities. By 2024, the programme aims to reach 30,000 students from Grades 1-9 in 300 schools.
- **More teacher professional development is needed on inclusive education pedagogy and diverse learning styles.** Teachers need adequate time and freedom to practise and integrate digital learning tools into lesson plans. Moreover, before introducing the ADT

in classrooms, caregivers and children also need support to acquire basic digital skills.

- **Functioning equipment and adequate digital infrastructure are fundamental to programme success.** The government must also invest in equipment, safe storage of devices and infrastructure contingent on specific school needs. Plans must be continually monitored and adjusted as needed, and roles well-defined.
- **Digital learning can give students with disabilities the tools to access the same learning as their peers.** Students with disabilities were more active participants in the classroom when using the ADT, raising their hands and commenting in sign language, orally or by pointing to the prototype images. Student interaction and peer support also increased.

NEXT STEPS

Preliminary research shows that the ADT, as an inclusive digital solution, will likely improve the ability of primary school students to read and write. For students to experience learning in a variety of ways, UNICEF is translating and developing 37 lessons in two textbooks with accessible digital formats for first and second grade students. Currently, UNICEF is training more than 300 teachers to ensure understanding of UDL principles and the effective use of ADT in the classroom. UNICEF is also doing research in five additional countries in the region (Colombia, Dominican Republic, Jamaica, Nicaragua and Uruguay) to examine the implementation of accessible digital textbooks and explore its impact on student learning on a larger scale.

Cost effectiveness: Since 2019, UNICEF has contributed about US \$246,000 for accessible digital educational content so that students can access the same learning materials in the same classroom. The initiative has benefitted over 700 students in Paraguay with and without disabilities in the first phases of implementation, with plans to reach 30,000 students from Grades 1-9 by 2024, improving their ability to read and write. The estimated cost per digital textbook is between US \$15,000 to \$20,000, and as the programme scales up, UNICEF expects lower per student costs as the process is streamlined and national capabilities are strengthened.

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