



# Making Digital Learning Work

Lessons from the UNICEF-Akelius Digital Learning Initiative in 12 countries

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# Key takeaways

The UNICEF–Akelius Digital Learning Initiative ('the Initiative') is one of the largest and longest-standing digital learning initiatives implemented by UNICEF. Launched in 2018 and continuing through 2024, this initiative spans various educational settings across 12 countries. Its primary focus is to improve education outcomes through digital learning, with a particular emphasis on second- and foreign-language acquisition for marginalized children and adolescents aged 6–18 years.

This report synthesizes six years of experiences and insights from the Initiative, focusing on the factors and conditions that maximize the effectiveness of digital learning. It specifically addresses the often-overlooked challenges and best practices related to technology management in schools and classrooms. By doing so, the report offers valuable lessons for the implementation of digital learning at a global level, contributing to a broader understanding of the key factors that influence the successful adoption of digital learning in classrooms, including:

- **Relevant digital solutions:** Preparing the technology for digital learning takes time. Developing digital solutions that are friendly to use for both teachers and learners and can align with curricula, helping education technology developers understand educational contexts, and creating user feedback loops can ease the process and contribute to the sustained relevance of a digital application.
- **ICT management systems in schools:** Schools are little prepared for managing technology. Allocating human resources for information and communications technology and establishing management systems for the storage, sharing, use and troubleshooting of equipment is necessary for teachers to introduce technology to classrooms.



- **Teacher support:** Blended teaching pedagogy, where traditional teaching methods are complemented by digital learning, is a skill in need of development for teachers. Providing quality support for curriculum integration, lesson planning and classroom management, combined with practical training and collaborative reflective practice, is critical.
- **Evidence and learning:** Digital learning is a novelty for most education stakeholders. Learning from school visits and classroom observations can significantly increase the relevance of support strategies for schools and teachers. Inbuilt implementation research can provide evidence relating to learning outcomes and the success and hindering factors that contribute to improved implementation.
- **Partnerships for sustainability:** Scaling up and sustaining a digital intervention is challenging. Building partnerships across institutional, civil society and private stakeholders can contribute to the strategic positioning of digital interventions to address major education equity gaps.

# Synopsis

This report has been jointly developed by UNICEF Innocenti – Global Office of Research and Foresight (UNICEF Innocenti) and UNICEF Sweden to document the lessons learned from the UNICEF–Akelius Digital Learning Initiative ('the Initiative') and uncover effective practical strategies for implementing digital learning in diverse classroom environments.

Launched in 2018 and currently active in 12 countries, the Initiative has been one of the largest and longest-standing digital learning initiatives implemented by UNICEF to date. Research conducted by UNICEF Innocenti provides quantitative and qualitative evidence on the effectiveness of the programme in learning and other education outcomes in both non-formal and formal settings; for more on this research, please see country reports from [Greece](#), [Lebanon](#), [Bosnia and Herzegovina](#), and [Italy](#). With its wealth of experience across different geographical settings and outcomes documented over time, the Initiative offers a valuable chance to examine the factors and conditions that lead to a successful digital learning programme. In particular, this report focuses on the challenges and best practices of technology management and use in schools and classrooms that are often overlooked or taken as given.

This report draws from practical lessons to guide implementing agencies (including UNICEF country offices), ministries of education, school leaders and other stakeholders in making informed decisions and effectively implementing digital learning within and beyond the Initiative. Lessons cover information and communications technology (ICT) equipment preparation and management, school leadership, organization of digital learning in educational settings, pedagogical issues and teaching practices, and teacher support, and the ways in which these affect the implementation and success of digital learning. Lastly, it examines emerging avenues for ensuring sustainability and scalability.

## Hardware

The use of technology in classrooms is fundamentally affected by infrastructure and hardware. Device specifications (see [Clear specs, smarter ICT buys](#)), including those of accessories, require thorough consideration, as they significantly influence the procurement process, device management and the experiences of both teachers and learners. The set-up and distribution of devices to educational centres is a time-consuming and resource-intensive phase (see [Preparing devices for educational purposes takes t-i-m-e](#)) that is frequently overlooked. Yet it demands careful planning, knowledge of educational needs and environments, and navigation of various logistical and administrative complexities. Adequate Internet for using a digital application online, especially on multiple devices for large groups of learners, is rarely available, even in high-income countries (see [Improving school digital environments matters](#)). These realities need to be taken into consideration and addressed by enhancing the school's digital environment and providing offline modalities for the application to ensure the sustained use of technology over time.

## School organization and leadership

School organization and leadership are the next set of factors affecting whether digital learning is successful. Current educational facilities and systems are not sufficiently prepared for digital learning. School administrations must establish efficient systems for device management, covering storage, charging, updating, sharing and distribution of equipment. These systems, involving protocols with clearly defined responsibilities, are essential for streamlining equipment use, and schools need support in this area (see [Systems and protocols for device management are a m-u-s-t](#)). Another key takeaway from the Initiative is that teachers lack the time, mandate or skills to manage, update or troubleshoot digital devices. Hence, making digital learning work in schools requires ICT support for maintenance (see [Each centre and school needs ICT support](#)). The Initiative also highlights that engaging school leaders from the beginning of an intervention is crucial



for creating a positive digital learning environment, given their influence on resource allocation, organizational mechanisms and teacher support (see [Leadership, leadership, leadership](#)).

### **Classroom-level management**

A third set of factors influencing the use of technology in education relates to how teachers manage devices in the classroom and integrate digital content into their teaching practice. The Initiative reveals that effective classroom management rules and routines are crucial for using technology effectively with young learners or large groups, to minimize the loss of instruction time (see [Classroom management routines are key](#)). Another key finding is that teachers struggle with the blended learning approach, where traditional teaching methods are complemented by digital learning. Education ministries and school administrators should ensure that teachers are provided with tools, like digital content indexes, mapping, search functions and sample lesson plans, that facilitate curriculum integration and lesson preparation (see [Blended teaching is a skill](#)). Additionally, teachers need support to harness the potential of digital learning for individualized instruction, which, while challenging with or without technology, can be greatly enhanced through digital tools that accommodate various learning levels, paces and needs.

### **Teachers' professional development and support**

Teacher training and support significantly influence the adoption of digital learning and use of technology in classrooms. From the outset, the Initiative included teacher training, which has evolved into a fully structured and comprehensive framework addressing teachers' core needs: digital skills, pedagogical integration, blended techniques and classroom management practices for using technology. Practical training sessions are necessary for teachers to experience the technology and application first-hand, co-create lesson plans and blended learning tasks, and deliver mock lessons (see [Teachers need comprehensive hands-on training](#)). The Initiative underscores the

importance of providing continuous and flexible support to teachers, tailored to their evolving needs. Mentoring sessions, microteaching, e-training and help desks are among the effective practices that emerged across countries. Additionally, establishing virtual communities of practice has proven useful in guiding, encouraging and supporting teachers (see [Teachers need multiple spaces to learn, co-create, experiment and share](#)).

### **Scalability and sustainability**

The Initiative shows potential for further scale-up, as its replicability across contexts is influenced by the versatility of the application, available in 11 languages, its offline modality, and its flexibility for in-class and independent use. This is complemented by a comprehensive implementation strategy refined over time, combining ICT infrastructure, quality digital content, technical and pedagogical training, strong monitoring mechanisms and feedback loops, and knowledge-sharing across educational settings, partners and UNICEF (see [The Initiative is replicable and has potential for further scale-up](#)). The application's relevance to top-level education policy issues – such as national digital transformation agendas, education provision in emergencies and plans for second-language teaching – strengthens its continuity and capacity for scale (see [The Initiative is relevant to UNICEF and national policy agendas](#)). Finally, ministerial backing and strategic partnerships at national and local levels are a key route to sustainability and scalability (see [The main avenue to sustainability is partnerships](#)).



## CHAPTER 1

# Introduction

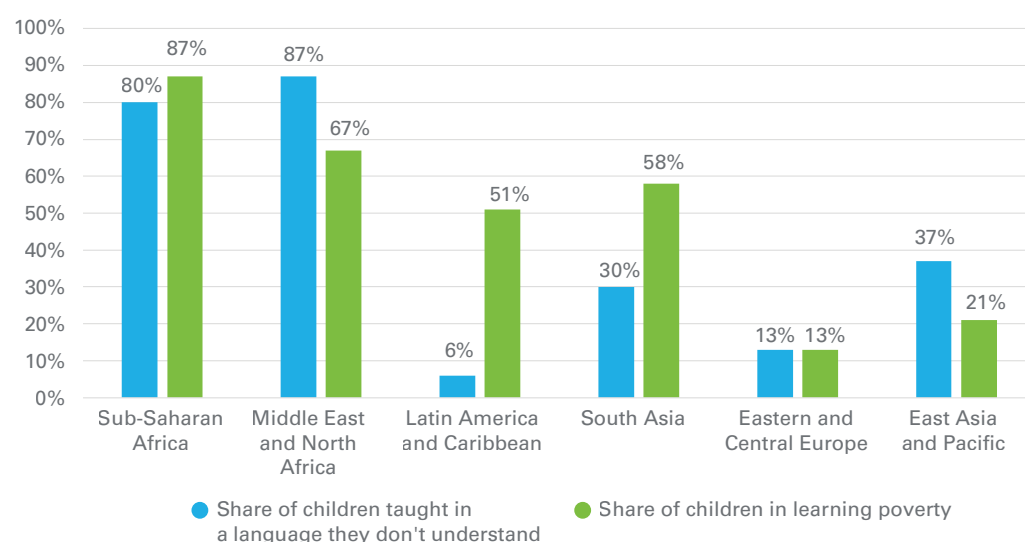
This joint report by UNICEF Innocenti – Global Office of Research and Foresight (UNICEF Innocenti) and UNICEF Sweden documents the lessons learned from the UNICEF–Akelius Digital Learning Initiative ('the Initiative') is intended to guide UNICEF country offices, education ministries, school leaders and other stakeholders in implementing effective digital learning strategies across various educational settings.

The Initiative, launched in 2018, is currently active in 12 countries: Albania, Bhutan, Bosnia and Herzegovina, Cabo Verde, Greece, Italy, Kazakhstan, Lebanon, Mauritania, Mexico, Poland, and Sao Tome and Principe.<sup>1</sup> It aims to improve second- and foreign-language learning outcomes among marginalized children and adolescents, including migrant and refugee children, through a digital application that supports language acquisition across 11 different languages.



Globally, there is a learning crisis, with 7 in 10 children unable to read or write a simple sentence by the age of 10 in low- and middle-income countries.<sup>2</sup> A contributing factor for low learning levels is the language of instruction, with 37 per cent of students not being taught in a language they speak or understand – in some countries, 90 per cent of students are in this situation.<sup>3</sup> This issue is most severe in regions with the greatest linguistic diversity, such as sub-Saharan Africa and Asia and the Pacific.<sup>4</sup> This mismatch between the language of instruction and the language a student knows affects more than a quarter of a billion students and is an especially salient challenge in low-income and emergency settings.

**Figure 1: Percentage of students not taught in their native language and learning poverty rates by region**



Source: World Bank Group. 2021. 'Loud and Clear: Effective language of instruction policies for learning', A World Bank Policy Approach Paper. Washington.

While proficiency in a foreign language is a key skill for everyone to learn in the twenty-first century,<sup>5</sup> second-language acquisition is especially crucial for children whose native language differs from the language of instruction. Since learning and human capital accumulation are fundamentally language-based, students who do not speak the instructional language often struggle to acquire foundational skills such as literacy and numeracy. For refugee and migrant students, language barriers hinder their inclusion in national education systems. Moreover,

the intersection of language, ethnicity and poverty can create an exceptionally high risk of these students falling behind.<sup>6</sup>

The use of digital applications and platforms, which provide interactive and personalized language learning experiences, can significantly enhance students' proficiency in both their first and second languages. Robust evidence on the impact of technologies on learning outcomes remains globally patchy and context-specific and focuses little on specific products due to the challenges associated with attributing impact on learning to a single aspect of students' learning experience.<sup>7</sup> There is evidence for the greater effectiveness of digital learning solutions that improve teacher instruction and enhance learning activities compared with those aiming to replace the teaching process.<sup>8</sup> Drill and practice applications providing immediate feedback, for instance, are more impactful than other types including tutorials.<sup>9</sup>

## Rationale

The Initiative is one of the largest and longest-standing digital learning initiatives implemented by UNICEF to date, distinguished by its comprehensive implementation across multiple countries. It has been implemented in diverse non-formal and formal educational settings across five regions in low-, middle- and high-income countries, in both emergency and non-emergency contexts. From the outset, implementation research has been integral to the Initiative, providing evidence-based knowledge on the effectiveness of digital learning and its impact on language learning outcomes. This research has helped identify both barriers to the adoption of digital innovations and factors that enable successful implementation. Positive learning and non-learning outcomes for learners have been identified following the introduction of the Akelius application into learning routines (see [Implementation research on the Initiative](#)). In several countries, the Initiative has contributed to UNICEF's advocacy and policy efforts on inclusive education, education in emergencies and digital learning.

The Initiative, therefore, provides a unique opportunity to explore the implementation strategies, factors and conditions that influence the effectiveness of digital learning. By examining areas such as technology management by implementing partners and schools,

classroom integration and teacher support, the Initiative contributes to the overall body of knowledge on best practices in digital learning.

Research increasingly shows that how technology is used and the quality of the content are key for learning improvements.<sup>10</sup> Over the years, the evidence accumulated within the Initiative has highlighted that positive learning outcomes are driven not only by the mere introduction of quality digital content in classrooms, but also by the effective management and use of technology, which affects learners' access to digital content, time on task and overall learning experience. Paradoxically, under the current global focus on digital learning, the topic of device management and use in schools and classrooms has been persistently overlooked due to its perceived simplicity. An initial desk review undertaken for this report, encompassing dozens of recent publications on various digital initiatives, confirms that technology management and its implications on teachers and other school staff is rarely discussed. This documentation of lessons learned from the Initiative aims to address this knowledge gap and provide insights into what makes digital learning work in educational settings. It does not aim to provide new data on the effectiveness of the application in improving learning outcomes, which was covered in previous reports (see [Implementation research on the Initiative](#)). Rather, it sheds light on lessons learned on effective implementation strategies when introducing digital learning in schools and classrooms as observed through the Initiative.

Looking at practical aspects of how technology is used in educational settings and classrooms, this report opens with a section focused on technology management issues such as procurement and setting up ICT equipment for educational purposes. A key learning from the Initiative is that these activities, which take place before any others in many digital learning interventions, concern all involved stakeholders and not only ICT specialists, as they directly influence the effectiveness of the digital intervention. The next section, on school-level management, underlines the importance of securing buy-in from school management and teachers to create a positive environment for digital learning. Only after addressing these foundational elements does the documentation move on to how teachers manage and use technology in the classroom, develop blended teaching practices and



address the critical aspect of teachers' professional support, identifying the dimensions of this aspect that have proven most effective under the Initiative. The final section of the report explores avenues for scalability and sustainability of a digital intervention.

### Key definitions

**Digital learning** refers to the integration of digital technologies into educational practices to facilitate learning.

**Blended teaching and learning** refers to the combination of traditional teaching methods and the use of digital content in the classroom.

The lessons learned from the Initiative are relevant and valuable for a broad range of digital learning interventions in the education sector. This report is therefore aimed at countries participating in the Initiative as well as practitioners, ministries of education and national education agencies, teacher training providers, donors and implementing partners involved in digital learning more broadly. With these insights, stakeholders can strengthen digital learning efforts, leading to enhanced educational outcomes, including language acquisition and other targeted learning goals.

## Methodology

The report is guided by three main questions:

1. What key factors and challenges affect the implementation of digital and blended learning in both formal and non-formal educational settings within the Initiative?
2. How can digital learning strategies be optimized to achieve targeted educational outcomes, such as language acquisition, in diverse learning environments?
3. What lessons can be drawn from implementation challenges across participating countries to inform and enhance digital learning interventions in formal and non-formal education?

The methodology is underpinned by a conceptual framework articulated around five thematic areas:

- i. Infrastructure and ICT equipment

- ii. Management and organization of digital learning in educational settings
- iii. Teaching and learning practices
- iv. Teacher training and professional development
- v. Partnerships

Elements explored under each thematic area and subdomain include common challenges, good practices, key effectiveness factors and avenues for sustainability (see Figure 2).

**Figure 2: Summary of the conceptual framework**

MAIN AREAS	SUBDOMAINS
<b>Infrastructure and ICT equipment</b>	Electricity
	Internet connectivity
	Equipment, devices, accessories
	Procurement and delivery
<b>Leadership and management for digital learning in educational settings</b>	Leadership for digital learning
	Organization for device management
	ICT capacity
<b>Teaching and learning</b>	Device management at classroom level
	Pedagogical integration
	Blended learning pedagogy
	Teacher capacity
<b>Teacher training and professional development</b>	Training content
	Training and professional development delivery
	Communities of practice
<b>Partnerships</b>	Across all framework areas

The report is based on qualitative data collection methods. For this report, there was no primary data collection in educational institutions. Methods included (see Figure 3):

- a rapid review of international organizations and donors' recent reports on digital and blended learning;
- a desk review of seven of UNICEF Innocenti's research reports on the Initiative, including a rapid review of qualitative data collected for these reports;
- a desk review of participating countries' publications on the Initiative covering results and learning outcomes, and of internal documents regarding the implementation such as monitoring mission reports and country update sheets;
- an interview with the Akelius application developers;
- a lesson-harvesting workshop with UNICEF staff involved in the Initiative in the 12 current implementation countries; and
- 12 interviews, one per country currently engaged in the Initiative, with UNICEF staff and selected implementing partners.

**Figure 3: Summary of activities for the documentation of lessons learned**







# The Akelius Digital Learning Initiative

The Initiative has been implemented globally for more than six years. Starting in non-formal education in emergency settings, such as Greece and Lebanon, to support language learning and social integration among migrant and refugee children, the Initiative has now expanded into formal education, with a focus on vulnerable groups, including refugee and migrant children (Figure 4).

Monitoring data from participating countries shows that, over 118,000 children have benefited from the Akelius application content in language lessons to date, in both non-formal learning centres and formal primary and secondary schools. A total of 6,150 teachers and educators were trained in using the Akelius application and in blended teaching techniques.

**Figure 4: Summary of educational settings implementation modalities and main target beneficiaries of the Initiative**

COUNTRIES/ SETTINGS AND BENEFICIARIES	NON-FORMAL EDUCATION	FORMAL EDUCATION	EMERGENCY CONTEXT	REFUGEE AND MIGRANT CHILDREN	CHILDREN WITH DISABILITIES	OTHER CHILDREN IN MAINSTREAM CLASSES
Albania	✓	✓		✓		✓
Bhutan	✓					
Bosnia and Herzegovina	✓	✓	✓	✓	✓	✓
Cape Verde		✓				✓
Greece	✓	✓	✓	✓		✓
Italy	✓	✓	✓	✓	✓	✓
Kazakhstan		✓		✓		✓
Lebanon	✓		✓	✓	✓	✓
Mauritania	✓	✓	✓	✓	✓	✓
Mexico	✓	✓	✓	✓		✓
Poland		✓	✓	✓	✓	✓
Sao Tome and Principe		✓				✓
Serbia*	✓			✓		

Note: \*Implementation in Serbia took place between 2020 and 2022.

## The Akelius digital application

The digital application currently comprises 11 digital [language courses](#): Arabic, English, French, German, Greek, Italian, Polish, Portuguese, Russian, Spanish and Swedish.<sup>11</sup> Courses are organized by levels, from 200 to 4,000 words, following the Common European Framework of Reference for Languages but not matching a specific country curriculum for language learning. New content and features are regularly added to the application based on a co-creation process between Akelius and UNICEF that invites teachers and implementing partners to make suggestions for improvement.

The language courses offer multimedia interactive content structured around thematical chapters comprising a mix of interactive lessons focusing on drills and vocabulary practice, games, songs, grammar and quizzes (see Figure 5). The application uses a gamified approach where learners gain virtual coins that can be traded in exchange for decorative accessories for their digital avatar.

The application is free to use, contains no advertising, requires no prior user information to access and fully complies with the European General Data Protection Regulation (GDPR) requirements, including when learners create accounts and log in to track their progress. The sign-up and login functions for the application do not require any personal information.<sup>12</sup> Content can be accessed online – on a computer via a web browser or on mobile technologies such as tablets and mobile phones through an application – or offline, through the application when content is pre-downloaded or channelled through an offline classroom server (see [App flexibility, offline use and a comprehensive implementation strategy are key](#)).

**Figure 5: Akelius language levels and example of language chapter content**



Source: <https://languages.akelius.com/>

The Akelius application falls under the category of digital technologies that ‘augment’ educational practices and learning.<sup>13</sup> Augmentation tools enhance learners’ experience through displays and interactions that are both engaging and supportive of learning. Such digital tools do not drastically transform analog learning tasks; rather, they leverage technology to improve the task and amplify the learning experience by, for instance, combining audio with written text or providing immediate feedback on interactive tasks. The application is, therefore, intended mostly as supplementary content to enhance other traditional teaching and learning materials and methods in a blended learning environment. It can also serve as a self-paced learning tool for individual use. The application has been mostly used for children aged 6–12 years in formal education, and for children aged 6–18 years in non-formal education.

The application is now complemented by a [teacher application](#), which is a course providing key information on the application as well as tips on classroom management and blended learning techniques for embedding the digital content into teaching practices.

#### QUOTE

“We have noticed that children who have recently arrived and have experienced situations of war have difficulty concentrating ... This platform is a source of enjoyment for them; they can forget a bit about the world around them, where they live: in hotels with their mothers as refugees. This is the beauty of it: they study, but they also have fun.”

– School director, Italy

## Implementation modalities

While the application can be used by anyone at any time, to accelerate its access by children and adolescents who need it most, the Akelius Foundation, in partnership with UNICEF Sweden, directly supports countries with its implementation through programme grants.

The application is managed by the Akelius team and the Initiative is implemented by UNICEF. In each participating country, the team implementing the Initiative comprises UNICEF staff and implementing partners,<sup>14</sup> whether ministries, non-governmental organizations or teacher training providers. UNICEF, partners and teachers contribute to shaping the evolution and improvement of the Akelius application, in terms of visuals, functionalities and content, through feedback loops (see [Co-create with edtech developers](#)).

UNICEF and its partners provide both technical and pedagogical support to educational centres and teachers involved in the Initiative. They also purchase equipment, organize teacher training activities, and conduct monitoring visits and classroom observations to identify challenges, areas for further support and good practices to share across the participating educational centres. In 2022, UNICEF developed a [set of guidelines](#) to streamline implementation of the application, leveraging good practices from previous years.



## Implementation research on the Initiative

The Initiative has focused on generating evidence regarding learning and gaining insights on progress to inform and enhance implementation. UNICEF Innocenti has carried out research in [Greece](#),<sup>15</sup> [Lebanon](#),<sup>16</sup> [Bosnia and Herzegovina](#),<sup>17</sup> [Mauritania](#)<sup>18</sup> and [Italy](#).<sup>19</sup> The Initiative has also been researched in Italy by [Fondazione ISMU](#),<sup>20</sup> and in Mexico by Impacto Social Consultores and Radix Education.<sup>21</sup>

While collecting detailed information on the implementation contexts, modalities and challenges, several studies also examined the impact of the application on learning and non-learning outcomes for children (see Figure 6). The implementation findings are based on a combination of qualitative and quantitative data, with the latter based on localized learning measurement methods that vary across countries and are not easily comparable.<sup>22</sup>

Overall, the use of the Akelius application has been found to have positive effects on learners' language skills:

- **Greece:** The use of the application was associated with statistically significant improvements across different domains of Greek-language learning. Empirical results utilizing a propensity score matching technique found an 8 per cent increase in listening, a 25 per cent increase in speaking, a 9 per cent increase in reading, and a 34 per cent increase in writing compared with similar students not utilizing the application. No significant differences were found between boys and girls using the application. The sample size of this study was 949 students.<sup>23</sup>
- **Lebanon:** Children attending centres utilizing the application showed statistically significant improvements in foreign language (French or English), Arabic language and artistic competencies compared with students in centres not utilizing the application. An empirical model including individual-level characteristics, location fixed effects and students' initial learning levels was utilized to better isolate the influence of digital learning on outcomes. Overall, while learning effects were slightly higher

for boys than girls, this difference was not significant. The total sample size of the study was 10,711 students.<sup>24</sup>

- **Italy:** Learning data from initial and final assessments show that learners using the application to study Italian as a second language improved their reading and listening skills by one or more levels in less than an academic year compared with students who did not utilize the application. Caution should be used with these results, as the sample size was just 51 students.<sup>25</sup>
- **Mauritania:** The research focused on girls' experiences. A pre–post comparison between entry and end-of-programme tests showed that younger girls aged 11–12 years, who initially had the lowest baseline scores, exhibited the most substantial learning gains after using the application in classes. These results are just among students who utilized the application, as no comparison group was available in this study. The sample size was 59 girls.<sup>26</sup>

The Initiative also **has evidence of the influence of application use on various non-learning outcomes** for children. In summary, research has found that the use of the application was associated with improved participation in educational settings and heightened learner motivation among other outcomes, as summarized in Figure 6 below.

**Figure 6: Evidence on education outcomes beyond learning outcomes for learners**

OUTCOMES/ REPORTS	GREECE 2020 (NFE)*	LEBANON 2021 (NFE)	BIH 2022 (NFE/FE)	MAURITANIA 2023 (NFE)	ITALY 2023 (FE)*	ITALY 2024 (FE)
Attendance	✓	✓	✓	✓		
Engagement	✓	✓	✓		✓	✓
Motivation	✓		✓		✓	✓
Concentration	✓					
Confidence	✓	✓	✓	✓	✓	
Autonomy		✓			✓	
Well-being	✓		✓		✓	✓
Life-long habits			✓			
Competitiveness		✓	✓		✓	
Social integration	✓		✓		✓	

Note: *NFE* – findings from non-formal education contexts for refugee and migrant children | *FE* – findings stemming from formal education contexts.

Implementation research also revealed a variety of **increased capacities for teachers**, such as enhanced digital and pedagogical competencies, acquisition of new skills for a blended learning approach, effective integration of technology into lesson planning, improved preparation for teaching languages as a second language, better classroom management, increased confidence and motivation, collaborative learning and professional networking.



# Lessons on infrastructure and equipment

The first set of factors affecting the use of technology in classrooms and ultimately children's experience relates to infrastructure and hardware, which are major prerequisites for any digital learning intervention. This section explores the constraints and opportunities regarding ICT equipment procurement, preparation and distribution for educational use under the Initiative, and offers valuable insights for UNICEF country offices, implementing partners and education ministries to guide decision-making in digital learning programmes.

## Clear specs, smarter ICT buys

Uncertainty about the implications of using various equipment and procurement delays have been the main challenges faced by UNICEF and implementing partners in the Initiative. During implementation, countries also realized that some solutions which appeared cost-

effective were not efficient over time. Therefore, procurement officers and implementing partners must understand the implications of choosing certain equipment and accessories to make informed procurement decisions, ensure the optimal functionality of the digital learning application, and minimize end-user challenges during implementation

### **Plan ahead, get your ICT gear on time**

*Early planning and a thorough assessment of procurement methods and their implications are key to reducing the implementation delays.*

Across all 12 implementing countries, procurement<sup>27</sup> has been a complex process that has sometimes encountered delays. For instance, in Greece, suppliers' offers did not match UNICEF's requirements at times, necessitating retendering processes. In Kazakhstan, some devices were delivered without charging cables, which then had to be procured separately. Countries also faced issues with in-kind donations of ICT equipment due to the complex rules governing donation processes.

Procuring ICT equipment with mandatory specifications can be a complex process, especially when it is not available on domestic markets. **Local and international procurement routes have their own set of pros and cons** that might affect implementation in different ways:

- Local procurement is often quicker and eases the replacement or top-up of equipment. However, it presents significant challenges where the local market is limited, and items do not meet the required specifications. In some contexts, it is also costly due to tax rules that may or may not apply to United Nations agencies.
- International procurement involves issues like administrative complexity, time and costs, and risks of additional delays when delivered goods deviate from the specifications.

Beyond the choice of marketplaces, UNICEF has procured equipment through various routes, including the Supply Division in UNICEF or implementing partners. A key learning is that it is necessary to fully

understand the implications, whether administrative, logistical or time and cost related, of each route.

#### BOX 1

## Procurement strategy in Lebanon

UNICEF Lebanon has standardized the procurement process across several of its digital learning initiatives to procure internationally, in bulk, and reduce costs. In addition, UNICEF has allocated a small budget in the contract of implementing partners for overall equipment maintenance, which includes the replacement of low-cost items such as cables, covers and headsets to minimize implementation disruption for learners in-between large-scale procurement exercises.

### Understand the rationale behind device specifications

*Device specifications need to be precise and understood to inform procurement processes and maximize users' experience.*

The type and quality of devices directly influence the effectiveness of digital learning for children. A clear **understanding of the rationale behind device (and accessory) specifications** can help procurement officers identify specific product requirements to ensure compatibility with other equipment in their orders, request additional information from suppliers when product descriptions are not sufficiently clear and make informed procurement decisions.

For instance, some countries faced challenges with device models that diverged slightly from the recommended specifications and did not perform adequately when using the application offline. In other instances, procurement officers requested cheaper tablets, either of a different make or with lower storage capacity, not fully understanding the implications for end users or sustainability over time.<sup>28</sup> Storage capacity greatly influences device costs, but appropriate data storage is a must in contexts where the application is used offline through pre-downloaded content, particularly when more than one language course will be preloaded. While Secure Digital (SD) cards can increase the storage capacity of a device, displays can take longer to load and the application's responsiveness can be slowed down, as Lebanon and Kazakhstan experienced.



## Don't ignore the quality of accessories

*The type and quality of accessories, such as headphones, covers and screen protectors, matter, as they may enhance or hinder learners' experience.*

### QUOTE

"Sometimes the headphone jack doesn't fit properly, and so you can't hear well."

– Boy, Italy

Monitoring visits have revealed the **importance of quality headphones and tablet covers**. For instance, headphones may be unsuitable for early primary grades due to excessively long cables, prominent microphones prone to tangling and breakage, or elements that are too thin and fragile for young hands. In one country, headphones were procured in pink and blue, reinforcing gender stereotypes when distributed based on learners' genders by some teachers.

Another example is tablet covers. In the absence of stands, learners struggle to position the device on their desk appropriately. In Mexico, some tablet cases included both a hand strap holder, a useful add-on to stop teachers dropping the device during class demonstrations, and a shoulder strap, which provided an additional layer of tablet protection for use with young children (see photos below).



Tablet with shoulder strap in Mexico.  
Courtesy of Laetitia Antonowicz, 2024.



Tablet with strap and stand in Mexico.  
Courtesy of Laetitia Antonowicz, 2024.

A key consideration for selecting accessories is their **compatibility with devices or charging stations**. Some covers are not appropriate for certain tablet models, for instance, or are too thick for certain models of charging stations. Anticipating the various implications of procurement choices is not possible in every situation, and countries have learned through processes of trial and error. This experience has directly fed into the development of [guidelines](#) on issues to consider when purchasing equipment within and beyond the local marketplace, which has been of help to partners in the Initiative and has limited procurement mishaps.

#### QUOTE

“The tablets are constantly coming out of the cases. Cases are not the right size for the tablets. So, when a child tries to take it, it easily breaks. The tablet gets damaged.”

– Teacher, Greece

### Buy (or build!) charging stations

*Procuring charging stations is necessary to maximize device use across classes and reduce the workload of education staff.*

Educational centres report that charging devices regularly, and having adequate space, access to sockets and sufficient electricity supply, is necessary for learners to benefit from functional devices. Countries found that **multiple tablet charging cases eased the charging process** while also serving as secure storage solutions. Charging stations vary in size and weight, accommodating different numbers of devices, and can be either static or mobile. Mobile charging stations, equipped with roller wheels, are especially useful for teachers who need to transport devices between classrooms. In Mauritania, the use of charging stations that include small carry bags has also proven beneficial for moving devices between classrooms. Schools that cannot use charging stations due to the low capacity of the school’s electrical system must identify the maximum number of tablets that can be charged simultaneously through simple multi-charging cables.



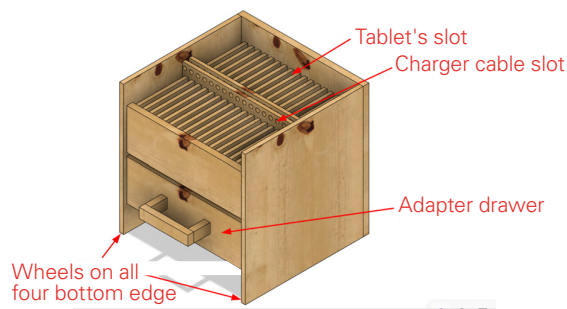
Small carry bags provided with the charging station for easy transportation of tablets between classrooms in Mauritania.  
Courtesy of Laetitia Antonowicz, 2024.

Countries observed that procuring charging stations was both costly and challenging. Understanding the pros and cons of low-cost and high-cost options, along with **exploring innovative practices for cost-effective solutions** (see Box 2), has helped managers make informed choices suitable for their context. For instance, simple charging racks equipped only with plugs can serve as a low-cost alternative, though they sometimes require more sockets and do not provide protection.

## BOX 2

### Locally produced charging stations in Bhutan

Procuring charging stations was challenging in Bhutan due to the limited numbers of locally available products and high costs requested by overseas suppliers. UNICEF partnered with Bhutan's Super Fab Lab to explore the possibility of manufacturing the multi-charging stations locally at significantly reduced costs. The prototype, designed according to UNICEF's specifications based on discussions with Akelius developers, includes roller wheels for mobility, wooden slots for tablets, holes for charging cables and an adapter drawer at the bottom.



Prototype drawing for a mobile charging station with wheels, tablet slots and cable holes in Bhutan.  
Courtesy of UNICEF Bhutan Country Office, 2024.



Completed mobile charging station, built as per the prototype design in Bhutan.  
Courtesy of Tshering Peldon, UNICEF Bhutan Country Office, 2024.

## Preparing devices for educational purposes takes t-i-m-e

New ICT equipment requires some level of configuration before being ready to use in educational settings. A key learning from the Initiative is the importance of this preparation phase, which requires time, resources, anticipation and meticulous planning to ensure that teachers and learners can have a meaningful digital learning experience from the outset.

### Don't forget: Devices need setting up

*Setting up devices requires resources, anticipation, planning and a comprehensive understanding of the requirements for their intended educational usage, including online safety.*

Several countries explained having underestimated or overlooked the **time required for the initial device set-up**. When procuring new tablets, unpacking and checking the devices, updating operational systems and creating a Google account for accessing the Google Play Store are some of the steps needed before starting the process of downloading the digital application or its content when used offline.

Some countries have installed **Mobile Device Management software or instituted parental control features to enhance online safety** for learners. Installing Mobile Device Management software, which increases control of the devices by central administrators, might require some administrative or legal steps to ensure compliance with GDPR where relevant, and technical steps to remove any potential interference between the software and the application update process, among other things.

Italy underlined the challenges associated with setting up 600 tablets due to the space, time, organization and human resources necessary to conduct the task. The set-up duration can also significantly increase in areas where the Internet is slow or unstable. Many countries, including countries with supposedly good Internet infrastructure (see [Improving school digital environments matters](#)), reported needing several days to download a full language course due to slow Internet. Where partners handled numerous tablets, downloading time became a major bottleneck at the outset of implementation.

In some countries, UNICEF personnel were directly involved in the set-up phase; in others, partners took the lead. In more recent years, Akelius developers have provided human resources and technical expertise to speed up the installation process. Lastly, some countries opted for private or governmental subcontractors. In Cabo Verde, the collaboration was with the government's ICT agency. Mexico and Poland underlined that, when tablets are procured locally, there is a practical advantage in requesting vendors to undertake the configuration and preload essential applications to reduce the demand on UNICEF and partners.

Implementing partners and ICT teams must carefully plan **device, application, and content updates in advance**. In schools with good Internet, device updates have become part of device management practices (see [Lessons on school organization and leadership for digital learning](#)). In contexts where Internet is limited and the application is used offline, partners have played a crucial role in managing the update process. For instance, partners might have to collect tablets from participating educational centres twice a year for conducting

updates, particularly when the application is used offline, which requires content updates. Several avenues towards facilitating the update process have been sought over time, including the Magic Boxes (see Box 3), decisions about limiting the number of significant update releases (currently twice a year), and communicating update schedules and their content in advance.

Spending a bit more time at the start of implementation on ensuring that the technology is set up for offline use (see [App flexibility, offline use and a comprehensive implementation strategy are key](#)) enables learners to access content all year round, regardless of connectivity issues.

### BOX 3

## Accelerating the process of content downloads: The 'Magic Box' solution

In the face of the challenges reported by UNICEF and partners in handling high numbers of tablets or experiencing poor Internet connections, the Akelius team developed a solution to drastically accelerate the tablet preparation phase where the application is mostly used offline. Known as the 'Magic Box', this novel solution combines a mini-PC with a switch, an ethernet cable and adapters, allowing for the pre-downloading of content – that is, all the lessons and activities of an Akelius language course, which are large (up to 15 GB per course) – at high speed onto multiple tablets simultaneously. This ICT solution has been a turning point in the implementation of the Initiative, facilitating the preparation phase and the necessary content updates throughout the school year. Equipment for the 'Magic Box' can be procured by countries, followed by on-site or remote set-up by the Akelius developers.

### Anticipate distribution and technology integration

*Distribution and transportation of ICT equipment to educational centres requires addressing potential logistical, administrative and technology integration hurdles.*

UNICEF and partners learned several lessons from the process of ICT equipment delivery. Italy experienced **high insurance premiums when couriering tablets** to schools after their configuration, as



devices were not transported in their sealed original packaging, so legal responsibility over lithium battery leakage risk was transferred from the manufacturer to the courier. In Cabo Verde, costly insurance coverage and additional protective packaging were necessary for transport by boat. **Restrictions on lithium batteries** onboard flights also complicated the delivery process to certain islands.

Another lesson learned was the importance of UNICEF country offices and implementing partners **understanding from the outset the regulatory and administrative context of technology integration in educational centres**, particularly in formal schools, which often have to comply with complex administrative rules to anticipate the requirements for third-party ICT equipment delivery. Issues include ownership of donated equipment, rules for equipment received as loans, compatibility of new equipment with schools' existing electrical or ICT infrastructure, alignment and integration with centres' and local or national authorities' policies and existing systems, and requesting permissions for receiving ICT equipment from external parties outside of the usual official providers. In Italy, connecting to the Wi-Fi of the school a donated external router, not procured through an official tendering process, was not possible in certain cases, hampering the Initiative's attempts to improve connectivity and download times through the use of the Magic Box.

Financial considerations are also important, as potential financial deductions from school budgets for donated equipment may affect schools' finances or require financial adjustments from authorities. In some contexts, support for school managers in navigating the administrative and regulatory landscape for technology integration might be necessary, a role that UNICEF and partners have played in several countries, such as Kazakhstan.

### **Keep equipment inventories**

*Equipment inventories have maximized the use of equipment over time and facilitated its reallocation across partners.*

Several countries shared that **establishing comprehensive inventories** for both partners and educational centres increased the efficiency of equipment use. More specifically, inventories:

- **Guided equipment renewal decisions** and procurement processes as devices and accessories got damaged or stolen. In Mauritania, inventories combined with monthly audits facilitated structured maintenance checks over devices and accurate estimates of equipment in need of replacement.
- **Supported technical discussions with developers:** Lebanon has used various types of tablets over the years, which behave differently when introducing new Akelius functionalities. Keeping track of the model, IMEI (International Mobile Station Equipment Identity) number, application update number and operating system update number facilitated technical discussions with developers when testing the new classroom server feature.
- **Enabled the reallocation of equipment across partners and centres** depending on needs. Greece, for instance, successfully reallocated equipment across refugee camps and schools following changes in demographics as migration routes evolved over time.

## Improving school digital environments matters

In educational centres where good connectivity is available, online use remains the preferred option for teachers, as it reduces the time needed for pre-downloading the content for offline use. Evidence from the Initiative in Albania, Bosnia and Herzegovina<sup>29</sup> and Italy<sup>30</sup> shows the link between good Internet and enhanced usage of the Akelius application, to the benefit of learners.

A key learning from the Initiative is that sufficient Internet bandwidth and Wi-Fi strength for using a digital application online on multiple tablets for large groups of learners are not always available, even in educational centres with 'good Internet'. Enhancing the school digital environment to **improve connectivity and providing offline modalities** in the meantime are key requirements for ensuring usage of the technology over time.

Addressing connectivity challenges, particularly in formal schools, requires a multifaceted sectoral approach, including infrastructure

upgrades, policy changes and public–private partnerships. While the Initiative did not aim to tackle connectivity at a system level, in countries with limited Internet, UNICEF has contributed to **improving the connectivity of participating educational settings through partnerships** with governmental agencies and telecommunications providers. In Cabo Verde, UNICEF collaborated with the e-government digital transformation agency to enhance Internet access in schools. In Bhutan, a partnership with a private telecom provider enabled remote monastic institutions to access the Internet at the outset of the Initiative and benefit from free connectivity for several months. In Italy, schools have collaborated with private sponsors or leveraged governmental funds to upgrade their infrastructure. These partnerships, however, can be limited in time, and a country’s Internet infrastructure may not always enable providers to offer a sufficiently strong connection.

#### BOX 4

### Improving connectivity in schools in Bosnia and Herzegovina

UNICEF’s [Giga initiative](#), which promotes global school connectivity, has contributed to improving digital environments in schools to support the implementation of digital learning in Bosnia and Herzegovina. Giga supported ministries’ efforts in school connectivity mapping, real-time monitoring of Internet connections and an investment study for connecting schools without Internet. Recent legislative changes have amended the status of schools, which enables them to secure Internet packages at affordable prices and to benefit from online safety measures such as Internet providers blocking certain pages in packages for educational settings. These initiatives are crucial for defining the standards of quality Internet and contribute to the creation of functional digital ecosystems for schools.



# Lessons on school organization and leadership for digital learning

The second set of factors affecting the use of technology in classrooms pertains to school organization and leadership for digital learning. The experience of the Initiative confirms this common finding from research literature on the importance of organization and leadership in the adoption, implementation and sustainability of digital interventions in education.<sup>31</sup>

This section explores the conditions linked to the management and organization of educational settings that are perceived as having an influence on digital learning in classrooms. It is particularly relevant for school leadership, education ministries, UNICEF country offices, implementing partners, ICT teams and teacher training providers.

## Systems and protocols for device management are a m-u-s-t

Implementing the Initiative across diverse countries and educational contexts has revealed that the management of technology is consistently overlooked, mostly due to its perceived obviousness. Providing guidance to educational centres on establishing effective systems and routinely embedding them in the work of the institution have proven critical in the implementation of the Initiative.

### Equipment needs storage

*Device storage options matter for security and logistics reasons.*

Storage of ICT equipment is a critical issue in educational centres, where space is often limited and considerations such as **protection from theft and damage** from humidity or dust are paramount. Under the Initiative, school administrations have implemented practical measures to enhance security, including mounting protective rails on windows, reinforcing doors, and installing locks on storing cabinets, charging stations and doors. In some contexts, more drastic measures are necessary. After the theft of tablets in one Mexican school, a barbed wire fence was installed on top of the high wall surrounding the school for additional security.

UNICEF and partners describe a **trade-off between security and accessibility of devices**. In some schools in Greece, tablets are stored and charged in the director's office for security reasons, limiting equipment accessibility for teachers at times when the director and vice-director are unavailable due to teaching or other duties. Issues regarding responsibility for and access to the keys of the tablet storage room are common across countries, particularly in centres with weak leadership.

### Develop systems to charge, share and move devices

*ICT equipment requires managing. Protocols introducing systems for charging, sharing and moving tablets and delineating clear responsibilities have streamlined the use of equipment in educational centres.*

Learning from experience, Akelius-implementing countries have developed **proper protocols with clear delineation of responsibilities for tasks such as charging, updating**, cleaning, counting and transporting tablets, which have significantly improved device management practices. For instance, while charging stations simplify the logistics of charging devices, schools must allocate responsibility for the charging process to avoid devices running on low battery during classes. In some schools, one teacher is appointed as focal point to undertake the task, with teachers taking turns every term to share the workload. In others, school directors or ICT staff have played this role. Partners confirmed that some educational centres benefited from dedicated meetings or training sessions on these issues, as well as simple illustrative templates for assigning tasks and responsibilities.

#### QUOTE

“It happens to us too sometimes – we plug in the cables and the tablets to charge, but in the end, some come out at 100% and others remain with low charge”

– Boy, Italy

Schools significantly boosted the uptake of digital learning by implementing mechanisms and **systems to streamline rotation, timetables and booking processes for tablet-sharing**. These address the common challenge of coordinating tablet use across the school when multiple teachers and classes only have access to a limited number of tablets. In Cabo Verde, schedules for language labs have helped ensure that tablets are available when needed and have reduced conflicts over their use. As one partner noted in Albania, all students are aware of the schedule of the language lab, which they remind their teacher of and are excited about.



## QUOTE

“I shared the cabinet with some colleagues who used the tablets for other activities. As a result, sometimes the QR codes [for student log in] were missing, and ... my 23 tablets were often not in order. All these challenges happened during the lessons, making it quite difficult, especially since first graders struggle with waiting times.”

– Teacher, Italy

This clear division of duties might extend beyond the educational staff themselves – to include **the roles of local education authorities, implementing partners and UNICEF**, for instance – regarding the process of application updates and tablet maintenance in contexts where educational institutions do not have the capacity to do so. In Poland, each participating school receives a document outlining the responsibilities of all parties in the Initiative: UNICEF, the implementing partner and the municipality (for pedagogical and technical support), and various school members, from directors to teachers and ICT staff.

## BOX 5

### Lessons from tablet donations in Poland

Before joining the Initiative, UNICEF in Poland distributed 22,000 tablets to municipalities and schools for educational purposes through a tablet donation programme as part of the Ukrainian refugee response. As UNICEF and its partner invited the beneficiary schools of the donation programme to use the tablets for implementing Akelius, they understood that most schools had not developed the mechanisms to store, use or share tablets appropriately. This led UNICEF to develop a matrix of responsibility for municipalities and schools, outlining the responsibilities of each stakeholder regarding ICT equipment donations, including UNICEF, municipalities, school directors, school ICT staff, when available, and teachers.

Lastly, partners underscored the importance of helping educational centres, particularly large schools, by providing **systems to move devices and accessories** around classrooms. Many schools opted for systems that involve the help of other school staff or learners, or

partner staff when available. Some schools devised creative solutions for tablet transportation. In Mexico, one school built its own charging trolley, facilitating the transport of tablets from the storage room to various teaching buildings. Another school bought a large suitcase on wheels to pack and transport the tablets across the school, while headphones boxes are transported in light cardboard archive boxes, which can easily be carried by children.



Mobile charging stations with roller wheels for easy transport between classrooms in Mexico. Courtesy of Laetitia Antonowicz, 2023.

#### BOX 6

### Device management training in Mexico

When a school joins the Initiative in Mexico, the implementing partner conducts a series of school-based training sessions. One of the sessions, the 'codesign' session, is held with teachers, school managers and other school staff, such as assistants, ICT staff or volunteers, to devise an organizational approach and establish a system encompassing the schedule for using tablets across classes and charging and maintenance responsibilities.

## Set up dedicated digital learning spaces where it makes sense

*Digital labs can facilitate digital learning in some settings, particularly where security, electricity and connectivity are an issue, or where large class sizes constrain the use of individual devices.*

In some contexts, digital learning or **language labs** have become the go-to solution under the Initiative for overcoming the multiple challenges faced by schools regarding secured device storage, connectivity and logistics associated with tablet-sharing and transportation across classrooms. Language labs were either set up under the Initiative, such as in Sao Tome and Principe and Cabo Verde, or established under other programmes, such as in Albania. A low-cost alternative to fully equipped language labs has been to designate a dedicated room, such as a language-teaching classroom, a library or a spare room in the school, where devices can be charged and stored and where classes can take place.

An advantage of such digital learning spaces is that they limit the loss of instruction time due to device management issues, which works to the benefit of children (see [Lessons from the classroom](#)). As implementation research in Bosnia and Herzegovina shows, teachers in schools with language labs spend less time before and during each lesson carrying and distributing tablets for students to use.<sup>32</sup> Similarly, in schools with language labs in Greece, the Akelius application appears to be utilized more frequently, software updates are conducted promptly and lessons commence without delays.

### QUOTE

“Here is much more fun because we use tablets, and upstairs in my classroom there are no tablets, there are no quizzes for practising as we have here. In here, we are learning, it is much more fun. I always wanted to come here.”

– Boy, Bosnia and Herzegovina

## QUOTE

“Thanks to the platform that the Centre made available, and thanks to the support I received, I have learned plenty of words that I now use to speak French. That made me more self-confident and allowed me to pass my entry exams for secondary school. Without this teaching, I probably wouldn’t have succeeded.”

– Girl, Mauritania

Dedicated digital learning spaces might not always be the best solution for all contexts, particularly if the environment is set up as a computer lab and not conducive to various blended learning techniques due to the layout – for instance, when desks face the wall for plug access or the size of computer screens prevents teachers and young children from seeing and interacting with each other. In some countries, UNICEF and partners underlined that it was also important for learners and teachers to experience blended learning in their regular classroom environments to embed the use of technology in teaching routines.

## BOX 7

### Language labs in Cabo Verde and Sao Tome and Principe

Dedicated digital learning spaces were created under the Initiative in most participating schools in Sao Tome and Cabo Verde. These language labs were developed as a solution for overcoming storage security issues and limited availability of electricity and connectivity. Learners attend Portuguese language classes in language labs when they use the application. The language lab model also enables teachers, in some contexts, to split their class into two groups when an extra teacher is available to oversee the group that remains in the main classroom.

### Each centre and school needs ICT support

Perceived ease of use and availability of support are common dimensions identified in the literature as requirements to sustain technology-based interventions in education.<sup>33</sup> This is confirmed by some implementing partners, who reported that, when teachers

encounter unresolved technical problems and lack assistance, they stop using the devices. Teachers mostly do not have the time, the mandate or the capacity for managing, updating or troubleshooting devices for digital learning.

### **Advocate for and build capacity of ICT staff in educational settings**

*Providing adequate ICT support is critical in the uptake and institutionalization of digital learning.*

In non-formal settings, teachers have usually had easy access to ICT support, as they were often recruited by UNICEF's implementing partners under the Initiative, such as in Greece, Lebanon and Mauritania.

In contrast, in formal education, participating countries have often observed a disconnect between education digitization agendas, ICT human resource allocations and concrete ICT needs in formal education. Few countries have mandated ICT staff in schools. Where they exist, these staff members are rarely dedicated staff retributed for their work, or, when they are, they can be overburdened with support requests or lack ICT capacity. As a result, ad hoc support is limited, and issues cannot be promptly addressed. Various **solutions to address ICT capacity shortage** have been used under the Initiative:

- ICT support provided by implementing partners and UNICEF, with capacity-building and transfer of expertise wherever possible:
  - Cabo Verde involved the government's ICT agency throughout implementation for supporting schools.
  - Lebanon established a system of ICT focal points in educational centres benefiting from capacity development (see Box 8).
  - Throughout the Initiative, Italy, Bosnia and Herzegovina, and Poland have advocated at local and national levels for improved ICT capacity in schools while also developing the capacities of existing ICT or digital learning staff.



- Italy set up a help desk, managed by the implementing partner, which has proven useful for remotely supporting teachers facing technical problems.
- One lesson learned from large countries, such as Mexico or Kazakhstan, is the importance of locally available ICT support to facilitate on-site support when needed.
- Countries also underlined the importance of partner and school ICT staff understanding the context in which teaching takes place and the type of issues faced by teachers. To this end, inviting ICT personnel to some specific training sessions conducted under the Initiative has been an effective capacity-building strategy. This strategy was also extended to the regional or local education authority digital learning or ICT department in some countries.
- Drawing on teachers' and students' expertise:
  - In some schools, ICT expertise has been harnessed from ICT teachers or teachers with expertise in mobile technologies.
  - Teachers using Akelius have also relied on each other, or on teachers from other educational centres. [Teacher communities of practice](#) set up under the Initiative have facilitated exchanges of experience and ICT tips.
  - Lastly, schools have also harnessed expertise from students with strong ICT skills. There are examples of students helping teachers with troubleshooting during lessons. In Albania, proficient young ICT students assist teachers with managing tablets, including software downloads and updates.

**BOX 8**

## Capacity-building of ICT focal points in Lebanon

Since September 2022, 95 educational centres have been using Akelius in Lebanon. UNICEF devised a pyramid model for ICT support comprising one digital learning focal point in each implementing partner and one ICT focal point in each educational centre. During a community of practice meeting, partners' digital learning focal points jointly developed a checklist outlining the main rules, tasks and responsibilities regarding ICT equipment procurement, set-up, maintenance and technical support for users under the Initiative. The roles and responsibilities of digital learning and ICT focal points were clarified and streamlined, based on experience. The checklist has simplified ICT support processes while also strengthening the overall capacity of educational centres in managing ICT staff and technical issues. Two ICT messaging groups were set up: one for partners and one for ICT focal points in schools. Both include Akelius developers to facilitate remote technical support.

### Help schools manage updates

*Empowering end users with information and more control over updates can streamline the update process.*

Keeping technology abreast of functionality improvements requires updates. In the Initiative, these encompass operating system, application and language course content updates. Automatic updates and those accepted by users without understanding their implications during class time may reduce instruction time and generate content discrepancies between versions across devices.

**QUOTE**

"As it happened to everyone, the tablet updates weren't done; so, the children turned on the tablets, and it went with the updates [impeding on class time]."

– Teacher, Italy

Where educational centres are in charge of managing updates, there are time and responsibility implications for staff. **Educating partners and school staff on the reasons for and implications of different types of updates** is one way to support them to make informed choices about which updates to prioritize when time and connectivity are limited. This requires coordination between developers and UNICEF, and capacity development for schools and teachers.

## Leadership, leadership, leadership

Leadership for digital learning innovations is paramount, as school and educational centre leaders bring momentum and influence strategic resources allocation, organizational mechanisms and teacher support. Leadership has been found pivotal across contexts and regardless of the levels of autonomy of educational settings. Where school leaders have little say on human resources allocation, they still play a key role in creating a conducive environment for digital learning.

### Secure informed commitment from school leaders from the start

*The engagement of school leaders is a key ingredient in creating a positive environment for digital learning, with their involvement required from the outset of an intervention.*

All 12 countries highlighted the **critical role of school leaders** in the efficiency and effectiveness of digital learning implementation. Many technology integration decisions require a leadership commitment and management decisions, from ICT equipment management to supporting teachers to innovate in their classroom using technology.

UNICEF and partners have learned over time the importance of **conveying key messages to school leaders at an early stage** about:

- the benefits of the digital learning intervention for children, teachers and their institution;
- the limited ICT equipment donation to schools by the Initiative, which requires the establishment of efficient systems to maximize the use of devices;

- the importance of providing flexibility and support for teachers using technology in class; and
- the expectations for their role as leaders, and the support they will receive from partners.

#### QUOTE

“What is definitely an obstacle are poorly equipped schools and lack of adequate mechanisms and resource management processes. Not all the schools have the necessary institutional support. Schools obtain the equipment through various projects, but do not plan for maintenance – they use the equipment until it breaks and then seek ways to obtain the new one and go around in circles.”

– Partner, Bosnia and Herzegovina

Several countries observed that meetings with directors of educational centres were insufficient to make them fully aware of the necessary organizational processes to support programme implementation. To complement these, some countries developed formal agreement letters. Others found it effective to **involve school leaders in teacher training sessions** on device management, offline use and blended teaching. Guidelines on the implementation of the Initiative were also distributed by UNICEF in some contexts.

#### BOX 9

### Formalizing school directors' engagement in Italy

In Italy, a *letter of intent* is sent to participating schools clearly outlining the responsibilities of the school and of the director regarding (i) making existing ICT equipment from the school available to the intervention to complement tablet donations from the Initiative; (ii) ensuring that donated tablets are regularly used with the intended target groups; (iii) ensuring the participation and support of teachers; (iv) providing ICT support; and (v) providing information for monitoring purposes. Such a detailed agreement with school directors at the outset has eased implementation, particularly in schools that could not benefit from on-site monitoring visits.

Digital learning may require **new school routines**. Countries reported that the leadership of directors and managers in non-formal and formal educational centres made a significant difference in both uptake of the digital application among teachers and smooth implementation. Directors play a significant role in:

- **Motivating and supporting teachers** as they innovate with technology and digital learning.
- **Reorganizing class schedules and organizing additional or remedial classes while ensuring that the most disadvantaged children benefit:** Strategic thinking is necessary to identify which learners would benefit most from the digital learning innovation, and how to organize their learning experience accordingly. In Kazakhstan and Mauritania, the organization of additional language classes after school required addressing logistics issues. In Kazakhstan, language classes initially gathered migrant children from different schools who needed transportation. In Mauritania, language classes organized after school require directors to coordinate with parents to ensure that girls will be accompanied to school for safety reasons. Another key task of directors is managing parental expectations when tablets are not used with all classes and all children, as demand is usually quite high in contexts where children have limited access to technology at home. In some circumstances, reorganization and logistical changes need to be discussed with local education authorities for approval.
- **Recruiting, allocating and managing human resources:** Language support for specific groups of children has implications on human resources. In some schools in Italy, special educational needs teachers can be mobilized to support teachers when the application is used in regular classes or for additional small-group teaching, under particular funding mechanisms for additional staff. In Sao Tome, volunteers are recruited to assist teachers in language labs (see Box 10). In several countries, legislation makes provision for the appointment of one member of school staff as the ICT or digital learning focal point in schools. School directors can play a key role in staff nomination and delineation of tasks.

- **Creating enabling conditions for device management:** Directors can facilitate the development of protocols for equipment management and support teachers innovating in their teaching. In Sao Tome schools, the school directors actively help with tablet updates and encourage teachers to use the language lab. All participating countries noted that the leadership of school directors had a significant impact on the management of technology in schools and the smooth running of digital learning.
- **Securing funding for additional classes, equipment and connectivity:** Some educational contexts require directors to be more proactive than others. In Italy, securing national, regional or municipality funds for literacy and cultural activities for migrant and other disadvantaged children requires significant work from the school management. In Mauritania, some non-formal education centres secured funding to organize more language classes supported by Akelius outside of the Initiative. Several countries also underlined the role of directors in fundraising for connectivity.

#### BOX 10

### Volunteer support in Sao Tome and Principe

UNICEF and the Ministry of Education opted to recruit volunteers to assist in schools implementing Akelius-supported literacy classes in language labs. The mobilization of volunteers is common in Sao Tome and Principe. Volunteering aims to provide opportunities for young people who are at risk of dropout or transitioning to the world of work. Volunteers receive a comprehensive training on multiple skills, including on the Akelius application. Managing volunteers is challenging for directors, who need to communicate schedules and ensure that enough volunteers are present when needed in a context where transportation and communication are limited. While the use of volunteers can support the Initiative, supervision strategies are necessary for effective implementation.



## Gain teachers' buy-in

*Gaining teachers' buy-in for digital learning boosts their motivation and secures their engagement over time.*

Countries participating in the Initiative highlight the importance of bringing teachers on board for a digital learning intervention to secure their active participation and buy-in rather than just passive compliance. Beyond the initial information meetings and presentations of the Initiative, teachers must be involved as core stakeholders.

A key learning is that UNICEF and partners must **clearly articulate the benefits of the Initiative for learners and teachers**, and to directly **address teachers' concerns about workload**, additional responsibilities, required competencies and the risks associated with device loss or damage. Sharing detailed information about training opportunities and support provided throughout implementation, describing the feedback loops in place and how their suggestions can contribute to refining the application, and highlighting the global scope of the Initiative are useful messages to secure teachers' informed participation.

### QUOTE

"Akelius has sped up the assimilation of concepts. I noticed that children learned and memorized faster."

– Teacher, Italy

### QUOTE

"The attractiveness of the tool, its ease of use, and also, so to speak, the social aspect of the tool itself, which serves as a connection with others, greatly reinforces and adds value to the work, motivating and certainly increasing motivation for the task."

– Teacher, Italy

## Get parents on board

*Engaging parents in a digital learning initiative helps reduce resistance to technology, establishes a supportive atmosphere for teachers to innovate and can foster family learning at home.*

Whole-school engagement is a key ingredient in the creation of a positive and supportive environment for digital learning. Beyond teachers, ICT staff and school leaders, parents also need to be on board. Digital learning might face some resistance from parents who worry about excessive screen time for children, digital safety and the educational value of digital gamified activities. UNICEF and implementing partners underlined the importance of school management and teachers clearly conveying to parents the benefits of blended learning and the use of the application to develop academic, digital and other competencies, including social skills and self-regulation.

### QUOTE

“I urge children and parents to attend Akelius classes together. In that way, they can spend some quality time together, as that is something children on the move have lost.”

– Partner, Bosnia and Herzegovina

**Parents’ evenings** to present the application were organized in Albania and Bosnia and Herzegovina in formal schools. In Mexico, parents are invited to download the application to their phones and attend information sessions combining the information on the Initiative with online safety. Parents in refugee centres are encouraged to learn the language alongside their children using the application, as a **family learning activity**. Some parents start using the application themselves and encourage their children to utilize it at home for additional language practice. In Lebanon, during the pandemic, parental buy-in proved indispensable, as Akelius was the main tool used for learning during school closure and parents had to provide their smartphones for children to access the application.<sup>34</sup> Research on the Initiative shows that parents respond positively to the digital application.<sup>35</sup> Parental support also provides additional motivation for teachers to continue using digital learning in their classes, as reported by partners in several countries. In Mauritania, research findings confirmed the need to mobilize parents for increasing girls’ regular attendance at language classes organized under the Initiative.<sup>36</sup>



## Lessons from the classroom

A third set of factors regarding how technology is used in education pertains to how teachers manage devices in the classroom and how they ensure the pedagogical integration of the digital content into their lesson plans, which is core to learners' experiences. This section is particularly relevant for teachers, school leadership, UNICEF country offices, teacher training providers and implementing partners. It summarizes the common challenges faced by teachers and identifies practices and tools developed under the Initiative to support teachers with technology management and curriculum integration of a digital learning application. These insights contribute useful knowledge that can shape key decisions across various digital learning interventions.

### Classroom management routines are key

Teachers play a key role in establishing **classroom rules and routines**, which are essential for using technology effectively with children. Rules and routines create a positive blended learning environment, ensuring that equipment is protected, learners are safe

and instruction time is optimized. Rules and routines also contribute to the development of digital skills, autonomy and self-regulation for learners.

A key learning from the Initiative is that teachers need to minimize the loss of instruction time due to technology, particularly during the **distribution and collection process**. Research in Bosnia and Herzegovina<sup>37</sup> and monitoring visits indicate that the process can take up to 15 minutes in large classes where many devices and headphones have to be distributed, which significantly reduces instruction time, particularly when class periods are under an hour. In some contexts, such as non-formal education classes in refugee camps, partners usually work with cultural mediators who are available to support teachers in speeding up tablet distribution. In formal schools, however, additional staff are rarely available. With the application being increasingly used in large groups, partners have emphasized the importance of helping teachers develop distribution and collection **mechanisms that involve learners**. By assigning equipment distribution responsibilities to learners and making them feel valued, teachers can prevent potential disruptive behaviour and empower learners while also contributing to embedding the equipment set-up process in the class routine.

#### QUOTE

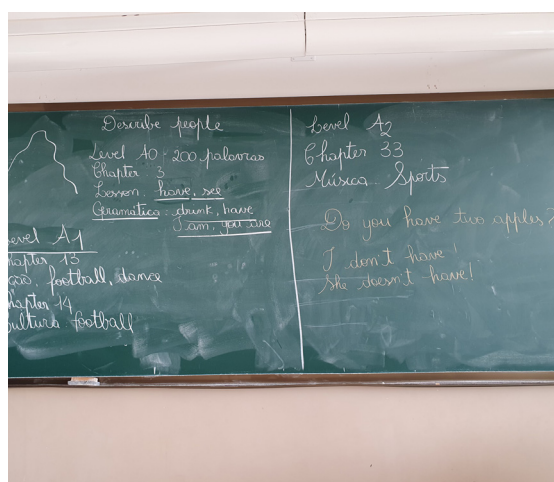
“We also have one case who is a child with a disability who started helping his friends especially when you wanted to collect the tablets back. He would stand next to me and the supervisor and tell me that he would like to help. I mean he started feeling that he has a role.”

– Teacher, Lebanon

When teachers develop **routines for powering up tablets, opening the application, logging in and accessing the required digital learning activities**, it contributes to the development of learners’ digital skills and autonomy. In Greece, partners stress that managing equipment presents a valuable learning opportunity for children. They advocate for teachers to allocate sufficient time for this task in their

classes until learners have mastered the skills and developed the necessary habits. In Mauritania, teachers dedicate a session to tablet-handling before using the application for the first time. This initial time investment minimizes potential disruptions of the learning process in the future, as fewer learners need assistance.

By setting up routines for navigating the application, teachers make it easier for learners to access the correct digital lesson or task, which is particularly important when teaching large groups of young children, as teachers usually cannot see the learners' screens and assess whether they are accessing the correct digital activity. Examples of best practices across countries rely on **guiding learners through simple steps using multiple means of communication, including visuals**, to support learners with limited language proficiency. Where projectors are available, teachers easily demonstrate the steps on screen. Otherwise, teachers note the instructions on the board using drawings and symbols or show flashcards.



Examples of guidance for learners to navigate the application to the activity of the day in Cabo Verde. Courtesy of Elisa Despreaux, 2023.



Flashcards to help learners navigate the application to the activity of the day in Cabo Verde. Courtesy of Laetitia Antonowicz, 2023.

In implementation contexts where learners have had limited exposure to technology, partners reported high levels of enthusiasm when technology is first introduced, and, at times, limited understanding of the fragility of equipment or disruptive behaviour stemming from overexcitement. Teachers create **ground rules on how to use technology in the classroom**, a practice that has proven effective



across countries, particularly with young children. Where teachers invite learners to develop class rules on the use of the technology, they acknowledge digital learning as part of the teaching routine, building both individual and collective responsibilities towards technology. In some schools, class rules encompass how to work in a group when sharing devices, including taking turns at interacting with the application. Classroom observations reveal that some teachers pay more attention than others to the gender-balanced use of technology in gender-mixed groups.

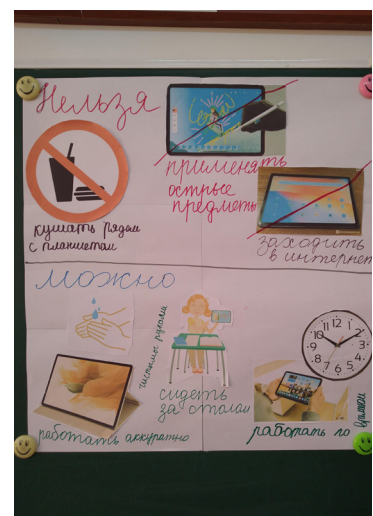
#### QUOTE

“They were all enthusiastic, it was a moment of peace in that class because everyone was silent and working.”

– Teacher, Italy



Ground rules on how to use technology in the classroom in Cabo Verde.  
Courtesy of Elisa Despreaux, 2023.



Ground rules on how to use technology in the classroom in Kazakhstan.  
Courtesy of Elisa Despreaux, 2023.

## Blended teaching is a skill

A common difficulty for teachers when blending their teaching is the process of curriculum integration.<sup>38</sup> In the Initiative, teachers must decide what content to select from the application, how to integrate it



in their teaching and how to introduce it in the classroom. While some teachers are at ease with experimenting, a key learning is the need for tools that simplify the process of curriculum integration and lesson preparation, enhance understanding of blended teaching techniques and support inclusive pedagogical practices.

### Help teachers with curriculum integration

*Teachers need help to integrate a digital application seamlessly into their curriculum. Providing tools to support them to quickly identify, access and evaluate digital content for achieving specific learning goals is essential.*

Teachers, particularly those following a specific curriculum, need to be able to quickly identify, access and evaluate digital content for achieving specific learning goals from their syllabus. When piloting the application in Italy, teachers using the Italian course encountered fewer issues with pedagogical integration than teachers using the English course. The absence of official 'Italian as a second language' curriculum<sup>39</sup> gave teachers more freedom in content, methods and approaches. In contrast, English teachers struggled with the application's progression and approach, which did not align with the curriculum, and did not teach English through Italian.

#### QUOTE

"Every curriculum has its teaching units, which are followed, so that it is necessary to pinpoint what in the application, which exercises, which assignments will be used in order to ensure the curriculum is followed. You must always train the teachers and give them at least some directions."

– Partner, Bosnia and Herzegovina

A good practice initiated by Mauritania is to **map the content of the application onto the curriculum** (see Box 11). This includes identifying overlapping themes, topics, concepts, grammar points and language competencies to support teachers to make strategic decisions on when to use the application in their scheme of work.

Key considerations shared by countries for mapping activities include:

- ensuring, where possible, that the mapping of the content of the application onto the curriculum is conducted and/or owned by the ministry of education or relevant education agencies at national and/or local level;
- being selective, conducting a mapping for only certain grades, curriculum goals or themes;
- being strategic, by providing a framework for the curriculum mapping with illustrative examples to inspire and guide institutions or teachers to expand and complete the mapping;
- disseminating the output widely, and encouraging educational settings and teachers to share their mapping with other schools and teachers; and
- using the curriculum mapping as part of a package for relevant authorities to support the scale-up of the Initiative.

#### QUOTE

“The book and Akelius want to reach the same goal. Akelius supported us; we are able to synergize a lot between the book and the application.”

– Teacher, Lebanon

#### QUOTE

“I went through all the lessons to see which games, which words maybe presented first to give the children the opportunity to play.”

– Teacher, Italy

## Curriculum mapping in Mauritania and Mexico

In Mauritania, to ease the pedagogical integration of the application, UNICEF conducted a mapping of the digital content of the application onto the French as a foreign-language textbook used by teachers in non-formal settings. This helped teachers identify when best to use the digital application to enhance their teaching and complement the textbook. Mauritania is currently considering conducting a similar mapping onto the primary school national curriculum for the French language.

In Mexico, the Akelius Spanish course started being piloted in Mexican schools the year of the roll-out of a new national curriculum. Teachers faced the double challenge of discovering the new curriculum while also discovering the application. A consultant was tasked to conduct a mapping and identify the main entry points for using the application to enhance specific themes and learning goals, which resulted in a publication.<sup>40</sup> Training sessions complemented the mapping framework. Following overwhelmingly positive feedback from teachers, the Akelius implementing partner will duplicate the approach for the English language.

Another good practice reported by countries to support the pedagogical integration of the digital application is the **development of indexes of digital content**, which was initiated by Greece and Mauritania, followed by Italy and Kazakhstan for the language courses that they use. Indexes, developed as pdf documents, presented the key characteristics of the content of an Akelius language course, lesson by lesson, detailing new vocabulary, language phrases and grammatical concepts. The aim was to equip teachers with a tool to quickly assess the type of digital content in multimedia lessons. Teachers found indexes useful for lesson planning and familiarization with the digital course. As noted by a partner in Italy, the more teachers are familiar with the content of the application, the more they are using it and are able to select digital activities strategically. This valuable work led to the development of a **digital index** now available in all languages for any user on the application itself.

## Equip teachers with blended teaching lesson plans

*Inspiring teachers with diverse lesson plans accelerates their familiarization with blended teaching techniques, which builds their confidence and enhances the quality of their instruction and the experience of their learners.*

Some countries did not anticipate the challenges teachers face regarding **lesson planning**, especially in creating complementary tasks across digital and physical environments to achieve learning goals. In the case of the Initiative, this refers to teachers' ability: (i) to select digital content for its added value, such as for pronunciation, listening or spelling, and to combine it with analog speaking and writing activities; and (ii) to balance the use of the application for independent learning with collaborative tasks based on group work or learner–teacher interactions.



Learners preparing for dancing to an Akelius song, 'Polish as a second language' class in Poland.  
Courtesy of Marta Miklińska (SOK Foundation), UNICEF Poland Country Office, 2023.



Integrating handwriting with digital learning in a blended approach in Italy.  
Courtesy of Barbara D'Ippolito, UNICEF Europe and Central Asia Regional Office, 2022.

In some contexts, teachers have limited experience of designing **learning tasks** and adapting activities and content to learners' various needs. For example, in non-formal education or emergency situations, teachers and educators involved in language-teaching activities might not have a teaching qualification. In other contexts, lesson planning is little practised due to heavy workload and competing demands on teachers' time. In Sao Tome and Principe and Cabo Verde, lesson planning responsibilities are shared between supervisors and local education officers for schemes of works and lesson plan outlines, and between teachers for day-to-day implementation.

## QUOTE

“[Children] truly helped each other – when one understood a unit or an exercise, then they would do it together to earn the famous coins and buy gadgets. ... so that was a tool for me, or as you say, a conflict resolution tool to create cohesion.”

– Teacher, Italy

**Providing examples of lesson plans** has proven useful across countries in both non-formal and formal settings to inspire teachers with blended teaching techniques and assist them with lesson preparation. Lesson plans produced under the Initiative typically:

- provided examples of integration of content from the application to achieve various learning goals;
- illustrated how to combine analog with digital tasks;
- outlined when to introduce the application in the lesson and for what purpose (e.g. to introduce/close a lesson, to present a concept, to practice through drills and games);
- presented techniques to support independent, pair, small-group and whole-class learning; and
- suggested formative assessment activities.

Some countries invite teachers to **co-create sample lesson plans** during teacher training activities, while others collect lesson plans for publication in teacher manuals and guidelines, including through UNICEF’s, partners’ or official publications.

Kazakhstan and Cabo Verde reported the importance of balancing the provision of ready-made context-specific lesson plans with approaches that encourage teachers to develop and share their own. This builds the autonomy of teachers, contributes to their self-efficacy and is a key step towards teacher collaboration within and across educational institutions.

Several partners and teachers reported that the focus on lesson planning in the Initiative had improved teaching practices overall. Following teacher support (see [Lessons on teachers' professional development and support](#)), UNICEF and partners have observed more varied language-learning activities in classrooms and enriched blended teaching approaches (see Box 12). Teachers have been increasingly creative with the multiple ways in which the application could be integrated in their teaching routines.

#### QUOTE

"[The application] helps teachers create a different learning environment. It allows the content provided by teachers to adapt to different learning styles."

– Teacher, Mexico

#### BOX 12

### Blended teaching practices in Kazakhstan

A clear evolution of teachers' abilities in blended learning was observed in Kazakhstan. Classroom observations revealed that, over time, teachers had enhanced their blended teaching techniques and their understanding of pedagogical integration. Language classes began incorporating a balanced combination of digital tasks for grammar drills and vocabulary enhancement, alongside learning activities aimed at improving pronunciation, communication skills (through role playing dialogues) and varied writing activities. Learners engaged in a range of independent, pair or small-group activities with and without the application, to promote individual and collaborative learning.

#### **Guide teachers in maximizing digital content for differentiated instruction**

*There are good examples of using the application for differentiated teaching, accommodating various learning levels, paces and needs, but teachers need extra support to harness the full potential of digital learning for individualized instruction.*



Teachers confirm that the **application is highly useful for differentiated teaching**, both in non-formal education, where class composition is highly heterogeneous, and in mainstream formal education for migrant children and learners with special educational needs. The application provides all language content from beginner to advanced levels in one place, making it easy for teachers to assign different tasks depending on students' levels and learning goals. In addition, interactive lessons can be repeated several times by learners where needed.

The application allows children to get involved right away in activities suited to their level and see immediate results. This sense of achievement boosts their self-esteem. Moreover, as a teacher in Greece noted, the application helps reduce learners' anxiety and embarrassment, allowing to work individually and privately, and correct errors without peer pressure. Research in Lebanon<sup>41</sup> also shed light on learners feeling more 'equal' when involved with the digital application. This is echoed in Poland and Cabo Verde, where teachers talked about less confident learners being able to 'shine' and demonstrate what they can do. As discussed in the [Implementation research on the Initiative](#) section, the application is associated with learning gains as well as higher motivation, engagement and confidence. In emergency contexts, socio-emotional outcomes are particularly meaningful for children.

#### QUOTE

"Children I work with, 24 of them, are thrilled with the Akelius learning application ... children who possibly do not have an opportunity to show how much they know during regular classes, have this chance at the Akelius classes because work is done in a slightly different manner."

– Teacher, Italy

## QUOTE

“Many children are embarrassed and have this anxiety so [with] their tablet it is much easier ... (When a refugee) child joins a Greek school, with children who speak Greek, it definitely affects self-confidence a bit. If they make a mistake with the tablet, no one will hear it, no one will see it.”

– Teacher, Greece

While in non-formal education the practice of differentiation can be more prevalent, in formal education environments such practices are less common, with or without technology. This is mostly due to large group sizes, insufficient teacher training, the pressure of standardized tests and overall limited support for differentiated instruction. Digital learning has the potential to help teachers meet the different needs and interests of learners,<sup>42</sup> but **teachers need to be equipped with effective differentiation strategies using technology.**

## QUOTE

“The purpose of the application is to lay the foundation for students; bring those without any prior knowledge to the point of being able to establish basic communication, and educate those who are unfortunately illiterate to at least be able to read, write and understand what is in front of them. When it comes to students whose knowledge is somewhat better, the goal is to expand their vocabulary and make them speak perhaps a little more formally.”

– Teacher, Bosnia and Herzegovina

## Differentiated learning in Italy

Schools in Italy operate with special educational needs coordinators and teacher assistants as a main modality for supporting inclusive education. Many participating schools in Italy report using Akelius to support the learning of all children, including children with disabilities. There are several examples of teachers using the application to support a specific learning goal for a child with a disability during regular class time or to provide Italian-language support to a small group of non-native learners.

### Digital applications can't replace teachers' assessment practices

*Quiz and reward functionalities in digital applications do not replace the need for checking student understanding after digital tasks.*

Digital tools are known to be widely used to support different types of assessments.<sup>43</sup> Teachers using the application value the various assessment opportunities it provides and the ways in which it monitors learners' progress.

The application gives immediate feedback to learners through its interactive features, which guides their learning and contributes to their motivation, awareness of their own understanding and confidence. However, the evidence collected within the Initiative reveals that some teachers move from one digital activity to another without taking stock of valuable information that could inform them on the progress of their learners. By not checking the understanding of their learners following a digital task, they fail to assess the extent to which content is assimilated, and by whom, and miss out on useful information that could inform future instruction. While digital applications can provide immediate feedback and summative tests, the **role of teachers in analysing learners' understanding and misconceptions remains critical** for supporting learners individually.



## Lessons on teachers' professional development and support

The fourth set of factors regarding how technology is used in education pertains to how teachers are trained and supported for digital and blended learning. Despite the efforts of teachers to boost their digital competencies since the pandemic, teachers' confidence in using technology in the classroom is uneven globally.<sup>44</sup> The OECD Teacher Survey (TALIS) 2018 shows that, before the COVID-19 pandemic, only 43 per cent of teachers in the 48 participating countries and territories felt prepared after pre-service training for using technology for teaching. Confidence levels were weaker among older teachers.<sup>45</sup>

This section explores the lessons and good practices derived from various approaches to digital learning training and professional development under the Initiative. It is particularly relevant for teacher training providers, education ministries, UNICEF country offices and school leadership, as it underlines the critical importance of providing teachers – regardless of levels of education, qualification and experience – with relevant and sufficient support to help them

enrich their teaching practices and improve children's experiences and learning. These insights are easily transferable to any digital learning intervention.

## Teachers need comprehensive hands-on training

At the outset of the Initiative, countries focused primarily on orienting teachers to the application functionalities, including login options and offline modalities and their implications for tablet preparation and management. As more teachers got involved and monitoring visits revealed common challenges related to the use of technology in the classroom and in teaching practices, the need for a more structured and comprehensive approach to training emerged. This approach was further enhanced when the Initiative expanded to formal education to better address issues of pedagogical integration and blended techniques.

### **Train teachers in digital skills, pedagogical integration, blended techniques and tech classroom management**

*Comprehensive and effective training and support packages encompass four components: (i) digital skills, including basic device and app-handling skills; (ii) pedagogical integration; (iii) blended teaching techniques; and (iv) classroom management when using technology.*

Drawing on over six years of experience, participating countries have increased the effectiveness of their training interventions by organizing them around four main components:

- **Digital skills and online safety**, which empower teachers to guide students in device use and navigation, and manage technology issues with greater confidence. UNICEF and partners quickly recognized that some teachers struggled with basic tasks like adjusting the volume, connecting to Wi-Fi or changing tablet settings. As a result, basic tablet-handling skills were incorporated into the training programmes, alongside instructions on navigating the application and its key features. In countries where devices may be connected to the Internet, online safety has been added to the training package.



- **Issues of pedagogical integration of the application**, including curriculum integration and language-teaching pedagogy. In Italy and Poland, where most teachers use Akelius for teaching Italian or Polish to non-native speakers, training also focused on equipping teachers with skills for teaching a second language. In Sao Tome and Principe and Cabo Verde, UNICEF focuses on reading and writing skills development in the training.
- **Blended teaching techniques:** Countries reported the need to demonstrate the multiple ways in which the application can be used for teaching. Albania trained teachers on how to use the application with smart boards to support whole-class teaching. Greece gives tips on how to use the application in pairs and small groups, and using the station rotation model. Italy suggests printed 'Italian as a second language' materials that can be combined with the application. Cabo Verde and Sao Tome provide multiple examples of blended teaching techniques to improve lesson planning and delivery, within and beyond the framework of the Initiative.
- **Classroom management when using technology:** Countries emphasized the importance of embedding classroom management techniques in training to help teachers set up routines and manage large groups, disruptive behaviours and the various paces at which learners undertake digital tasks. This also includes group work and inclusive practices to ensure that all learners have opportunities to access technology and learn, regardless of their gender, level of language or disability. Inclusive practices, differentiated instruction and gender-responsive pedagogy are at the core of classroom management practices and areas for continuous improvement in most countries.



## BOX 14

### Training content in Bhutan

In Bhutan, English teachers from monastic education institutions do not have a formal degree in teaching. Under the Initiative, they received an initial 30-hour training course covering: (i) basic ICT skills, (ii) online safety, (iii) content and navigation of the Akelius application, (iv) creation of Akelius teacher accounts and QR codes for learners' login, (v) Akelius classroom server for offline use, (vi) child-centred pedagogy, (vii) lesson planning, (viii) blended learning and (ix) classroom management techniques. The training was done in partnership with the Ministry of Education and Skills Development. An additional two-day child online protection training session was conducted by UNICEF to strengthen teachers' understanding of online safety and equip them with materials to raise learners' awareness of the issue.

## QUOTE

"The practical part was great, using the possibilities of Akelius in combination with the textbook and lesson planning."

– Teacher, Poland

Countries also underlined the importance of **accrediting training courses** to incentivize teachers and recognize the efforts they invest in their professional development. In Albania and Bosnia and Herzegovina, the accreditation process was facilitated by the fact that training undertaken under the Initiative was designed and delivered by national teacher training providers. In Italy, the Initiative's implementing partner is an accredited training provider for the Ministry of Education, enabling Akelius-related teacher training courses to provide credits for teachers' professional development. These enablers underscore the importance of partnership-building from the outset of a digital learning intervention.

### Prioritize practical training sessions

*Experiential hands-on training is critical to help teachers demystify the use of technology in class and boost their confidence for experimenting with blended teaching practices.*

Partners have realized over time the limitations of theory-based training for an Initiative like Akelius, which some teachers require to **help them demystify the use of technology in class**. Following a teacher training workshop in Bosnia and Herzegovina, 84 per cent of participants indicated that the most useful part of the training was its practical aspects, including practical activities undertaken with the application.<sup>46</sup> Evidence from Greece and Kazakhstan shows that practical training increased teachers' familiarity with the application and gave them confidence to use the application in different ways.



Akelius and blended learning teacher training in Sao Tome and Principe.  
Courtesy of UNICEF Sao Tome and Principe Country Office, 2024.



Akelius information-sharing session for six primary schools in Una-Sana Canton, facilitated by Save the Children.  
Courtesy of Azra Alibabić (Save the Children), UNICEF Bosnia and Herzegovina Country Office, 2024.

Partners emphasized that **hands-on training sessions** enabled teachers to:

- co-create tools they could immediately apply in their classes, such as lesson plans or blended learning tasks;
- experience first-hand the technology issues that might arise in a classroom situation, and discuss how to address them;
- deliver mock lessons using Akelius to practise blended teaching and classroom management competences; and
- become confident in using more advanced features such as the classroom server.

## Training approach in Greece

Building on six years of implementation experience, Greece currently implements a training approach that covers (i) preparatory activities, including the completion of the [Akelius e-teacher training](#) and the review of key materials such as the manual for Akelius teachers;<sup>47</sup> (ii) an eight-hour hands-on training; (iii) follow-up training activities comprising the development of a tablet management protocol, the establishment of classroom management routines and the development of lesson plans. Training sessions are combined with mentoring and follow-up group discussions where teachers are gradually invited to practise with varied implementation modalities, such as individual, pair and group work, and to use specific techniques and learning activities such as the station rotation model.

## Teachers need multiple spaces to learn, co-create, experiment and share

The initial teacher training modality of countries that adopted Akelius early was primarily articulated around one-off training events. Partners increasingly found it challenging to address the many requirements of a comprehensive digital learning training approach using this modality. A key learning for UNICEF and implementing partners is that teachers require support over time, tailored to their evolving needs, as well as flexible approaches that help them innovate through experimentation and reflective practice.

### **Cultivate a multi-pronged continuous teacher support model**

*Multimodal professional development interventions support teachers to apply newly gained knowledge and skills over time when innovating in their classrooms.*

Strategies that can elevate the effectiveness of professional development, so that teachers can apply newly gained knowledge and skills to improve the quality of their instruction, span an appropriate training needs assessment, connection with teacher practice, opportunities for meaningful engagement and opportunities for individual and collective reflective learning.

## QUOTE

“The meetings we had, the supervisions and demonstration classes we had, and discussions afterwards. They helped me a lot.”

– Teacher, Greece

UNICEF and partners realized over time the importance of providing **multiple modalities for teacher professional development**. This enables them to cater for the varied needs of teachers regarding technology competences, use of technology in class and the pedagogical integration of a digital application such as Akelius. Based on experience, countries identified the most effective professional development approaches for teachers, underscoring the importance of their combination for maximum effect:

- Formal training events spread over time to give teachers opportunities to practice
- Formal training events followed by group discussions and Q&A sessions
- Mentoring sessions, based on classroom observations conducted by trainers and peers
- Demonstration classes
- Microteaching (see Box 18)
- Training sessions led by champion teachers to inspire their peers
- Video ‘how to’ tutorials on the application
- Help desk type on-demand support (see Box 16)

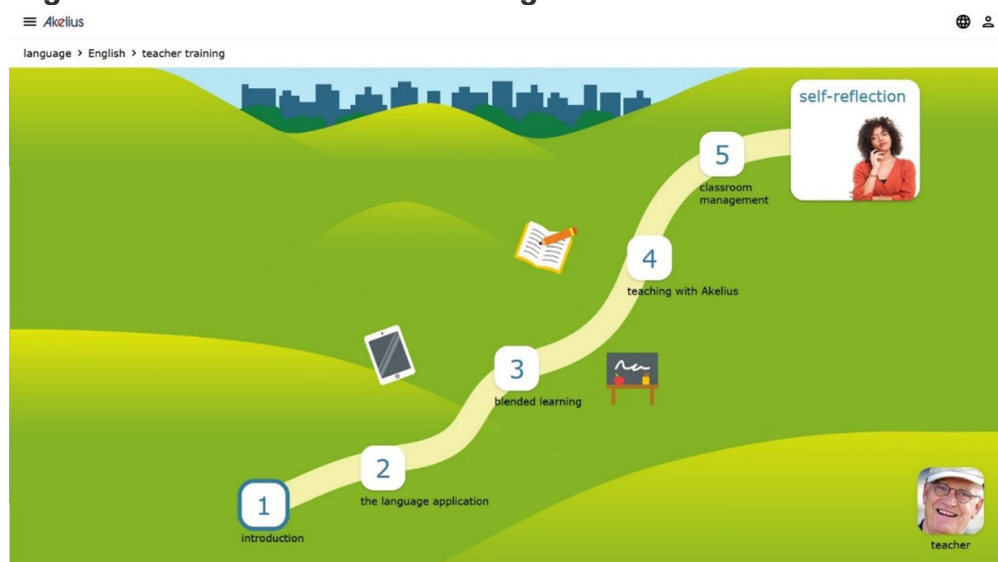
A few countries such as Italy have embarked on producing videos to support professional development activities and provide teachers with concrete examples of blended teaching practices using Akelius.

## Programme Help desk modality in Italy

In Italy, the implementing partner set up a help desk accessible by phone and email with dedicated staff responsible for providing technical and pedagogical support to teachers. The help desk regularly shares Frequently Asked Questions (FAQ) documents providing tips and ideas to all teachers involved in training activities under the Initiative.

Additionally, the Initiative developed **global training products to guide partners** with training issues: first, a teacher manual with general guidance on blended teaching with Akelius<sup>48</sup> and, then, a global e-teacher training course. The e-teacher training has been used as a self-paced training course for teachers in Greece and Lebanon, and has also been integrated in in-person teacher training interventions, particularly in Sao Tome and Principe, Cabo Verde and Mauritania.

**Figure 7: Akelius e-teacher training course**



Note: Available course languages: English, French, Greek, Italian, Polish, Portuguese, Russian, Spanish

Source: <https://teachers.akelius.com/subjects/en/2040>

Offering a **specific e-teacher training application** played an important role in communicating the philosophy, content and features of the application, and in providing teaching tips for navigating and using the application across diverse contexts. The main challenge in

developing a one-size-fits-all e-teacher training course was addressing the significantly different needs of teachers across the participating countries and educational settings. This was overcome by identifying key messages that teachers across all settings would benefit from, and by developing scenarios for self-reflection that teachers could select to best suit their learning environment.

Some countries such as Italy, Poland and Kazakhstan underlined the importance of contextualized teacher training products for their audience, respecting the pedagogical traditions and expectations of teachers regarding academic theories or the specific needs of target teachers, such as support in teaching a second language to refugee and migrant learners. In Albania, the national teacher training agency developed an in-service training course for teachers on digital learning and the use of the Akelius application. In Poland, this led to the development of Poland-specific Akelius e-teacher training modules (see Box 17).

#### BOX 17

### Contextualization of the Akelius e-teacher training course in Poland

Poland is developing an e-teacher training course to support Polish teachers using Akelius for teaching Polish as a second language to refugee children. The course draws from the principles and slides of the Akelius e-teacher training course, combined with additional content adapted to the context of Poland. The e-teacher training modules comprise bite-sized courses tailored to the needs of teachers juggling multiple commitments. They will be hosted on the ministerial teacher development platform through the UNICEF Learning Passport. Every teacher in Poland can access the course and receive professional development credits upon completion.

#### Set up and support teacher communities of practice

*Teacher communities of practice contribute to peer learning, reflective practice and teacher visibility.*

Countries found it useful to set up **virtual communities of practice** to guide, encourage and support teachers. These are usually a space for teachers to ask technical questions and share some basic practices



or materials. In Bosnia and Herzegovina and Cabo Verde, teachers are invited to join a messaging group following teacher training events. The group gathers teachers from both formal and non-formal settings, which maximizes the mutualization of good practices. In Bhutan, teachers share lesson plans on an online drive and support each other through a group chat. In Albania, the partner set up a Facebook group, [\*Akelius teachers Albania\*](#). In geographically large countries such as Kazakhstan, one national and several regional groups are set up to ease or encourage different types of exchanges and information flows.

Virtual communities usually include teachers, UNICEF, implementing partners and representatives of the education authorities. In Cabo Verde, the messaging group includes education supervisors and local education authorities, for instance. Some communities of practice provide structured spaces for partner-facilitated online thematic discussions, such as in Albania, Italy and Poland. Partners underscore the need to facilitate these communities, either by answering teachers' questions, contributing content or inviting ideas and practices.

Some partners noted teachers' reluctance to share their preparation work with peers. Albania and Greece underlined that smaller communities were more conducive to building trust among teachers, particularly when discussing pedagogical issues. **In-person communities of practice** are more costly to run, yet enable teachers to bond further and benefit from a more transformational experience. Cabo Verde underlines that peer exchange appears to have a significant impact on teachers. Albania implemented the innovative microteaching method for its in-person local communities of practice (see Box 18) and supported larger peer learning workshops. Greece runs regional communities and has initiated a buddy system, pairing teachers across Greece to discuss implementation challenges and solutions.

## Microteaching experiment in Albania

Every two months, teachers from four Akelius schools participate in coaching sessions organized by the teacher training partner in the Initiative based on the microteaching technique. Sessions comprise a series of 10-to-15-minute mini blended English lessons taught by teachers to a group of volunteer students and observed by other teachers. The objective is to provide opportunities for teachers to practise specific blended teaching and pedagogical integration skills. The teaching session is followed by a discussion between teachers and trainers, where best practices and areas for improvement are identified. Teachers found these sessions useful and inspiring. Trainers have observed greater creativity and mastery of blended teaching skills among beneficiaries.



## Emerging lessons for scalability and sustainability

Lessons learned from the previous sections have implications not only for planning and devising implementation strategies but also for sustainability and potential scale-up approaches. Since the Initiative is ongoing in all 12 participating countries, some of which having only recently started implementation, there are few substantial lessons learned regarding scale-up or sustainability. Additionally, a myriad of factors may hamper scaling and sustaining technology interventions in education, including financial resources for ICT infrastructure and equipment, policy and curriculum planning, leadership for innovation, support systems for technology integration and teacher motivation and attitude to change, among others.<sup>49</sup>

In this context, this section only discusses emerging insights from the Initiative on how the use of the application can be scaled and sustained in both existing and potential new implementing countries, providing useful insights for the scalability of digital learning interventions in general. This section is particularly relevant for UNICEF country offices, education ministries, implementing partners, school leadership, teacher training providers, edtech developers and donors.

## The Initiative is replicable and has potential for further scale-up

To date, **the Initiative has been replicated across countries and educational settings** in varied contexts, including: (i) low- and high-income countries; (ii) emergency and non-emergency contexts; (iii) non-formal education for catch-up education programmes, education activities in refugee camps and after-school classes; and (iv) formal education, including reception classes and additional language classes for refugee and migrant children, and for whole-class literacy improvement and second- or foreign-language teaching. It is evident from the data that the key factors contributing to replicability across countries and expansion within countries, beyond the necessary funding, are the application's versatility and flexibility, including its offline modality, its compliance with GDPR and a 'data protection by design' approach, and the comprehensive implementation strategy developed over time.

### Application flexibility, offline use and a comprehensive implementation strategy are key

*The versatility and flexibility of the application, along with the implementation strategy of the Initiative, combining equipment, technical and pedagogical training, strong monitoring mechanisms and knowledge-sharing, makes it easily replicable across contexts.*

The **flexibility and simplicity of usage of the application** is an enabling factor for both scale-up and sustainability. Research on innovation shows that flexibility is an important parameter for sustainability, which enables teachers to adapt innovations over time to the evolving needs of their learners, their curriculum and the school environment.<sup>50</sup> The application is a ready-to-use learning tool that can be deployed quickly across contexts to address language barriers and access to education, as it is available, to date, in 11 different languages for different levels of language proficiency.<sup>51</sup> There are two solutions for **using the application offline** in contexts with limited or no connectivity:

1. Setting up the **classroom server functionality**, a hub system enabling learners, through a local network using a simple Wi-Fi router, to connect to a lightweight server running offline

on a teacher device. This enables learners to consume the content of the teacher device without the need for an Internet connection. The teacher device only needs an initial connection for downloading the content. The classroom server also provides teachers with a dashboard for progress monitoring and achievement reports.

**2. Pre-downloading the content** (language courses and lessons) on devices, which is then immediately available for offline use.

Moreover, the digital application is complemented by technical support tutorials and the e-teacher training course, which creates a standalone Akelius digital package available to all for supporting implementation.

Deploying the application to educational centres has enabled UNICEF and partners to refine, over the years, a comprehensive implementation strategy combining ICT equipment, software, technical and pedagogical training and support for teachers and schools, strong monitoring mechanisms and knowledge-sharing within and across educational institutions, partners and UNICEF country offices. This strategy has contributed to implementation effectiveness and efficiency, and has informed replicability across contexts.

According to UNICEF and partners, the critical enablers of implementation effectiveness have been:

- **Evidence of impact on learning**, and implementation research that gathered users' perspectives on challenges and good practices to refine implementation and support UNICEF's advocacy efforts towards ministries and development partners.
- **Setting feedback loops between developers, users and partners** for improving the design and functionalities of the application.
- **Standardizing the requirements for equipment** based on children's, teachers' and partners' feedback.

- **Developing support guidelines**, gathering emerging good practices on ICT equipment, device management, organization of digital learning in educational centres, and blended teaching and teacher training.
- **Providing implementing partners with direct access to developers** to solve and improve technical issues, including through on-site visits.
- **Conducting regular monitoring visits** and classroom observations to understand the challenges faced by educational centres and teachers with technology and pedagogical integration. These visits enabled partners, including national training providers and ministry pedagogical supervisors when involved, to adjust technical and pedagogical support, with a ripple effect on school management and teaching practices.
- **Sharing lessons** across educational centres, educational settings and UNICEF countries. Peer exchanges across countries for UNICEF and implementing partners have also been critical as countries expanded digital learning interventions and looked for inspiration, models and solutions to improve implementation.
- **Being agile**, capitalizing on initial experiments, learning from failures and identifying promising practices to systematize implementation strategies.

### Devise strategies to increase reach and inform scale-up

*Increasing the reach of a digital learning intervention such as Akelius requires strategies to minimize the initial investment cost for digital devices and to reduce the cost and human resources dedicated to capacity-building activities for teachers and other school staff.*

Several countries are currently exploring ways in which to expand the reach of the Initiative, ensuring that a larger proportion of learners can benefit from the digital application. Overcoming the initial investment cost for ICT equipment, along with the maintenance and renewal costs due to the short lifespan of tablets, remains a key barrier to scalability and sustainability.



To increase reach, countries have explored how to minimize the reliance on tablets for digital learning by:

- **Maximizing synergies across digital learning interventions to share equipment:** In Lebanon, for instance, UNICEF implements several digital learning initiatives in parallel, which provides some opportunities for cost savings and sharing of ICT equipment. In Poland, UNICEF is linking the Initiative to its previous tablet donation programme under the Ukraine refugee crisis response. In Albania, the Initiative has been partially implemented in schools co-equipped as tech hubs by the government, UNICEF and other donors. In Mauritania, the expansion of Akelius in the M'Berra refugee camp was possible, as hardware was funded by other donors.
- **Maximizing existing equipment in schools** through:
  - Supporting schools to manage their equipment efficiently and effectively. Educational centres are increasingly equipped with ICT devices, particularly since the pandemic. Bosnia and Herzegovina, Italy and Poland underlined that formal schools in particular are little prepared to manage ICT equipment effectively, hence hindering the use of technology for learning.
  - Delivering ICT equipment on the basis of a thorough needs assessment of existing equipment in educational centres. In Italy, UNICEF adopted this approach to reduce the initial investment cost.
  - Promoting the use of Akelius on non-mobile technology. In some schools, Akelius is used on existing laptops, including touchscreen laptops that have a longer lifespan than tablets and greater storage capacity. In others, the application is linked to TV screens or speakers when using songs. In Albania, Greece, Kazakhstan and Poland, partners also systematically encourage teachers to use the application with a projector or smart board. This enables learners to benefit from the application's content even when there are absences or an insufficient number of

devices. Evidence on the impact the various ways of using the application have on learning, however, requires additional research.

- **Using the digital application for pair and group work:** While the Akelius application is optimized for individual use, many teachers use it for pair and small-group work. This set-up limits the number of tablets needed for teaching large groups while also promoting collaborative and social skills among learners who have to share devices.
- **Maintaining equipment to increase lifespan and maximize reusability:** In Lebanon, partners insisted on the importance of screen protectors, tablet covers and regular maintenance to increase the lifespan of tablets and their potential for reuse over time.
- **Using a loan modality for devices, to enable reuse and reallocation:** In Greece and Mexico, tablets were reallocated across partners to respond to evolving needs and circumstances. This would not have been possible had equipment been donated to partners and educational centres. Finding a balance between the use of equipment as an incentive to pilot an innovation and the imperative of involving a maximum number of learners can be challenging. Conveying clear messages about the conditions of the use of equipment from the start helped.



Using the digital application for pair and group work in Bhutan.  
Courtesy of UNICEF Bhutan Country Office, 2023.



Using the digital application for pair and group work in Italy.  
Courtesy of Barbara D'Ippolito, UNICEF Europe and Central Asia Regional Office, 2022.

While opportunities for scalability and replicability exist, scalability models are only nascent to date across participating countries, and often limited to medium- or high-income countries where educational centres may have some ICT infrastructure and equipment, and where teachers may have some experience with digital learning. In Poland, where ICT equipment is available in some schools, and smart boards are in all schools, UNICEF and partners have developed a tiered support strategy to increase the Initiative's reach through minimal cost investment (see Box 19). In addition, the self-paced e-teacher training course for using Akelius in the context of Poland (described in Box 17 above) contributes to eliminating the costs associated with repeated teacher training over time. In Italy, a cost estimate was conducted for replacing tablets after five years to continue using the application.<sup>52</sup>

#### BOX 19

### Increasing reach in Poland

Poland has adopted a three-tier approach to support the schools and teachers implementing the Initiative, to maximize its reach through minimal cost investment.

- Tier 1: Intensive in-person technical and pedagogical support for two schools in Warsaw that act as a laboratory for piloting the use of the digital application. This includes regular school visits, ICT equipment support, in-person teacher training and classroom observations.
- Tier 2: Moderate technical and pedagogical support for 20 schools across the country. These schools have received between 5 and 30 tablets under the refugee response programme. Through the Initiative, they benefit from: (i) a presentation webinar for school directors, school ICT staff and interested teachers, (ii) up to 5 tablets and 30 headphones, (iii) a 12-hour remote teacher training programme.
- Tier 3: Light support to any school and staff interested in participating in a two-hour presentation webinar on the Akelius application. Participants can also attend a follow-up remote discussion event available to all schools participating in the Initiative and receive the FAQs developed by the implementing partner.

Reach can also be increased through leveraging the value added by the application in contributing to a bigger agenda, as described below.

## The Initiative is relevant to UNICEF and national policy agendas

The Initiative started as an education innovation pilot that could be tested at a small scale. Some countries, however, maximized its potential to support upstream work on key organizational priority areas and respond to top-level education policy issues. Where UNICEF has maximized the experience from the Initiative, it has strategically amplified its contribution to education in emergency, language acquisition support for refugee and migrant children, and the transformation of education through digital learning.

### Enrich education provision in emergencies and for second- and foreign-language teaching

*The Akelius application has proven relevant for enriching education provision in emergency contexts and supporting policy advocacy efforts for second-language teaching for refugee and migrant children.*

In many participating countries, the Initiative has been part of UNICEF's response to address the fundamental educational rights and needs of children during emergencies. Participating countries underlined the usefulness in an emergency context, such as in Greece back in 2018 or Poland in 2023, of a digital learning tool such as Akelius that **responds to an immediate need** of a large number of children and teachers and that **can be implemented immediately** to address a significant barrier to learning, particularly in the absence of alternative quality language-learning materials. The Akelius application has also played a relevant role in interventions supporting the transition and integration of refugee and migrant children into formal education, such as reception classes or additional language-learning classes in Greece, Lebanon, Italy and Poland.

In Greece, Italy and Poland, UNICEF has strategically leveraged the benefits of the application and its use in various second-language-learning modalities to establish itself within second-language-learning

networks and **advocate for policy changes and suitable language support for refugee and migrant children**. The Initiative has also served as an entry point for UNICEF to advocate for a broader inclusive education agenda. For example, in Italy, it has helped UNICEF engage with national and regional education authorities on the provision of Italian as a second language for migrant children and for inclusive education support staff more broadly. In Poland, UNICEF is using Akelius in support of governmental efforts to prepare teachers for teaching Ukrainian refugee and other migrant children in the Polish system (see Box 20).

#### BOX 20

### Strategic leverage of the Initiative for the Ukraine refugee response in Poland

UNICEF currently co-funds the government programme [Accessible School for All](#) to accelerate the readiness of schools and teachers to welcome Ukrainian children to Polish schools. The programme includes a fully accredited online teacher training course for Polish as a second language to be rolled out in both pre- and in-service teacher training from September 2024. The training package is developed by a coalition comprising institutional, academic, civil society and international organization stakeholders. The training package was informed by the lessons learned from the Akelius e-teacher training modules and the experience of the Initiative in training teachers on using Akelius for Polish-language teaching and other evaluation results from the Initiative's pilot phase in Poland. The application is among the recommended tools for teaching Polish as a second language for children and early adolescent learners.

In Bosnia and Herzegovina, UNICEF is working with the Ministry of Education of Una Sana Canton on strategies to enable the use of the language application in primary schools to support foreign-language teaching (see Box 21).

## Supporting language learning in Bosnia and Herzegovina

UNICEF is working with education authorities to support the implementation of curricular reforms that make foreign-language learning compulsory from early grades in primary education. In Una Sana Canton, where English will be compulsory from Grade 1 as of September 2024 but no textbooks are yet available for learners, Akelius can play a key role, support the work of teachers, and enhance the teaching and learning experience of children. UNICEF and the Ministry of Education of Una Sana Canton are currently exploring avenues for making Akelius available in all schools in the canton for English-language teaching.

### Support national digital education agenda

*The Akelius application has proven relevant to UNICEF's policy efforts in support of the digitization of education.*

In some countries, UNICEF has leveraged its participation in the Initiative to act as a knowledge broker in the area of digital learning and **contribute to the agenda of digital transformation of education** at a national level. UNICEF has advocated for the inclusion of key components in education digitization policy development processes based on concrete lessons learned from the Initiative. UNICEF has also leveraged the experience of the Initiative to inform strategies for the development of teachers' professional competencies, including digital skills and digital learning pedagogy. For instance:

- In Poland, UNICEF commented on the draft national digital learning strategy, pinpointing the critical importance of empowering school leaders to drive digital learning innovation, the need for strong ICT and digital learning management systems at school level, and the importance of the support component to develop the skills and confidence of teachers.
- In Greece, the Initiative has provided an entry point for engaging more broadly with the Ministry of Education on digital education during and after the pandemic and discussing further expansion of the integration of technology in education.



- In Cabo Verde, the Initiative also served as an inspiration and a catalyst for advancing discussions with the Ministry of Education on enhancing the quality of education, improving teaching practices with digital learning and mobilizing funds.
- In Albania and Bosnia and Herzegovina, the Initiative provided a key opportunity for ministries and national teacher training providers to expand their understanding of the concrete technological and pedagogical challenges encountered by teachers when integrating technology in the classroom. This knowledge directly fed into the improvement of general training approaches for using technology in the classroom.

## The main avenue to sustainability is partnerships

While no country has yet engaged in an exit strategy under the Initiative, several countries have taken active steps to explore sustainability avenues that would contribute to the use of the application beyond securing additional funding for implementation support. To date, the main avenues for sustainability emerging across countries stem from partnership-building both at a national level, with authorities and other stakeholders, and with the education technology developers, to ensure the continuous improvement of the application to sustain quality over time and address the evolving needs of users.

### Develop strategic partnerships at a national level

*Countries that have sought ministerial backing and developed strategic partnerships at a national level have established some degree of legitimacy, visibility and potential for sustainability of the Initiative.*

While no full transfer of ownership regarding the implementation of the Initiative has taken place to date, some implementing countries have taken significant **steps to secure political backing**. In Albania, Bosnia and Herzegovina, Greece, and Italy, the application has been officially endorsed by ministries of education as a resource for overcoming language barriers for migrant children. In Sao Tome and Principe, Cabo Verde, and Bosnia and Herzegovina, the involvement of the ministry at national and decentralized levels is a key implementation strategy of the project.

A key learning for UNICEF and partners is the **importance of engaging with a wide range of national and local education institutions**, such as the digital learning, inclusive education and curriculum departments of ministries, teacher training providers, national education agencies including institutes of education, and authorities in charge of teacher pedagogical supervision and inspection. UNICEF and partners should share learning from schools' experiences, challenges and good practices regarding digital learning to contribute to enhanced supporting strategies from these institutional stakeholders.

Additionally, countries have developed strategic partnerships at a national level, with education authorities and beyond, to pave the way for scaling or sustaining parts of the Initiative. Beyond partnerships with Internet providers (see [Improving school digital environments matters](#)), examples of partnerships include:



Launch of the Initiative in Bhutan, in partnership with the Monastic Education Council. Courtesy of UNICEF Bhutan Country Office, 2023.



Minister of Education, Sarajevo Canton, opening the first day of the Akelius training for teachers. Courtesy of UNICEF Bosnia and Herzegovina Country Office, 2023.

- Partnership development with pre- and in-service teacher training providers:** In Albania and Bosnia and Herzegovina, Akelius teacher training activities are implemented by national teacher training agencies. In these countries, and in Italy, teacher training courses implemented under the Initiative are fully accredited and contribute to teachers' professional development. In Cabo Verde and Sao Tome and Principe, UNICEF is currently exploring the feasibility of partnerships with universities and training institutes in charge of pre-service teacher training to develop courses on digital learning for teachers, which would include but not be limited to the Akelius application.

- **Networking and partnership-building with national and civil society organizations contributing to addressing a pressing national policy priority:** In Poland, UNICEF's implementing partner specializes in teaching Polish as a second language. UNICEF and its partner are part of a national coalition to support the government's efforts in training teachers and supporting Polish-language acquisition.
- **Strategic partnerships with non-governmental organizations in emergency contexts** that are implementing non-formal education programmes at scale. In Lebanon, UNICEF developed a model through which the two most established partners in the Initiative have taken the lead in building the capacity of all other partners implementing Akelius across the country.
- **Partnership with the private sector to secure ICT equipment:** In Italy, UNICEF developed a partnership with the private sector for ICT equipment to support the implementation of Akelius in schools. Italy also identified key programmes and funding opportunities for schools at national and local levels (see Box 22).

#### BOX 22

### Securing funding in Italy

Schools in Italy can submit proposals to access funds for educational programmes from municipalities, regions and the Ministry of Education, including through European Union funds such as the European Social Fund Plus, the Recovery and Resilience Facility and the Child Guarantee. UNICEF has encouraged schools participating in the Initiative to secure such funding for teaching Italian as a second language to migrant children. Funding can contribute to the recruitment of a civil society organization specializing in Italian-language teaching to provide additional classes for migrant children or to pay school teachers for extra time when conducting these classes themselves.

## Co-create with edtech developers

*The continuous improvement process of the application, based on feedback from teachers and partners, has contributed to simplifying the integration of technology in the classroom and increasing the relevance of digital content and learning tasks to meet the needs of both teachers and learners.*

The more developers and content creators understand the different needs of teachers across the diversity of implementation contexts, the more they can respond to these, and to teachers' suggestions for improvement, and continue to ensure the relevance and usefulness of the digital application to the needs of teachers and learners.

The ongoing **feedback loops between developers and users** have been key in enhancing the relevance of both content and software technology to the evolving needs of different beneficiaries in different contexts. UNICEF and partners relay users' feedback to developers through an online system. Remote and on-site support provided by Akelius developers has also been a key means of developers better understanding the varied needs of teachers in various contexts, while also contributing to strengthening local capacity in educational technology.

Overall, teachers and partners appreciate the co-creation process that underpins the development and improvement of the Akelius application, despite developers and editors not always being able to accommodate all their requests. The co-creation process has contributed to the development of the offline version of the application, solutions to simplify updates and additional features such as the digital index. In Lebanon, for instance, where the classroom server is being used to facilitate offline access to the application, server response time issues have been identified due to the high number of users. Developers are currently exploring distributed server options to overcome the problem. The co-creation process has also led to improved content, the simplification of lessons in the first language levels to better match the needs of beginners, and a greater variety of digital tasks, such as additional grammar drills. In Poland, the first version of the text-to-speech audio files had pronunciation mistakes and was reworked to respond to learners' needs.



## Recommendations

This report presented concrete lessons learned from the Akelius Digital Learning Initiative, offering useful insights into what makes digital learning work in various classroom settings and improves children's overall learning experience. These recommendations are based on experience implementing the Digital Learning Initiative in a classroom setting where previous research has demonstrated its effectiveness in promoting learning in multiple countries (for more info on effectiveness, see reports from [Greece](#), [Lebanon](#), [Bosnia and Herzegovina](#), and [Italy](#)). Beyond informing the scale-up of the Initiative, these lessons can support the advocacy efforts and digital learning implementation decisions of implementing agencies (including UNICEF), education policymakers, education technology stakeholders school directors, teachers and implementing partners. Overall, five core messages emerge from the breadth and depth of lessons learned in this report.



## 1. Digital tools must be relevant and easy to use.

**Implementation sequence:** First step in the process.

The Initiative shows that integrating a new digital tool in classrooms takes time at the outset, as technology and teachers need to be prepared.

### ***For education technology developers:***

Focus on creating digital solutions that are simple and friendly to use for both teachers and learners, align with curricula, and require minimal technical capacity for set-up and management. Ensure a deep understanding of the diverse educational contexts in which these tools will be implemented to enhance their relevance both in technology and content.

### ***For implementing agencies (including UNICEF) and partners introducing digital learning:***

Provide clear guidelines on selection, set-up and integration of digital tools to schools. Support schools with resources and training to ensure the seamless integration of these tools into daily classroom activities.

## 2. Schools need support with managing technology.

**Implementation sequence:** To be addressed right after tool readiness.

Lessons from the Initiative reveal the critical importance of organization and leadership for digital learning at school level. The increased use of technology in education requires schools to be prepared for managing ICT infrastructure, equipment and digital platforms.

### ***For ministries of education:***

Take a leading role in developing and disseminating guidelines, models and strategies that support school leaders and teachers in creating and maintaining environments conducive to blended teaching practices.



***For implementing agencies (including UNICEF) and partners:***

Collaborate with ministries of education to facilitate the provision of necessary resources, including equipment, technical support and guidance. Actively support the implementation of school management systems that oversee the set-up, updating, storage and use of digital devices.

***For school directors:***

Implement and maintain effective school management systems that handle the day-to-day management of ICT infrastructure. Develop protocols for device storage, updating and usage. Ensure that staff are trained in the use and upkeep of digital platforms and online security.

**3. Teachers require skills for pedagogical integration and training for blended teaching pedagogy.**

**Implementation sequence:** After technology set-up in schools.

Introducing technology in the classroom and developing sustained blended teaching practices requires teachers to develop both digital skills and key pedagogical competencies, such as curriculum integration, lesson planning and classroom management.

***For ministries of education and teacher training providers:***

Develop and provide comprehensive professional development programmes that equip teachers with the skills needed for effective technology integration, including curriculum integration, lesson planning, blended teaching strategies (particularly those applied to differentiated instruction and individualized learning), classroom management and assessment.

***For school directors:***

Facilitate and support ongoing professional development opportunities for teachers that emphasize the practical integration of technology into their daily teaching practices. Encourage a school culture of continuous learning and collaboration among staff.

**For teachers:**

Take an active role in professional development, building both digital literacy and advanced pedagogical techniques. Foster innovation in the classroom by experimenting with new blended teaching methods. Collaborate with colleagues to exchange and improve upon best practices.

**4. Evidence and learning are key to improving implementation.**

**Implementation sequence:** Concurrently with programme implementation.

Evidence from the Initiative underscores the importance of school monitoring visits and classroom observations in providing customized support to school leaders and teachers and sharing lessons from implementation across stakeholders. Implementation research has generated valuable data on learning outcomes for children that have contributed to the refinement and expansion of the Initiative.

**For implementing agencies and donors:**

Invest in and support implementation research to generate data on students' learning outcomes, teachers' pedagogical practices, and technical challenges and their impact on the learner experience. Develop partnerships with research institutions and education ministries to conduct ongoing research and evaluation. Use this evidence to inform and refine policies and strategies.

**For implementing partners and teacher training providers:**

Engage in regular classroom observations and feedback sessions to identify pedagogical challenges and successes. Use the insights gained to tailor training programmes that address specific needs related to digital integration in the classroom. Enhance mechanisms for experience-sharing and collaboration across educational centres, including formal and non-formal settings and participating countries to increase the mutualization of learning among professionals at all levels.

## 5. Building partnerships is key for sustainability.

**Implementation sequence:** Concurrently with or after the initial stages.

Scaling up and sustaining a digital intervention presents multiple challenges. Developing models that maximize synergies between a digital learning intervention and government priorities and programmes, both in emergency and non-emergency contexts, is critical for scalability and sustainability.

### ***For implementing agencies:***

Facilitate partnership development at national and local levels, working closely with ministries of education, teacher training providers, ICT and Internet providers, and civil society organizations. Secure political backing of the digital solution and its strategic positioning to address urgent national priorities. Provide tools and resources, such as teacher training packages and cost estimates, to support the scale-up of digital learning initiatives.

### ***For education technology developers:***

Engage in continuous co-creation processes with teachers, partners and users to refine and improve the digital application. Address the evolving needs of teachers and learners by incorporating feedback into content and software updates, ensuring that the digital tools remain relevant and effective across diverse implementation contexts.

### ***For teacher training providers:***

Develop and deliver accredited teacher training programmes that are aligned with the digital learning initiative. Ensure these programmes are integrated into both pre-service and in-service teacher training systems to support sustained professional development.

# Annex I Current implementing partners

In education, UNICEF works with the ministries of education in the countries where it operates. Ministries of education are therefore stakeholders in the Initiative. Where ministries of education are mentioned in the list of implemented partners below, they took on specific responsibilities in the implementation of the Initiative, beyond coordination.

COUNTRY	PARTNERS
<b>Albania</b>	Agency for Quality Assurance in Pre-university Education (ASCAP) <a href="http://www.ascap.edu.al">www.ascap.edu.al</a> Observatory for Children's Rights <a href="http://www.observator.org.al">www.observator.org.al</a>
<b>Bosnia and Herzegovina</b>	Institute for the Development of Pre-university Education Canton Sarajevo <a href="https://irpo.ba">https://irpo.ba</a> Ministries of Education of Canton Sarajevo and Una Sana Canton Save the Children <a href="http://www.savethechildren.net">www.savethechildren.net</a> World Vision <a href="http://www.wvi.org">www.wvi.org</a>
<b>Bhutan</b>	Ministry of Education and Skills Development Monastic Education Council TashiCell
<b>Cabo Verde</b>	Ministry of Education <a href="https://minedu.gov.cv/">https://minedu.gov.cv/</a> Núcleo Operacional da Sociedade de Informação (NOSI) <a href="https://nosi.cv/en/web/guest/home">https://nosi.cv/en/web/guest/home</a>
<b>Greece</b>	Arsis <a href="https://arsis.gr">https://arsis.gr</a> Danish Refugee Council ELIX <a href="https://elix.org.gr/">https://elix.org.gr/</a> METAdrasi <a href="https://metadrasi.org">https://metadrasi.org</a> Ministry of Education <a href="http://www.minedu.gov.gr/">www.minedu.gov.gr/</a> Solidarity Now <a href="http://www.solidaritynow.org/">www.solidaritynow.org/</a>
<b>Italy</b>	API Social Cooperative (Agire Insieme Per l'Intercultura) <a href="http://www.aipicoop.it/">www.aipicoop.it/</a> ISMU Foundation (Iniziativa e Studi sulla Multietnicità) <a href="http://www.ismu.org/">www.ismu.org/</a>
<b>Kazakhstan</b>	Astana City Methodological Center <a href="https://astana-modern.edu.kz/?lang=ru">https://astana-modern.edu.kz/?lang=ru</a> International IT University <a href="https://iitu.edu.kz/en/">https://iitu.edu.kz/en/</a> Kazakhstan International Bureau for Human Rights and Rule of Law (KIBHR) <a href="https://bureau.kz/en/">https://bureau.kz/en/</a> Public Foundation 'Rodnik' <a href="https://shorturl.at/jBUBy">https://shorturl.at/jBUBy</a> The Legal Center for Women's Initiatives 'Sana Sezim' <a href="https://sanasezim.org/eng/">https://sanasezim.org/eng/</a>

<b>Lebanon</b>	Alpha Association <a href="http://www.alpha-association.info/">www.alpha-association.info/</a>
	Amel Association International <a href="https://amel.org/">https://amel.org/</a>
	International Rescue Committee (IRC) <a href="http://www.rescue.org/country/lebanon">www.rescue.org/country/lebanon</a>
	LOST <a href="https://lostlb.org/">https://lostlb.org/</a>
	Mouvement Social <a href="https://mouvementsocial.org/">https://mouvementsocial.org/</a>
	Save the Children <a href="http://www.savethechildren.net/">www.savethechildren.net/</a>
	War Child Holland <a href="http://www.warchild.net/">www.warchild.net/</a>
<b>Mauritania</b>	Assistance et Education (AED)
	Centre d'Accueil et de Réinsertion Sociale des Enfants en Conflit avec la Loi (CARSEC)
	Centre de Formation et de Promotion Sociale des Enfants en situation de Handicap (CFPSEH) <a href="http://www.cfpsesh.gov.mr/">http://www.cfpsesh.gov.mr/</a>
	Centre de Renforcement et d'enseignement des Langues (CREL)
	Connectivity Center of Mberra camp and Dar Naim Schools
	Ecole Nationale des Instituteurs (ENI)
<b>Mexico</b>	SOFIA Centre
	Radix <a href="http://www.radixeducation.org/">www.radixeducation.org/</a>
<b>Poland</b>	SOK Foundation <a href="https://fundacjasok.org.pl/">https://fundacjasok.org.pl/</a>
<b>Sao Tome and Principe</b>	Ministry of Education

# Endnotes

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# Acknowledgements

This report was prepared by Laetitia Antonowicz (UNICEF–Akelius Partnership Consultant) and Svetlana Poleschuk (Education Researcher, UNICEF Innocenti), with invaluable guidance from Bo Viktor Nylund (Director, UNICEF Innocenti), Cecile Aptel (Deputy Director, UNICEF Innocenti), Linda Jones (Education Chief, UNICEF Innocenti), Thomas Dreesen (Education Manager, UNICEF Innocenti) and Philippe Testot-Ferry (Global UNICEF–Akelius Partnership Coordinator). Special thanks to Joaquin Cárcelos Martínez Lozano (Education Researcher, UNICEF Innocenti) for facilitating the lessons learned harvesting workshop.

The research process greatly benefited from the support and valuable inputs provided by colleagues from the UNICEF offices and implementing partners of Albania, Bhutan, Bosnia and Herzegovina, Cabo Verde, Greece, Italy, Kazakhstan, Lebanon, Mauritania, Mexico, Poland, and Sao Tome and Principe.

The research team is deeply grateful for the constructive feedback and support during the peer-review process from Juan Pablo Giraldo Ospino (Education Specialist, UNICEF NYHQ), Auken Tungatarova (Education Specialist, UNICEF ECARO), María Luján Tubio (Education Specialist, UNICEF ROSA), Haritz Goya Lujambio (Education Specialist, UNICEF WCARO), Evans Atis (Education Specialist, Global Partnership for Education) and Maria Rebeca Barron Rodriguez (education technology team co-lead, World Bank Group).

The team would also like to thank Sahiba Minhas Turgesen, Adam Cathro, Kathleen Edison and Amanda Marlin for communication and editorial support, and Amparo Barrera for the administrative support, which made this work possible.

Copy-editing and design: Strategic Agenda

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**Suggested citation**

UNICEF Innocenti – Global Office of Research and Foresight, *Making Digital Learning Work: Lessons from the UNICEF–Akelius Digital Learning Initiative in 12 countries*, UNICEF Innocenti, Florence, October 2024.

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