

# UNICEF Regional Digital Learning and Transformation of Education Strategy for Europe and Central Asia



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# 1. Vision



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**At UNICEF we believe in the potential of education technology to transform and accelerate learning and skills development, improve the delivery of inclusive, equitable, relevant and quality lifelong learning for all children, and build resilient education systems that can contribute to the achievement of SDG4.**

This Regional Digital Learning and Transformation of Education Strategy (RDLS) for Europe and Central Asia (ECA) sets the vision, goals, focus areas and programmatic interventions for scaling up and sustaining UNICEF's work on digital learning and transformation of education systems. Achieving quality, equity and inclusion in education are UNICEF's guiding principles and the main signposts for this Strategy.

## Box 1. Terminology: EdTech and Digital Learning.

- **EdTech (Education Technology):** includes a wide range of technologies, hardware, software, services and digital resources used to conduct, support or enhance teaching and learning, and facilitate education management and operations.<sup>1</sup>
- **Digital learning:** teaching and learning process that entails the use of digital technologies, including in online or offline environments, using distance, hybrid or in-person modalities.<sup>2</sup>

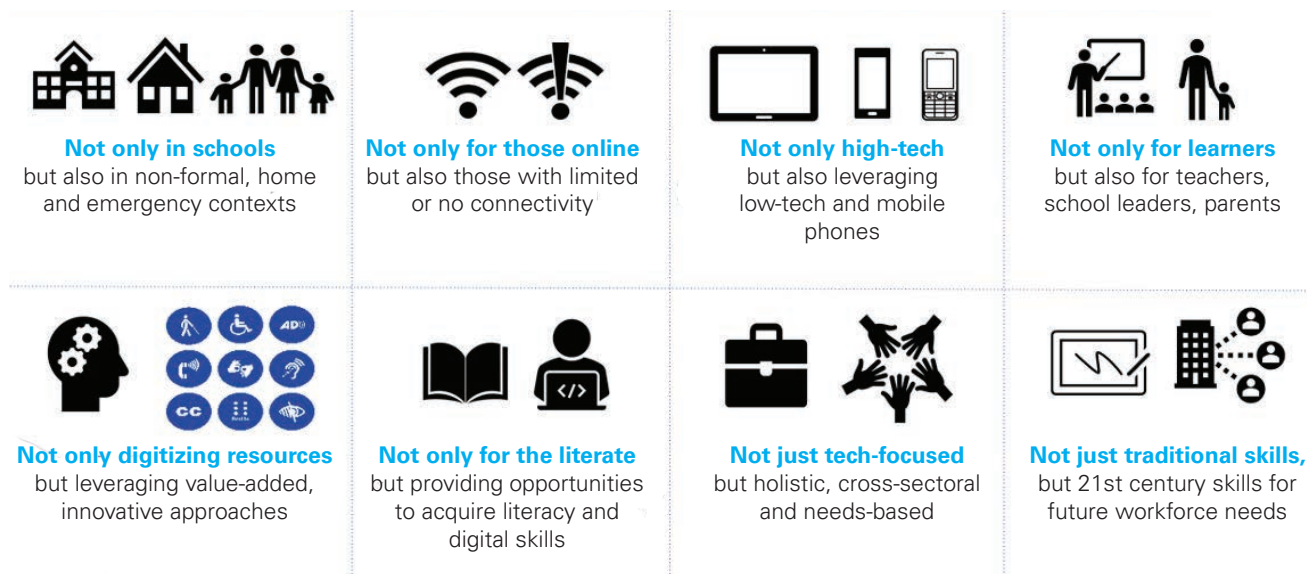
The Strategy outlines three main goals for ECA:

1. **Addressing the digital divide** to enable equitable access to quality and inclusive learning opportunities for all children;
2. **Maximizing edtech to improve learning outcomes** that empower all children to thrive;
3. **Strengthening edtech governance, preparedness and system resilience** to build quality education systems resilient to shock and fit for the 21<sup>st</sup> century.

This regional Strategy is aligned with UNICEF's global and regional Education Strategies, the Reimagine Education<sup>3</sup> initiative and UNICEF's global digital learning principles (See Figure 1). This Strategy prioritizes the use of edtech for effective teaching and learning, transforming education delivery and promoting digital and broader competencies and skills, placing learning, particularly for the most marginalized children, at the center.

It is hoped that through this Strategy, country and regional initiatives and programmes can approach edtech and digital learning as a

Figure 1: UNICEF's global digital learning principles



viable solution to improving learning outcomes, supporting teachers, promoting learner-centered pedagogical approaches, providing multiple and flexible learning pathways, and creating resilient and agile education systems.

That means integration of edtech in in-person, online and hybrid learning environments with intent to bring an added value, such as interactivity, accessibility and personalization. It also implies embracing strategic, needs-centric, well-planned, and sustained solutions, as well as a systems approach that leverages the potential of edtech to strengthen curricula, teaching and learning, assessment, policy, school operations and more.

Effective edtech integration requires coordination, strengthened capacity and empowerment of various key stakeholders to

implement digital learning agendas, including teachers, policymakers, school leaders, communities, parents/caregivers, academia, and other partners to collaborate and create quality digital learning experiences for children. For this reason, this Strategy will encourage focus on integrated, system strengthening approaches that focus on the entire digital learning ecosystem, leveraging partnerships both in and across countries, and at the regional and global levels.

Finally, this Strategy aims to ensure digital learning is not a separate agenda, but is an enabler of broader educational goals, responses, and initiatives for the region, and provides guidance to countries, no matter their stage of uptake of digital learning, to make sure it is systematic, relevant and transformative.



## 2. Situation Analysis



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### 2.1 Digital learning context in Europe and Central Asia

**While the use of edtech and digital learning had already been integrated in a number of education systems in the region prior to COVID-19 school closures, it was the response to the pandemic that gave an impetus to the accelerated digital transformation of education systems.** During the pandemic, ECA countries largely took up remote modalities to ensure the continuity of learning and mitigate the effects of school closures on learning.<sup>4</sup> Despite limited prior experiences with digital education in most countries, governments, supported by UNICEF and other partners, quickly deployed a mix of options to support remote learning. A UNICEF review of national educational responses to COVID-19 in Albania, Bosnia and Herzegovina, Georgia, Moldova, Montenegro, North Macedonia, Serbia, Türkiye, and Ukraine showed that asynchronous approaches were the most common, with pre-recorded TV or YouTube videos used most frequently.

Many countries also developed and launched national digital learning platforms and repositories for teaching and learning content to reach even the most marginalized children. Examples include akademi.al in Albania, e-school Armenia, okudemia.kz in Kazakhstan and the Education Information Network (EBA) platform in Türkiye, as well as national instances of the Learning

Passport<sup>5</sup> - a digital learning solution developed by UNICEF and Microsoft - in Kazakhstan, Kosovo, Kyrgyzstan, Montenegro, Serbia and Ukraine, among others. In Greece, Albania, Bosnia and Herzegovina, Italy, Kazakhstan, Serbia and others, the Akelius Digital Language Learning Course<sup>6</sup> has also been implemented in formal and non-formal settings, and provided an effective method for refugee and migrant students to learn foreign languages and develop foundational literacy skills.

**Teachers' digital and pedagogical skills were prioritized.** The Digital Learning Policy Landscape highlights that in countries such as Kosovo, Serbia, Montenegro and North Macedonia, in-service teacher training was prioritized at a national scale to equip as many teachers as possible with basic digital-pedagogical competencies. In addition, by the end of 2021, UNICEF had supported the training of approximately 449,000 teachers in the region on delivering digital, distance and blended learning.<sup>7</sup> In response to gaps identified in national needs assessments, UNICEF, with the financial support of the European Union, also designed a package of materials—including modules, manuals for teacher trainers, and digital courses<sup>8</sup> —to support the development of teachers' digital-pedagogical competencies.

## 2.2 Challenges

**While providing opportunities, the pandemic also brought to light multiple and interrelated challenges that continue to create significant barriers towards accessing equitable and up-to-date digital learning.** These include:



### DEVICE DIVIDE

Within schools, the availability of devices for learning remains low with great heterogeneity among countries. The number of personal computers per 15-year-old students in Eastern Europe is notably below the OECD average of 0.83.<sup>9</sup> The ratio is at or below 0.3 PCs per 15-year-old student in Albania, Bosnia and Herzegovina, Montenegro, Serbia and Türkiye, for example, with the rate at approximately 0.4 in Georgia and North Macedonia. Schools in the most remote areas lack appropriate and up-to-date ICT infrastructure, and capital and recurring costs for the procurement and maintenance of devices at all levels of education systems are not sufficiently accounted for in education budgets.



### CONNECTIVITY DIVIDE

According to ITU estimates, approximately 36 million 3-17 y.o. children in the region do not have Internet access at home.<sup>10</sup> While 89% of the children aged 3-17 living in the richest quintile of households in the region have access to the Internet at home, only 40% of their peers from the poorest quintile of households do so. The gap between rural and urban areas is also significant. While 66% of children and youth aged 25 and under in the ECA region have access to the Internet at home, only 45% of their peers living in rural areas do so.<sup>11</sup> Connection quality is also an issue - in Kazakhstan, for example, around 1.21 million students despite having access to the Internet do not have sufficient bandwidth to access digital learning resources.<sup>12</sup>



### SKILLS DIVIDE

Although improving, according to 2018 PISA results, 15-year-olds from the ECA region score lower on average in reading, mathematics, and science than their peers from OECD countries.<sup>13</sup> Beyond foundational learning, many children also lack media and information literacy, digital and transferable skills needed for safe, ethical and effective engagement online, and meaningful employment in the 21<sup>st</sup> century. According to the EU Kids Online survey results in Serbia in 2018, while students rate their digital skills as above average, more than a third of 9-12 y.o. students "do not know how to save a picture they find on the Internet."<sup>14</sup> According to Eurostat data, Bulgaria and Romania are at the bottom of the ranking where the digital skills of young people are concerned, with 58% and 56% of youth respectively having basic online skills only.<sup>15</sup>



### SOCIAL DIVIDE

Opportunities to develop digital skills are also correlated with social factors and broader societal inequalities. Children with disabilities, girls, those from the poorest families, children living in rural areas, Roma children, and refugee and migrant children are systematically excluded, are more likely to be on the wrong side of the digital divide, and disproportionately lack access to the Internet and devices needed for learning.

While girls in the region are increasingly connected and skilled, they still fall behind in STEM and digital skills.<sup>16</sup> For example, in Uzbekistan, the digital skills gap between men and women is 24%,<sup>17</sup> and unemployment impacts women (17.2%) more than men (12.1%).<sup>18</sup> Moreover, in the region, only 1 out of 3 of STEM graduates from tertiary education are young women.<sup>19</sup>

Roma children are among the most marginalized children in the region and are less likely than their peers in the general population to engage in early learning, complete primary and secondary education, and develop foundational skills.<sup>20</sup> For example, about 20% of Roma students in Ukraine and 30% in Croatia did not participate in remote learning during COVID-19 closures. Similarly, estimated one third of out of school children in the ECA region are children with disabilities.<sup>21</sup> The reasons vary from high levels of stigma and discrimination to expectations of parents, teachers and society that children with disabilities are best taken care of in specialized institutions. Furthermore, only 1 in 10 children have access to Assistive Technology (AT), and the lack of AT is one of the major reasons why children with disabilities experience higher levels of exclusion compared to children without disabilities.<sup>22</sup>

**The region also hosts more than 12 million refugee<sup>23</sup> and migrant children,<sup>24</sup>** a significant portion of whom face exclusion from education and the opportunity to receive quality learning. These educational challenges are exacerbated by factors such as poverty, gender inequality, language barriers, and insufficient social protection mechanisms.

**While many governments in the region invested heavily in the creation of digital learning platforms during the COVID 19 pandemic, a recent global mapping found significant gaps in their access and usability features.** Gaps persist in equitable, accessible, and interactive digital learning platforms and content in ECA (See Box 2).

### Box 2. Status of digital learning platforms in ECA.<sup>25</sup>

**14%** of platforms no longer exist or have not been updated since 2020.

**77%** of platforms did not have offline functionality.

**75%** of platforms did not have features that support accessibility for people with disabilities (e.g., colour contrast, captions, audio content, text size adjustments, or any content for special education).

**67%** of platforms analysed did not contain content that users could interact with (e.g., chatbots, forums, games).

**83%** of platforms were accessible on a basic smartphone.

The most common types of platforms were resource hubs (**77%**) and Learning Management Systems (LMS) (**13%**).

**There is also a lack of focus on student and teacher privacy and safety considerations in online spaces.** With proliferation of new technologies, students and teachers are offered myriad opportunities, but are also exposed to inappropriate or harmful content and risks online. According to the EU Kids Online survey results in Serbia in 2018, while students rated their digital skills as above average, half of 9-12 y.o. students did not know how to change their privacy settings on social networking sites.<sup>26</sup> Girls and young women are also at a serious risk of online discrimination, sexual harassment and bullying when navigating digital spaces.<sup>27</sup> As COVID-19 led to increased screen time for many children and families,<sup>28</sup> it brought to the forefront the continued importance around investing in both teacher and student online rights, safety and privacy.



**High quality teacher professional development practices, including for digital skills and learning, are lacking in many countries in the region.** Systems for ensuring quality recruitment, retention, preparation, and professional development of teachers remain inadequate, and teaching practices do not yet meet the diverse needs of all learners. Teachers often receive sporadic or one-off training rather than continuous professional development and support from experts and peers to develop digital learning competencies, and inclusive, learner-centered, and reflective practices.

In countries that had invested in teachers' digital skills prior to the pandemic, such as Montenegro or Serbia, teachers have displayed higher levels of digital competence, and they continue to use digital devices, content, and tools in their work.<sup>29</sup> In other countries in the region teachers still require more training on interactive and inclusive use of pedagogical and digital learning technologies and tools.<sup>30</sup> Moreover, prioritization of asynchronous and synchronous blended learning, and awareness of the potential of and digital skills for using edtech at classroom and school levels are still lacking in the region.

**Information on the quality of learning through distance and digitally supported education remains a challenge, as countries lack systems for monitoring learning outcomes.** Data shows that during the pandemic countries primarily relied on teachers to gather information on students' learning, reinforcing the importance for teachers to possess the competencies—such as in formative assessment and ongoing feedback—to identify and respond to students' learning gaps. Many countries never implemented monitoring systems to assess the extent to which children were reached with remote learning opportunities or how effective such opportunities were in achieving learning outcomes. This also highlights the need for countries to develop standards and related monitoring frameworks for digitally supported learning, and leverage the potential of digital technology to improve the availability of data on learning outcomes, as well as other aspects of teaching and learning.

## 2.3 Opportunities

**Digital learning can be the great equalizer of access to quality and relevant learning.** Having strong digital learning systems across the region that offer formal and non-formal programmes and multiple and flexible learning pathways, would allow students to access continued learning and content, learn at their pace, and develop foundational literacy and numeracy as well as digital skills for school, work, and life. There is also an opportunity for learners and youth not in employment, education, or training (NEET) to leverage digital solutions for career-related information, advice, and guidance.

**There is a growing commitment towards digital learning in the region that is reflected in the plethora of national digital learning strategies, action plans and initiatives** that countries have been developing and implementing. However, ensuring that digital learning is planned from the outset to be inclusive and equitable, and to support system resilience to crises will be key.

**There are opportunities to build on digital learning policies, frameworks, initiatives, and trainings that were initiated during COVID-19 to transform education systems.** While the latest pandemic forced countries to harness the potential of edtech as an emergency response to school closures at scale, there are now several opportunities to build on the lessons learned and achievements made to approach digital learning more holistically and strategically with a long-term vision.

Finally, **the surge of Artificial Intelligence (AI) has offered unprecedented opportunities, but also challenges** in and for education. As children in the region are increasingly using and interacting with AI technologies, it will be important to monitor, explore, and advocate for child-centered, equitable and ethical use of AI in education, assessing opportunities and risks, particularly to ensure that the most marginalized children and youth can also benefit.

# 3. Strategy

## 3.1 Vision, goals, and focus areas

The UNICEF Digital Learning and Transformation of Education Strategy is aligned with the Education Strategy for Europe and Central Asia, and aims to provide strategic direction for systematizing, scaling, and sustaining UNICEF's leadership and support to countries across the region in digital learning and transformation of education systems. The overall vision is:

***to unlock the potential of education technology to transform learning opportunities, make education systems more resilient, and ensure effective education delivery to achieve inclusive, equitable and lifelong learning for all children.***

In particular, UNICEF will focus on enabling environments and holistic approaches to edtech integration by placing learning, particularly for the most marginalized children, at the center, and addressing their needs within and outside of formal education systems in both development and emergency contexts. This also implies empowerment of various key stakeholders, such as caregivers, school leaders, teachers, communities, academia, policymakers and other partners to collaborate, coordinate and streamline various components that create quality digital learning experiences for children, and are driven by clear educational objectives and evidence.

This Strategy outlines **3 primary goals** that align with UNICEF's vision of harnessing the potential of edtech to enhance and broaden learning opportunities for millions of children at national, school and classroom levels:

- |   |   |  |
|---|---|--|
| <p><b>1</b> <b>Addressing the digital divide</b> to enable equitable access to quality and inclusive learning opportunities for all children;</p> | <p><b>2</b> <b>Maximizing edtech to improve learning outcomes</b> that enable all children to thrive;</p> | <p><b>3</b> <b>Strengthening edtech governance, preparedness and system resilience</b> to build quality education systems.</p> |
|---|---|--|

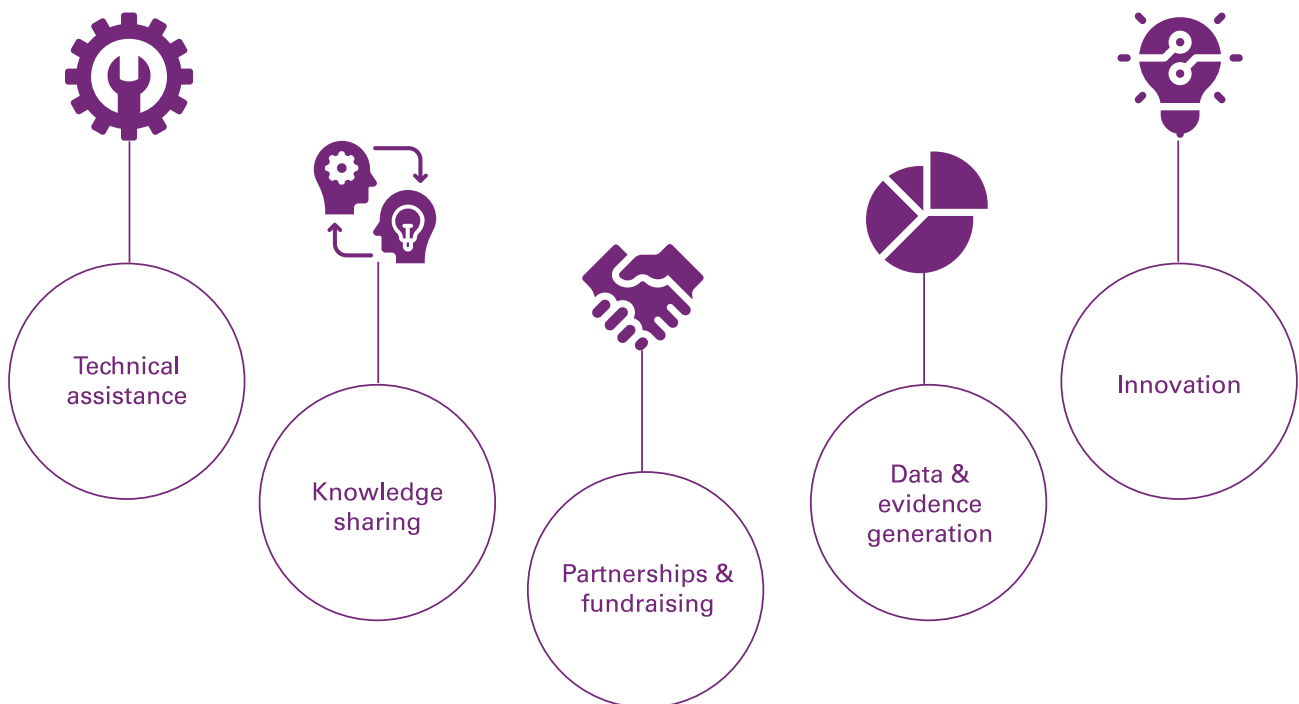
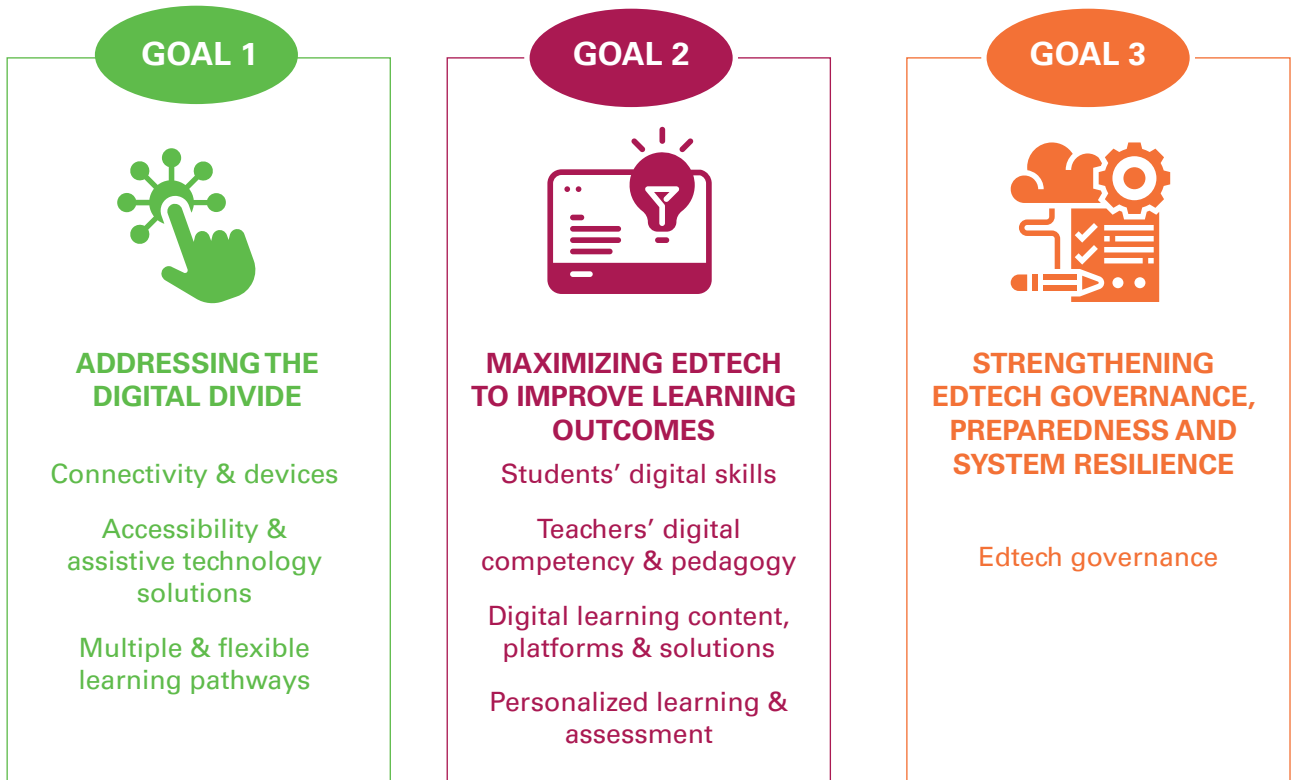
To achieve these goals, UNICEF will prioritize **8 focus areas** in the region.

1. Connectivity and devices
2. Accessibility and assistive technology solutions
3. Multiple and flexible learning pathways to reach and empower marginalized children and youth
4. Students' digital skills and literacy
5. Teachers' digital competency and pedagogy
6. Digital learning content, platforms and solutions
7. Personalized learning and assessment
8. Edtech governance

To support the implementation of these focus areas, UNICEF in ECAR will provide **5 main types of inputs**: technical assistance, knowledge sharing, partnerships and fundraising, data and evidence generation, and innovation.

Figure 2. UNICEF’s Digital Learning Strategy Framework for Europe and Central Asia

**TO UNLOCK THE POTENTIAL OF EDUCATION TECHNOLOGY TO TRANSFORM LEARNING OPPORTUNITIES, MAKE EDUCATION SYSTEMS MORE RESILIENT, AND ENSURE EFFECTIVE EDUCATION DELIVERY TO ACHIEVE INCLUSIVE, EQUITABLE AND LIFELONG LEARNING FOR ALL CHILDREN**



Each goal, focus area and enabling input are described in detail in the sections below.

## Goal 1: Addressing the digital divide



UNICEF will prioritize 3 key focus areas to tackle the digital divide in the ECA region:

1. Expand ICT infrastructure, primarily through connectivity and devices, to remote and hard-to-reach areas, leveraging multi-stakeholder partnerships.
2. Enhance edtech accessibility and encourage assistive technology solutions for children with disabilities.
3. Promote multiple and flexible learning pathways to reach and empower marginalized children and adolescents.

### Connectivity and devices

**UNICEF will continue to support countries to ensure that all schools are connected to the Internet and children have access to affordable and quality devices in a safe and age-appropriate manner.** At the same time, it is important that connectivity and devices are viewed as a means to lay the foundation to enable educational opportunities. Connectivity and device procurement should be accompanied by digital skills trainings for students and teachers, digital learning content and platforms, engaging and relevant digital learning solutions, and more.

To achieve this, UNICEF in ECA, in collaboration with Giga and Information and Communication Technology Division (ICTD), will focus on the following interventions:

- **Support countries in mapping digital connectivity of schools and assessing digital infrastructure.** Understanding the status, practices and potential barriers to adoption of technology is the first necessary step before introducing edtech. UNICEF will continue to work with governments to identify and map school connectivity needs, and support teachers and school leaders to conduct self-assessments of digital needs using existing tools, such as the Self-reflection on Effective Learning by Fostering the use of Innovative Education Technologies (SELFIE) tool.<sup>31</sup>

#### Examples of UNICEF efforts:

- In Kazakhstan, Kyrgyzstan, Uzbekistan, and Bosnia and Herzegovina, UNICEF has partnered with ITU on the Giga global initiative to support governments in mapping school location and connectivity status, and assessing available options for connecting off-the-grid schools to the Internet. So far, 21,100 schools have been mapped on Project Connect, which shows real-time connectivity of schools.<sup>32</sup>
- In Kosovo, as part of the new Kosovo Education Strategy, and with UNICEF support and advocacy, the Ministry of Education has allocated funds to equip all schools with devices, and has engaged with Ministry of Economy to ensure safe Internet connectivity in all schools.

- **Explore innovative models and foster multi-stakeholder partnerships to improve school connectivity and device procurement.** UNICEF will continue exploring existing and innovative models, intermediate and long-term solutions for providing quality connectivity, and support governments to partner with the private sector to procure technology and devices for learning, advocate for and broker in-kind contributions to deliver connectivity and devices to the most marginalized children.

**Examples of UNICEF efforts:**

- In Albania, UNICEF worked to address the digital divide by establishing Education Technology Hubs that are set up in schools, equipped with tablets, laptops and smartboards, and free Internet.
- In Serbia, as part of the “Bridging the digital divide in Serbia for the most vulnerable children” project, UNICEF has supported schools to establish edtech libraries, and learning clubs at 30 at-risk schools to allow access for the most marginalized children.<sup>33</sup>
- **Establish standards to promote safe, secure, and age-appropriate use of technologies and devices** according to what will improve learning, what technologies can meet that need, and what support is required to make learning happen.

**Examples of UNICEF efforts:**

- In Bosnia and Herzegovina, UNICEF developed Basic Technical Standards for Tools of Information and Communication Technology in Education Systems<sup>34</sup> to contribute to setting norms and standards for computer equipment and supported infrastructure in educational institutions in the country.

**Accessibility and assistive technology solutions**

**As part of the regional priority to support inclusive education for children with disabilities, UNICEF will continue supporting accessibility of digital learning content and platforms, and use of assistive technologies and solutions so that children with disabilities can access and participate in learning.**

UNICEF is strongly committed to ensuring edtech is accessible to children with disabilities, highlighted through its Disability Inclusion Policy and Strategy (2022-2030).<sup>35</sup>

**Box 3. What is assistive technology?**

In an education context, assistive technologies are tools explicitly designed to enhance learning for persons with specific disabilities by allowing them to become mobile, communicate more effectively, see, and hear better, or participate more fully in learning activities.<sup>36</sup> They may include devices such as phonetic spelling software, text-to-voice applications, picture-based communication, talking calculators, braille note takers, and much more. Assistive technologies reduce, if not eliminate, barriers to help individuals with special educational needs and disabilities participate in learning and related tasks, which otherwise might not have been possible.<sup>37</sup>

To implement this commitment, UNICEF will focus on the following interventions:

- **Promote and support a comprehensive approach to accessibility as well as provision and use of assistive technology (AT) for learning at three levels:**
  - **National level:** UNICEF will work with Ministries of Education to bring about legislative changes, financing and institutional set-up for mainstreaming AT into the education process and support capacity development of national systems to ensure accessibility of digital learning platforms and solutions, and provide AT through development of national catalogues.
  - **School level:** UNICEF will promote a whole school approach by strengthening teachers’ and school leaders’ capacity in utilizing AT, and ensuring adequate funding.
  - **Community level:** UNICEF will advocate for removing stigma and discrimination around the use of AT, and support parents/caregivers and their representative organizations to understand the benefits and potential of AT.



### Examples of UNICEF efforts:

- In Serbia, UNICEF is developing a national platform that will host an AT catalogue with tutorials and information on resource centers and their services, as well as digital resources for schools, teachers, parents, students, and other stakeholders.
  - In Bulgaria, UNICEF and the Ministry of Education and Science developed the “Help Me Thrive”<sup>38</sup> platform to address the lack of accessibility, and to serve as a hub for tailored resources, including video and adapted lessons for children with special needs.
  - In Armenia,<sup>39</sup> UNICEF supported policy development for AT, introduced a national list of low- and high-tech AT for children with disabilities in education, revised financial mechanisms, established AT workstations (motor; sensory; speech and language; and communication), and provided AT to schools as well as training for teachers and specialists.
- **Advocate for and evaluate accessibility of digital learning solutions and content.** UNICEF will continue to work with partners and governments to ensure that digital learning solutions, platforms and content in general are accessible and meet the minimum standards. The potential of AI in this regard will also be explored. Such solutions and interventions should also be backed by evidence to assess effectiveness of tools for target learners.

### Examples of UNICEF efforts:

- In Türkiye, to ensure that children with disabilities in early childhood education and primary school levels are supported to learn in hybrid settings, 22,000 existing learning activities for children with disabilities were digitalized, and new digital learning content on basic literacy, numeracy and life skills was developed.<sup>40</sup>

- **Promote Augmentative and Alternative Communication (AAC) tools and programmes.** UNICEF views AAC technologies as a key element to equitable digital learning that has been identified as one of the main gaps in providing AT, particularly for children with communication difficulties.

### Examples of UNICEF efforts:

- UNICEF ECARO has developed a Framework to build national capacity for AT and AAC for children,<sup>41</sup> as well as a Guide for teachers and schools on how to use AT in education.<sup>42</sup>
- In Bosnia and Herzegovina,<sup>43</sup> UNICEF initiated the introduction of AT in the context of inclusive education, Boardmaker 7, an Augmentative and Alternative Communication (AAC) solution in two pilot locations: RS and the Sarajevo Canton. UNICEF procured AAC software, trained 54 professionals, and developed the first AT catalogue for inclusive education in the country.
- In Bulgaria, UNICEF conducted a study<sup>44</sup> to assess attitudes, knowledge, competencies, and use of AAC by over 200 specialists from Regional Inclusive Education Centers, which pointed to overall low level of familiarity and use. The findings triggered legislative changes, and capacity building of professionals and parents. UNICEF also developed the first AAC Catalogue<sup>45</sup> featuring more than 80 AAC tools. In 2023-2024 UNICEF is supporting the Ministry of Education and Science to build a national AAC team and establish regional AAC Communities of Practices in 13 regions of the country.

## Multiple and flexible learning pathways to reach and empower marginalized children and youth

**UNICEF will continue to leverage innovative approaches and edtech solutions in providing inclusive and equitable access to quality, accredited and certified learning opportunities for vulnerable children and young people,** including girls, out-of-school children, adolescents not in education, employment, or training (NEET), refugees and migrant populations. It is imperative to bridge access gaps by ensuring that marginalized children and youth have access to devices and connectivity, online safety and privacy, digital skills and literacy, and more.<sup>46</sup>

UNICEF seeks to do this in the following ways:

- **Explore the use of low- or high- tech to facilitate context-driven multiple and flexible learning pathways as part of formal and non-formal education** for marginalized children through catch-up and remedial classes, bridging and accelerated education, second-chance education, skills development training and apprenticeships that reinforce foundational and transferable skills. This includes edtech tools, solutions and approaches that can facilitate recognition, validation, and accreditation of non-formal learning outcomes, as well as bridging programmes to allow for transition to formal education systems.

### Examples of UNICEF efforts:

- In Romania, Educational Hubs were established to provide Ukrainian refugee adolescents with a learning space and support to follow the Ukrainian curriculum online, with access to digital devices and connectivity. There are 14 Educational Hubs across the country, which are hosted in educational facilities, including schools. Ukrainian children attending classes in Romanian schools can also attend Ukrainian classes online in the afternoon. Extracurricular activities, host country language lessons, and integration support are provided to promote social integration.
- **Set up monitoring systems for hybrid learning and multiple and flexible learning pathways.** During COVID-19, many countries did not implement monitoring systems to assess the extent to which children were reached with remote learning opportunities or how effective such opportunities were in achieving learning outcomes. UNICEF will support countries to implement stronger monitoring and data collection systems that would address these gaps and improve the overall integration of refugee learners, as well as develop a model to support learning through multiple pathways.



## Goal 2: Maximizing edtech to improve learning outcomes



UNICEF will continue to work at multiple, connected intervention points to leverage technology to improve learning outcomes and build capacity at all levels. There are 4 focus areas under Goal 2, all of which are interconnected and build on one another to ensure resilience, preparedness for crises and demands of the future:

1. Improving digital skills and literacy of students.
2. Supporting teachers to develop digital competencies needed for student-centered, inclusive, quality teaching.
3. Promoting quality, relevant, and engaging learning content, digital learning platforms and solutions.
4. Using edtech to provide personalized learning and assessment.

### Students' digital skills and literacy

Digital skills and literacy are a growing part of any approach to skills development. These are featured in UNICEF's global framework on transferable skills,<sup>47</sup> which seeks to prepare children and adolescents for school, work, and life. UNICEF promotes a holistic approach to

digital literacy that emphasizes the linkages between traditional and digital literacies. Interventions to support this focus area are multifaceted and interconnected. Key actions include:

- **Develop tools and frameworks to guide development and assessment of digital literacy and skills.** Frameworks are a necessary starting point as they define the boundaries of what constitutes digital literacy and skills, and inform curricula and assessments, such as the European Commission's DigComp Framework.<sup>48</sup> Despite using a range of labels (e.g., digital literacy, skills, citizenship), they broadly converge around the idea of a set of competencies that include technical as well as transferable skills. Implementing digital literacy programmes effectively requires more than simply importing a successful programme from elsewhere. Beyond choosing a framework, an integrated approach to digital literacy and skills involves undertaking a preliminary diagnostic review of the local context, developing operationalization guidelines, and conducting impact assessments. UNICEF will continue to provide countries with technical assistance in developing policies, digital literacy frameworks, curriculum guidelines and practical tools.
- **Introduce and integrate digital literacy and skills into national pre-primary to upper-secondary curricula and education programmes.** UNICEF will continue to work with Ministries of Education to integrate digital skills frameworks in national curricula. This is also in line with the European Union's economic and investment plan for the Western Balkans, which includes a strong focus on digital literacy and adapting education systems to knowledge-based economies.
- **Leverage digital solutions and develop targeted initiatives to provide skills building opportunities and employability support to:**
  - **Girls** by leading interventions that advance their digital and STEM skills and participation, and empowering them through learning content, resources, training, and mentoring opportunities.

- o **Refugee children and youth** by ensuring their continued learning and integration in host countries, skills development, access to information and relevant resources through existing and available digital solutions and tools, including mobile and blended learning, and innovative programmes. These should take into account holistic needs of refugee and migrant children, adapting solutions to each of the refugee contexts, and accounting for their voices and participation with a long-term view.
- o **Adolescents and youth not in employment, education, or training (NEETs)** by promoting their access to career-related information, coaching and guidance. Digital platforms developed could also be used to link NEET adolescents and youth to livelihood opportunities. Examples from elsewhere include using web- or app-based solutions that provide career information and remote mentoring on job-seeking and entrepreneurship.<sup>49</sup>

### Examples of UNICEF efforts:

- UNICEF Offices in Armenia, Bosnia and Herzegovina, Moldova, Kazakhstan, Kosovo, Kyrgyzstan, Tajikistan, Serbia, Ukraine, and Uzbekistan have implemented dedicated programmes that provide training and mentoring to equip girls with 21st century skills, including digital skills.<sup>50</sup> In Kazakhstan,<sup>51</sup> UNICEF and Al-Farabi Kazakh National University launched the 'UniSat Nanosatellites educational project for girls and young women.' This skills-based programme has aimed to develop the knowledge and competencies of girls and young women aged 14-35 years in the development of nanosatellites, as well as to improve their transferrable skills. In Uzbekistan,<sup>52</sup> UNICEF, together with the Ministry of Employment and Labour Relations and UNDP, adapted the AflaYouth programme for Uzbekistan, which aims to improve the employability and income-generating opportunities of girls and boys (ages 16 to 24). In Azerbaijan,<sup>53</sup> UNICEF-supported skills programmes include STEM at the formal education level, along with digital literacy skills at the informal education level. Across 10 regions, 100 girls gained basic digital literacy skills as a result of the project launched by UNICEF in partnership with the Youth Foundation in 2022.
- In Georgia, UNICEF and the Business and Technology University have launched an eight-months training programme to build digital skills of the most vulnerable young people, which is one of the partnership projects between UNICEF and the business community. The final phase will be a career bootcamp giving young people an opportunity to meet with potential employers and explore employment opportunities.<sup>54</sup>
- In Greece, Italy, Serbia, Albania, Bosnia and Herzegovina, Kazakhstan, and other countries, UNICEF and Akelius Foundation collaborated to develop and implement the Akelius Digital Language Learning Course, promoting social inclusion, allowing refugee and migrant children to learn their host countries' languages to be better integrated into national education systems.<sup>55</sup>

- **Cultivate awareness of online safety and privacy, cyberbullying, and violence.** Providing digital skills trainings to teachers, parents/caregivers and students is key to raising awareness of their rights online, risks in navigating online spaces, disinformation,

misinformation, hate speech, and use of edtech in an age-appropriate manner so that they are able to mitigate these. UNICEF will work with governments and schools to embed child online protection within broader school safety policies and strategies.



### Examples of UNICEF efforts:

- In Ukraine, UNICEF together with the Ministry of Digital Transformation and with support from USAID, launched educational videos on “Media literacy in a time of pandemic”. The course consists of six episodes starring Ukrainian celebrities exploring their own ability to identify fake news.<sup>56</sup>
- In Bulgaria, UNICEF organized the first online youth hackathon where youth presented their 5 solutions and projects on media literacy to address cyberbullying, fake news, etc.<sup>57</sup>
- UNICEF Regional Office for Europe and Central Asia produced a study on “Child Online Protection in and through Digital Learning: Considerations for Decision-Makers.”<sup>58</sup>



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## Teachers' digital competency and pedagogy

**UNICEF recognizes the centrality of teachers and the importance of teacher professional development. UNICEF will continue to prioritize teachers' digital and pedagogical competencies, from pre-primary to upper-secondary education levels.** Key interventions include, but are not limited to, the following:

- **Support governments in reforming teacher training systems and policies from pre-primary to upper-secondary education levels to integrate digital competencies.** UNICEF will provide technical assistance to governments in developing and/or revising and implementing national digital competency frameworks and resources for teachers, based on existing guidelines, such as the European Framework for the Digital Competence of Educators (DigCompEdu)<sup>59</sup> and UNICEF ECARO Educators' Digital Competence Framework.<sup>60</sup> Such frameworks should then guide teacher pre- and in-service training curricula and programmes, teacher certification, assessment, appraisal, promotion, etc.

### Examples of UNICEF efforts:

- UNICEF ECARO has developed the Educators' Digital Competence Framework<sup>61</sup> with 5 accompanying modules to empower teachers, improve online teaching and boost innovation in education, as well as to provide a common frame of reference that can be adapted in response to different needs.
- In Albania, UNICEF supported the government in developing ICT Competency Standards for Teachers, which were endorsed by the Ministry of Education.
- In Serbia, UNICEF supported the development of several iterations of teachers' digital competency frameworks.
- **Support teacher preparation and training to strengthen quality, inclusive, gender-sensitive and personalized pedagogy through the use of edtech tools and innovative approaches.** Teachers require more support in facilitating effective, engaging, personalized and inclusive digital learning to ensure that all children can benefit. To enable teachers to meaningfully integrate edtech in teaching and learning, UNICEF will support governments to upskill teachers in both digital and pedagogical competencies through teacher trainings and relevant



resources, linked to the regional agenda on inclusive education and teacher professional development, prioritizing teachers' preparedness in providing learning adjusted to the pace and levels of different children.

### Examples of UNICEF efforts:

- In Montenegro, through the regional DG NEAR funded project in cooperation with the Bureau for Education, over 20% of teachers received training in using digital tools in teaching in a quality and inclusive manner, reaching almost 50% of all students in primary and secondary schools in the country.<sup>62</sup>
  - UNICEF in Bosnia and Herzegovina supported the development of an online platform, DigiEdu,<sup>63</sup> hosted by the University of Sarajevo, for teacher professional development, with 10 courses currently available.
  - In Serbia, UNICEF supported a teacher professional development institute to develop a digital platform for teachers' online and blended learning. 300,000 of online/blended training participants have used this platform.
  - In Türkiye, UNICEF, in collaboration with the Ministry of National Education, will implement the "Digital Ecosystem for Teacher Training" project, where an initial cohort of 200,000 teachers and other school personnel will undertake online digital skills training. The initiative will provide an online training platform offering 120 hours of interactive modules on digital skills. Teachers will participate in content development phases and collaborate in eight teacher training labs.<sup>64</sup>
- **Promote a blended/hybrid teaching approach** where teachers can incorporate various edtech tools and solutions in various learning environments (including in-person classrooms), and not only during emergencies or school closures. This can enable more engaging, efficient, as well as personalized learning, but requires teachers to possess digital skills and pedagogy to adapt to different contexts and needs, and switch seamlessly between different activities, modalities, and tools.

### Box 4. What is blended learning?

The European Commission defines blended learning as "the term used to describe when a school, educator or student takes more than one approach to the learning process. It can be a blend of school site and other physical environments (companies, training centres, distance learning, outdoor, cultural sites, etc.) or blending different digital and non-digital learning tools."<sup>65</sup>

- **Empower school leaders to create a favorable and enabling school environment for teachers and learners to harness the potential of edtech.** UNICEF will support school leaders and their readiness and skills as enablers for school-level innovation, empowerment of teachers, peer coaching and learning circles, and strategic use of technologies for school management and planning, and teaching and learning to promote schools as digitally competent educational organizations.

## Digital learning content, platforms, and solutions

**UNICEF will support governments in ensuring quality, relevant, age-appropriate, and curriculum-aligned digital learning content, platforms and solutions.** This aligns with the global flagship initiative led by UNICEF and UNESCO, Gateways to Public Digital Learning,<sup>66</sup> that aims to ensure that every learner, teacher, and family can easily access, find, and use high-quality and curriculum-aligned digital education content. For this, UNICEF will prioritize the following interventions:

- **Promote age-appropriate, learner-centered, interactive, engaging and accessible government-endorsed digital learning platforms and solutions, and assess their quality.** Considering that 77% of digital learning platforms in ECA were resource hubs and only 13% were LMS,<sup>67</sup> UNICEF will work with governments to assess quality and promote relevant and more engaging and interactive digital learning platforms and

solutions that allow for personalized learning and assessment, are backed by evidence generation and improvement of learning outcomes, and enhance teaching and pedagogical approaches.

- **Help ensure digital learning content is age-appropriate, gender-sensitive, engaging, inclusively designed, and relevant to learners' needs.** Digital learning content should be interactive, engaging, inclusive, relevant, and educational, aligned with national curricula and user needs. UNICEF will support countries in developing standards, content management plans as well as innovative approaches (such as gamification and other edutainment approaches)<sup>68</sup> for different groups of children and youth to facilitate learning and skills development. To this end, UNICEF will develop tools and resources to support countries in planning, developing, using and evaluating digital learning content that responds to educational goals. UNICEF will also advocate for and support open digital learning resources that can be shared across the region and globally. At the same time, there should be a balance between high quality interactive content and optimization for low connectivity settings, as marginalized students may not always have access to curated digital learning content. This can be achieved by allowing for content and platforms to be downloadable and usable offline.<sup>69</sup>

#### Examples of UNICEF efforts:

- In Montenegro, UNICEF supported the development of quality standards for digital textbooks and auxiliary digital educational materials.<sup>70</sup>
- In North Macedonia, UNICEF has partnered with Think Equal (UK) and Svetot na Bibi to produce a series of cartoons and fun educational materials to support the development of social and emotional skills in pre-school aged children. The materials are freely available to all parents, teachers, and caregivers.<sup>71</sup>

## Personalized learning and assessment

**UNICEF strongly believes in harnessing edtech's potential to provide personalized and adaptive learning approaches that will allow teaching and learning at the right level.**

A key component of digital personalized learning is the continuous collection of data on learning outcomes and skills. Technological advancements have also opened avenues for a new generation of approaches to assessments. However, equity and data privacy must be ensured so that all learners can benefit from quality educational opportunities.

### Box 5. What is digital personalized learning?

Digital personalized learning can be defined as any technology that enables or supports learning based on particular characteristics of relevance or importance to learners. Some examples include edtech that adapts educational content based on learners' preferences, age, prior knowledge, cultural contexts and learning needs, among others. By capturing learning patterns and data, it can adjust the pacing to allow students to have more control over their own learning journeys, and supports teaching at the level of each individual student.<sup>72</sup>

As such, UNICEF will:

- **Promote equitable access to effective digital personalized learning opportunities and pedagogy, and engage with other stakeholders in this field.** Digital tools can be leveraged to support adaptive teaching to meet students' individual learning needs, and build foundational numeracy and literacy skills for lifelong learning. UNICEF will support countries in evaluating and planning for digital personalized learning opportunities and solutions, in collaboration with key actors.

- **Explore innovative digital tools and approaches to reimagine and embed assessment throughout the teaching and learning process, and support countries in planning and testing assessment strategies and tools.** Edtech solutions can allow education systems to shift away from purely traditional assessment methods towards more responsive, adaptive, universally designed, flexible and personalized assessment approaches in order to measure learning (particularly more complex competencies), provide timely feedback, and gather actionable insights. Additionally, capacity building is needed to prepare and support educators in designing and deploying formative assessment, and using assessment data, while also ensuring security and privacy of student data.
- **Continue to explore the potential of AI for digital personalized learning and assessment, while advocating for data protection and privacy policies.** Data collection is one of the key components of digital adaptive and personalized learning through the application of AI across various solutions, which are increasingly an integral part of teaching and learning processes. However, more attention needs to be paid to safeguarding children's data and child-centered data governance. Their data must be treated differently<sup>73</sup> to ensure privacy and protection.<sup>74</sup>
- **Advocate for development of national technology-enabled assessments** that provide regular and systematic data on students' and teachers' learning outcomes and digital skills to inform policymaking, teaching and learning practices, and address gaps in national learning data.

#### Examples of UNICEF efforts:

- In Bulgaria, UNICEF developed an assessment tool as part of the personalized online catch-up programme on foundational numeracy and literacy and numeracy.



## Goal 3: Strengthening edtech governance, preparedness and system resilience



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UNICEF will continue its work on education system strengthening with a focus on long-term resilience. UNICEF will support countries to institutionalize their commitments to digital learning and transformation of education systems, and to the development or strengthening of quality, inclusive digital learning ecosystems through education sector analysis, planning, financing, and education management. Full government ownership and accountability would be the driving pillar.

As governments increasingly take up digital learning and explore possibilities to establish digital accountability mechanisms, UNICEF will continue to focus on ensuring that the most marginalized families are included in these processes.

### Edtech governance

Resilient education systems are governed by strong institutions, policies and cross-sectoral collaboration and coordination. UNICEF will prioritize the following interventions within this focus area:

- **Provide technical guidance and assistance in development, planning and implementation of national digital learning strategies that include plans for sustainable financing.** Having strong digital learning policies and Master Plans, as well as education sector plans that integrate digital learning is foundational in building resilient education systems. Countries that were best prepared to respond to educational disruptions during the pandemic were those that could build on pre-existing Master Plans for ICT in Education.<sup>75</sup> UNICEF will encourage for these policies to be equitable and inclusive, and developed with participation of a wide range of stakeholders, and that the process is fully owned by the government. It is also essential that M&E mechanisms and evaluation be put in place to continuously reflect on lessons learned for future enhancement and improvement.<sup>76</sup>

### Examples of UNICEF efforts:

- In Moldova, UNICEF is supporting implementation of the “Education-2030” Strategy and its implementation programme developed by the government. One of the main objectives of the Strategy includes effective implementation of digital technologies.<sup>77</sup>
- In Bosnia and Herzegovina, UNICEF and UNESCO contributed to a breakthrough in education policy: all 16 education authorities agreed on the Statement of Commitment for TES 2022, and the government endorsed the Guidelines for Online and Blended Learning, paving the way to transform the education agenda, with a focus on digital education.<sup>78</sup>
- In Montenegro, UNICEF supported the government in developing the first Education System Digitalization Strategy for 2022-2027.<sup>79</sup>
- In Albania, UNICEF supported the development of the National Education Strategy 2021-2026, with one of the pillars focusing on digital education.
- In Poland, UNICEF, has been working with the Ministry of Education and Science to ensure the new national digital learning policy pays sufficient attention to refugees and marginalized children.



- **Support countries to strengthen national education data management, particularly Education Management Information Systems (EMIS).** Multiple countries have established centralized information systems in line with the digitalization of education system administration, albeit with varying outcomes. Oftentimes, however, different databases and information systems are not created to be compatible with one another, even when created within the same sector. As such, UNICEF will continue to support countries in ECA to improve EMIS, and to integrate data analytics from learning management systems with existing EMIS to improve the validity, reliability and relevance of education data. An integrated digital learning monitoring framework for EMIS will be a powerful resource for informed and evidence-based decision-making.

#### Examples of UNICEF efforts:

- In Bulgaria, UNICEF supported the Ministry of Education and Science to develop a module for EMIS to support cross-sectoral collaboration to identify out-of-school children and for dropout prevention.
- In Kyrgyzstan, every year, UNICEF has supported the Ministry of Education and Science to increase data quality and coverage in the EMIS, now available online, to make it interoperable with other information systems, and enhance data visualization and use.<sup>80</sup>
- In Romania, UNICEF supported the Ministry of Education to develop a module for EMIS to monitor as well as to potentially prevent and reduce school and classroom level segregation based on 5 national criteria. This module allows the Ministry to monitor and generate reports for schools to assess their levels of segregation, and take action based on the real time situation.<sup>81</sup>
- **Monitor and gather data on children's digital literacy levels and needs** to guide digital learning policy and programme development. Despite the overall awareness of and attention given to the importance and value of digital literacy, more disaggregated and comparative data is needed on children's

digital literacy levels. There is a need to know how children engage online, their use of digital technologies, platforms, and media, and how this links to development of digital literacy, especially in low- and middle-income countries.<sup>82</sup>

#### Examples of UNICEF efforts:

- Serbia participated in EU Kids Online<sup>83</sup> Survey to collect quality scientific data on the use of the Internet and digital technology by children and young people, and to expand the scientific base that will serve to empower children and young people in the digital space.<sup>84</sup>
- **Provide guidance on policies and procedures to evaluate the quality and safety of edtech solutions, and data use and protection.** UNICEF will work with governments to develop standards for deploying edtech. This includes developing acceptable use and data protection policies that build on global guidances, such as UNICEF's "Data Protection in Schools Guidance for Legislators, Policy Makers and Schools".
- **Foster mechanisms for cross-sectoral collaboration and decision-making at national and school levels.** For quality digital learning to be delivered at a national level, Ministries of Education, Finance and Digital Transformation together with schools and the wider edtech community need to plan and coordinate resource implementation efforts, where teachers and learners are involved in the process (whole-government and whole national approach). In some countries in the ECA region, this level of coordination is not occurring. Local governments and schools often have the autonomy to endorse specific digital learning platforms, procure digital devices or organize teacher training programs on digital learning. As part of digital learning policy development and planning, closer collaboration, and coordination between and within government agencies and schools will be encouraged.



- **Advocate for equitable and flexible systems and models of education financing, and support governments in planning the capital and recurrent costs of digital learning.** Securing sufficient finance is currently a significant obstacle to scaling up the use of edtech. Meaningful investment in the edtech ecosystem will require more resources, including public funding and capital investments. Key cost components related to infrastructure include but are not limited to connectivity, electrification, and devices. Recurrent costs include professional development, content development, administrative systems, and data usage. Moreover, it is important to ensure that school funding is responsive to school contexts and learner needs, including grants for inclusive education, improvement of learning outcomes, prevention of drop-outs, etc.
- **Facilitate public-private partnerships to mobilize resources that support digital learning.** A broad coalition of actors will need to be formed to cover costs and deliver the transformation potential of edtech. Ministries

of Education cannot fix, or in many cases even initiate, the work to tackle access barriers and quality of entire education systems on their own.

- **Support governments in documenting and scaling innovations developed through pilots.** Together with the Learning Innovation Hub and other partners, UNICEF in ECA will not only support assessing the impact of digital learning solutions on learning, but also help governments in learning from and leveraging such successful cases and models to be integrated in national education systems that bring an added value.
- **Advocate for equity, inclusion, and ethical use of frontier technologies in education, including AI.** The potential and risks of AI have not been sufficiently studied, explored, and utilized, particularly in classroom settings and how it can augment learning and facilitate skills development. UNICEF will promote child-centered approaches to using AI, and advocate for equity, inclusion, and safety.



# Enabling inputs

Each country in the region will have a different set of needs based on where they are in the process of education system digitalization and the development of digital learning ecosystems. UNICEF will work closely at the national and local levels to customize focus areas. Regardless of which approaches are selected at the country level, UNICEF will support implementation in five primary ways: technical assistance, knowledge sharing, partnerships and fundraising, data and evidence generation, and innovation.



## Technical assistance

UNICEF Country Offices lead on digital learning and transformation of education, working closely with national governments and stakeholders. UNICEF Regional Office will collaborate with, provide, and mobilize technical support to Country Offices, governments and other key stakeholders for digital learning planning, implementation, deployment, evidence generation, etc. This will be achieved through remote and in-country technical support.

Based on needs identified at country level, UNICEF Regional Office will continue to develop relevant regional resources and toolkits, and support countries' adaptation and uptake of these resources in their work on digital transformation of education.



## Knowledge sharing

UNICEF will continue to facilitate cross-country sharing and knowledge exchange opportunities. This will be achieved through development of case studies, webinars, communities of practices and regional events on various themes related to digital learning and transformation of education systems. Country study visits will also be facilitated to connect countries, promote cross-country sharing of best practices and lessons learned. In collaboration with Giga, knowledge and capacity building opportunities will be offered to strengthen national capacities on policy, regulatory frameworks and procurement for school connectivity.



## Partnerships and fundraising

UNICEF will continue building strong and effective partnerships at the regional and country levels to increase scope and impact of our work on digital learning and transformation of education. UNICEF will collaborate closely with other UN organizations (such as UNESCO and ITU), and participate in high-level events for education ministers, stakeholder forums on digital education, and others to raise the profile of inclusive digital learning and education digitalization in the region, and to ensure that equity features prominently in regional discussions. UNICEF will engage key partners, such as the European Union, International Financial Institutions (IFIs), governments, private sector, civil society, academia and others through regional multilateral and bi-lateral meetings where the Regional Office will continue to advocate for digital technology to be leveraged to support quality, inclusive learning for the most marginalized children and for equity-based funding.

Internal collaboration and coordination within UNICEF are also important to ensure alignment, management of resources and a whole system approach. This includes HQ-Programme Group, Public Partnerships Division (PPD), Learning Innovation Hub, UNICEF Innocenti, Information and Communication Technology Division (ICTD), as well as different sectors of UNICEF engaged in digital transformation.



## Data and evidence generation

The Regional Office will continue to generate evidence on the effect of digital learning solutions on learning outcomes, and document good practices in the implementation of digital learning strategies and programmes across the region and globally. Setting up and increasing capacity of monitoring and evaluation systems to improve digital learning access, quality and inclusion will be a priority. This will facilitate transparency, accountability, and flexibility in designing and implementing digital learning at the regional, national, and local levels.



## Innovation

Simply using and implementing edtech for teaching and learning does not automatically equate to innovation. Throwing technology at a problem without purpose or a long-term vision can oftentimes worsen it. As such, first and foremost, technological innovation requires pedagogical innovation. Technology will not replace teachers, but eventually, “teachers who use technology will replace those who do not.”<sup>85</sup> This mandates prioritizing teachers and their digital and pedagogical competencies, but also overall school environments that can enable them to adopt new and learner-centered approaches, and innovate within and outside of classrooms. As covered under Goal 2, focus area 2, UNICEF will continue to

prioritize teachers’ digital skills, innovation, and pedagogical leadership.

Secondly, innovative and creative strategies to ensure that children are met where they are on their learning journeys through the use of edtech tools and platforms can ensure more equitable, open and engaging learning experiences that allow children to learn, but also do so through play. Such approaches as ‘edutainment’ (entertainment-education) that harness various types of technologies, tools, and solutions to bring learning through entertaining and accessible means is one such example. Another example includes personalized and adaptive learning strategies and solutions using AI. UNICEF will continue to explore and support countries in planning for, implementing and considering various innovative and context-driven approaches and models to teaching and learning.

Thirdly, innovation requires cooperation, shared leadership, and a whole system approach in order to truly integrate and promote creativity, innovation-driven cultures and ecosystems within classrooms, schools, districts and government agencies. It will be increasingly important to cultivate relationships with different partners within and outside of education systems to build shared and formative learning leadership, and ensure their contributions. This is a complex, dynamic, multi-level, and system-wide effort.<sup>86</sup> As such, UNICEF will continue to build such relationships and promote this approach, particularly with the aim of building resilient education systems.





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