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Digital learning in the Western Balkans – Building on lessons learned during the COVID-19 pandemic

Key research findings and recommendations

This research report presents key lessons for implementing and scaling digital learning systems, drawing from the experiences of four education systems in the Western Balkans (Bosnia and Herzegovina, Kosovo[1], Montenegro and North Macedonia). Evidence for this research was gathered throughout the implementation of digital learning platforms during and after the COVID-19 pandemic. Based on this research, the following recommendations are provided for governments and education practitioners working to develop effective digital learning systems:

(1) **Think beyond the development of national digital learning platforms, to coordinate and support their implementation at the school level.** While digital learning platforms and content are key components of a digital learning system, teacher training, device procurement and allocation, logistics and coordination at the school level are crucial to make digital learning work in practice. Focus should be placed on how digital learning can be incorporated into

teachers' lesson plans and curricular goals to improve students' learning.

(2) **Adjust the delivery of digital learning post COVID-19 to provide adaptive and differentiated learning to students.** Teachers, students and parents in the Western Balkans frequently associate digital learning with emergency remote learning during the COVID-19 pandemic and related challenges. Careful planning and communication are needed to transition from digital learning as an emergency response to a tool that teachers can leverage to support their students inside and outside the classroom. For instance, adaptable digital content can help teachers teach at the right level in classrooms where students have different competency levels, and interactive digital content that provides students with instant feedback can help students follow remedial self-paced learning at home. This is particularly relevant to remediating learning losses triggered by school closures during the COVID-19 pandemic.

(3) **Improve teachers' professional development and digital skills by utilizing teacher digital competency frameworks, digital learning platforms and practical peer-learning opportunities.** Additional teacher professional development is required to utilize digital learning

[1] All references to Kosovo shall be understood in the context of UN Security Council Resolution 1244 (1999).

effectively across the Western Balkans. Teacher training programs should be adjusted to incorporate frameworks for digital competencies, such as the European Framework for Digital Teaching Competence (DigCompEDU), and developing digital skills should be linked with career advancement schemes for teachers. Providing opportunities for teacher professional development within national digital learning platforms can help to ensure and standardize their quality and to organize teacher training around structured learning paths. Building communities of practice for teachers to learn from others who have utilized digital learning in the classroom can be a powerful lever to improve skills.

(4) **Provide connectivity, devices and support to students in need including those from marginalized communities and children with disabilities, to ensure that the benefits of digital learning are realized by the most vulnerable**. Equity needs to be at the center of digital learning policies to close existing gaps in access and use of technology in education among schools and learners in the Western Balkans.

(5) **Invest in implementation research to test and refine new digital learning solutions to identify and manage challenges in implementation as they arise.** Embedding strong monitoring and research into the delivery of programs at a systems level will help to assess how specific digital learning solutions or pedagogies meet the needs of different learners. Testing digital learning solutions in classroom settings will help plan for a successful scale up at the systems level by providing education stakeholders with relevant data to inform decisions regarding support and infrastructure requirements for effective implementation.

Introduction

When teachers are equipped with the right tools and knowledge, they can leverage digital learning[2] to provide engaging, individualized learning for children. This is particularly relevant in the Western Balkans where 54 per cent of 15-year-olds are unable to comprehend a simple text of moderate length and complexity, compared to 24 per cent in the European Union (OECD 2020). Countries in the

Western Balkans rapidly adopted remote learning[3] as an emergency measure to ensure continuity of education in the context of COVID-19 school closures. These experiences provide a foundation to strengthen and scale digital learning systems that can be used inside and outside the classroom in times of crisis and normalcy.

Building on the lessons learned from the COVID-19 response, education policymakers in the region increasingly recognize the potential of digital learning to not only serve as an emergency measure but also to improve the quality of education. Consequently, digital learning is being more frequently integrated into education sector policies, strategies, and ongoing reforms. In Kosovo[4], digitalization in education has been included as one of five key strategic priorities in Kosovo Education Strategy (2022-2026). In Montenegro, digitalization in education is steered by the Ministry of Education, Science, Culture and Sport's ICT department and guided by the Strategy for Digitalization in Education (2022-2027). In Bosnia and Herzegovina, the 'Guidelines for the improvement of online and blended teaching and learning for the educational system in Bosnia and Herzegovina in the context of quality (and) inclusive education' endorsed by all cantonal governments lays out a plan to integrate digital learning across Cantons. In North Macedonia, The Republic of Macedonia Education Strategy For 2018-2025 and Action Plan (MRK 2018) includes digital literacy and the wide use of ICT as a priority. Efforts to strengthen digital learning frameworks in the Western Balkans are supported by the European Union's Neighborhood and Enlargement policies, including the Digital Agenda for the Western Balkans and the Digital Education Action Plan; by digital competency assessment tools such as SELFIE or HEInnovate; and by digital learning events and networks, such as the Digital Education Hackathon, the EU Code Week, and the GEANT network.

Yet, to harness the promise of digital learning, additional efforts are needed to ensure that capacity gaps identified during the pandemic are addressed and that the aforementioned policy, plans and reforms lead to meaningful implementation at the school level for teachers and students. The goal of

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[2] Digital learning refers to any type of learning that utilizes digital technology. Digital learning can take many forms, including online courses, mobile learning apps, educational video games, and more. The focus of digital learning is on using technology to enhance and support the learning experience.

[3] Remote/Distance learning specifically refers to learning that takes place when the student and teacher are physically separated. This can occur through various forms, including online courses, correspondence courses, and video conferencing. Distance learning is often used by students who cannot attend a physical classroom, such as those who live in remote areas or have other scheduling conflicts.

[4] All references to Kosovo shall be understood in the context of UN Security Council Resolution 1244 (1999).

this research is to provide evidence from the ongoing efforts to scale up effective digital learning systems across countries in the Western Balkans.

To achieve this goal this research brief seeks to answer the following questions:

1. How did countries in the Western Balkans leverage digital learning to ensure the continuity of education during school closures in the COVID-19 pandemic?

2. How can countries in the Western Balkans build on these experiences to develop robust digital learning systems that can be leveraged by teachers to improve learning in and out of classrooms?

3. How can countries in the Western Balkans leverage digital learning to make learning more engaging and individualized for students to develop the competencies and skills they need to strive in school, work and life?

To answer these questions this research utilizes and triangulates data and evidence on digital learning in Bosnia and Herzegovina (Poleschuk et al. 2023), Kosovo (Cárceles and Dreesen 2023c), Montenegro (Cárceles and Dreesen 2023b; UNICEF 2023) and North Macedonia (Cárceles and Dreesen 2023a), conducted during and post the COVID-19 school closures. In addition, the research utilizes data from the OECD's Programme for International Student Assessment (PISA) on each of the focus education systems before the COVID-19 pandemic.

Digital learning in the Western Balkans

Before the surge in remote learning brought on by the COVID-19 crisis, digital learning experiences in the Western Balkans were varied and generally small-scale. For instance, according to data from PISA 2018, half of principals in Montenegro reported that an effective online learning support platform was available in their school (49 per cent). In other education systems, this share was considerably lower: Bosnia and Herzegovina (34 per cent), North Macedonia (24 per cent), Kosovo (22 per cent). Considerable gaps also existed across and within education systems in terms of access to devices (Figure 1), connectivity, and teacher capacity to deliver digital learning (OECD 2020).

The education response to COVID-19 was more rapid in countries with prior investments in digital learning. North Macedonia and Montenegro were able to build on existing digital learning platforms, skills or policies to respond faster to the emergency. This reinforces existing evidence on the importance of systems strengthening to improve the resilience of education systems in times of crisis (Cobo et al. 2021; UNICEF 2021). Remote learning in the Western Balkans was delivered synchronously through videoconferencing tools (e.g., Zoom, MS Teams, Google Classroom) and asynchronously through take-home printed packages and tools like Viber, Youtube or Facebook, which were used to develop and share educational resources. In parallel, education policymakers in Bosnia and Herzegovina,

Figure 1. Computer-student ratio
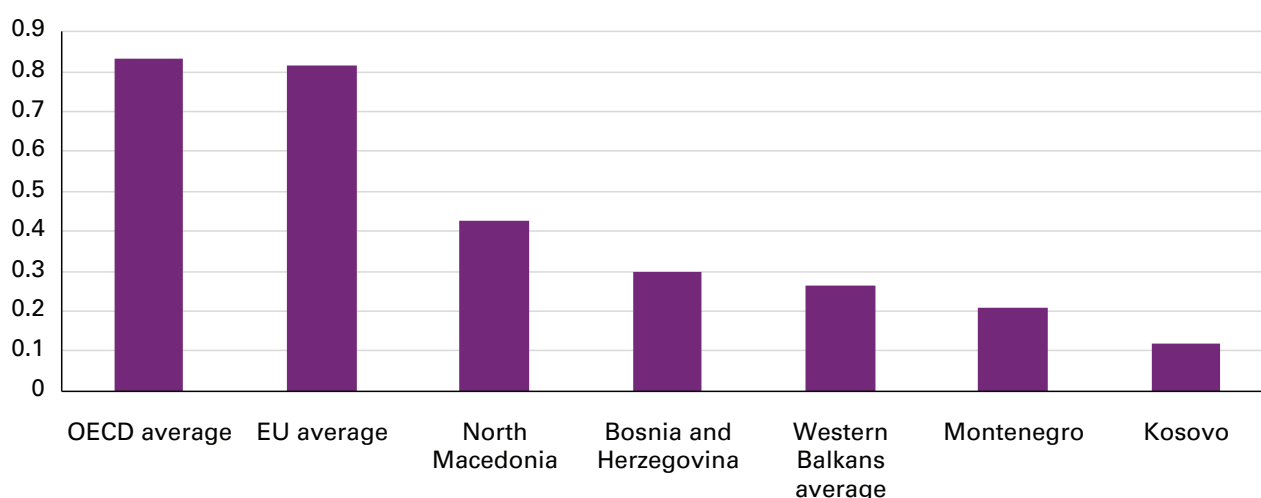
Source: OECD, PISA 2018 Database.

Kosovo, North Macedonia and Montenegro sought to scale up more centralized solutions for remote learning at the national or sub-national level, including digital learning platforms or TV-broadcasted educational content:

- In **Bosnia and Herzegovina**, different remote learning solutions were developed by each cantonal Ministry of Education (MoE). TV classes were broadcasted in several cantons, mainly targeting children in lower primary school. Digital learning platforms were also developed in several cantons, including Republika Srpska (e-Nastava), Herzegovina-Neretva Canton (e-Škola), West Herzegovina Canton (skole.sum), Posavina Canton and Canton 10 (UNICEF and UNESCO 2020), and the web domain edu.ba in Zenica-Doboj Canton (Osmić et al. 2021).

- In **Kosovo**, remote learning was supported through educational TV, broadcasted for different grades following a schedule. In 2021, Kosovo launched the digital learning platform Shkollat. org, the Kosovo version of the Learning Passport - a UNICEF-Microsoft Partnership. Shkollat.org combines a repository of educational content, including more than 12,000 curriculum-aligned videos with Microsoft Office 365 tools (Cárceles and Dreesen 2023b)

- **North Macedonia** expanded the content and scope of the existing EDUINO platform from its focus on pre-primary education to all levels of education. The Ministry of Education and Science (MoES) was remarkably successful at crowdsourcing a large repository of educational content from teachers around the country in a short time to facilitate this expansion. As of 2022, EDUINO includes the largest repository of educational content in North Macedonia covering all levels from pre-primary to upper secondary. In combination with online learning, North Macedonia also broadcasted more than 8,000 video lessons, covering educational content from different grades and following a regular schedule.

- **Montenegro** launched the #UčiDoma (#LearnAtHome) initiative, through which classes and teaching content in Montenegrin and Albanian were published on Youtube and broadcast on TV. In 2021, supported by UNICEF, Montenegro launched Digitalna škola, the localized version of the Learning Passport, as the national platform for digital learning. As of 2022, the platform combines more than 7000 curriculum-aligned videos and documents for pre-primary, primary and secondary education,

with Microsoft Office 365 tools, Montenegrin education management system (MEIS) tools and C-board[5].

The COVID-19 pandemic helped bring attention to the potential that digital learning can have to strengthen learning in the region. Nonetheless, equity and capacity gaps remain to move from emergency remote learning to quality digital learning approaches that can be leveraged by teachers inside and outside of the classroom. These include unequal access to devices and connectivity among learners, poor-quality content developed for the COVID-19 emergency, lack of planning or gaps in teachers' capacities and support to deliver digital learning. In times of normalcy, digital learning can be leveraged by teachers to enhance the quality of learning for students at different levels, through adaptive or differentiated learning, or to make the teaching process more efficient, freeing up time to develop training content to focus on providing students with pedagogical and socio-emotional support (Major and Gill 2020).

Additional efforts are needed to support the implementation of digital learning at the classroom level. Evidence shows that technology alone is not enough to improve education outcomes for children (Brossard et al. 2021). Ensuring sufficient access to connectivity, devices and quality digital content is an important pre-condition for the scale up of digital learning but teachers and school administrators remain the key to its successful implementation to improve learning. Supporting teachers' preparedness for digital learning is crucial for technology to support an education system. Alongside teacher preparedness, fostering and monitoring students', parents' and teachers' engagement with digital learning solutions and related impacts on learning outcomes is needed for a successful implementation 2021; UNICEF 2021). In the Western Balkans, addressing these challenges is urgent to ensure that digital learning can be harnessed by teachers to provide students with engaging learning solutions, adapted to their own learning pace and needs.

This research report presents key findings to support and overcome challenges faced for digital learning in the Western Balkans focusing on the education systems of Bosnia and Herzegovina, Kosovo, Montenegro and North Macedonia. Research findings are organized around overall policy recommendations from the implementation of digital learning solutions.

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[5] Cboard is an open-source application, developed by UNICEF to support young children with complex communication needs who otherwise may be left out of early childhood education services.

1. Think beyond the development of national digital learning platforms, to coordinate and support their implementation at the school level

Across the Western Balkans, institutional awareness and support for digital learning have increased following the COVID-19 pandemic. Education strategies in Montenegro and Kosovo emphasize digitalization in education as a strategic priority for their education systems. In North Macedonia and Bosnia and Herzegovina, different policy initiatives have also begun prioritizing digital learning as a key tool to improve the quality of education. Often, despite enhanced institutional support for digital learning, teachers in the Western Balkans have not leveraged digital learning to enhance their teaching in the classroom as schools reopened (Cárceles and Dreesen 2023a, 2023b).

Governance of education reforms in the Western Balkans is hampered by weak coordination between central, local governments and schools leading to misaligned policy efforts (OECD, 2022). In Bosnia and Herzegovina, education is governed by 17 different institutions, while in Kosovo, Montenegro and North Macedonia municipalities and schools have considerable influence over education delivery leading to a lack of standardization (OECD, 2022; Eurydice 2022). For instance, 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 (OECD, 2020; UNICEF, 2022). Decentralized decision-making is necessary to ensure education delivery is aligned with schools' contexts, but can also lead to misaligned policy efforts and equity gaps if policy efforts are not sufficiently coordinated and supported. For quality digital learning to be delivered at a national level, education ministries together with other responsible ministries of finance, ICT, schools and the private sector need to plan, coordinate and resource implementation efforts across national through to the school level, involving teachers and learners in the process (whole-government and whole national approach).

Evidence from the implementation of Digitalna škola in Montenegro shows that school-level factors play an important role in the take-up of digital learning solutions (Cárceles and Dreesen 2023a; UNICEF 2023); UNICEF 2023). Sufficient access to connectivity and devices, well-prepared ICT coordinators, and a supportive school leadership team are key factors associated with the take-up of digital learning at the school level (Ibid). In North

Macedonia, providing clear guidance to principals and teachers on how to organize digital learning at the school level helped teachers organize their teaching during the COVID-19 pandemic (Cárceles and Dreesen 2023a).

To steer efforts for system-wide digitalization in education, countries in the Western Balkans are adopting different policies and strategies, which can serve as useful references for peer-learning:

- **A dedicated government unit for digitalization in education can help rally education stakeholders behind a set of common objectives and improve coordination**. The Ministry of Education, Science, Culture and Sport in Montenegro includes an ICT department that is in charge of digitalization in education. In Kosovo, Kosovo Education Strategy (2022-2025) lays out plans for the establishment of a digitalization unit within the Ministry of Education, Science, Technology and Innovation (MESTI).

- In Montenegro, the Strategy for Digitalization in Education (2022-2027) includes **an action plan with clear objectives, milestones, earmarked financial resources, and baseline and target values to track progress in implementation**. This framework facilitates coordination and monitoring efforts to track progress and identify support needs.

- In Bosnia and Herzegovina, UNICEF created **a country-wide school map of schools' capacities to deliver digital learning, including their access to devices, connectivity, and teaching staff**. Collection and aggregation of clear, comparable and relevant data on schools' capacity to deliver digital learning is crucial to identify support needs in different regions and municipalities.

2. Adapt the use and perception of digital learning from an emergency measure used during COVID-19 to a tool that enables adaptive and differentiated learning for students

When compared to teachers in the European Union, teachers in the Western Balkans are more likely to follow traditional teaching practices, including teacher-directed instruction (OECD 2020). Adaptive teaching practices, such as tailoring lessons to students' learning needs or providing students with individual feedback when they have difficulties understanding a task are less common (OECD 2020).

Figure 2. Change in reading performance associated with greater student-reported exposure to:
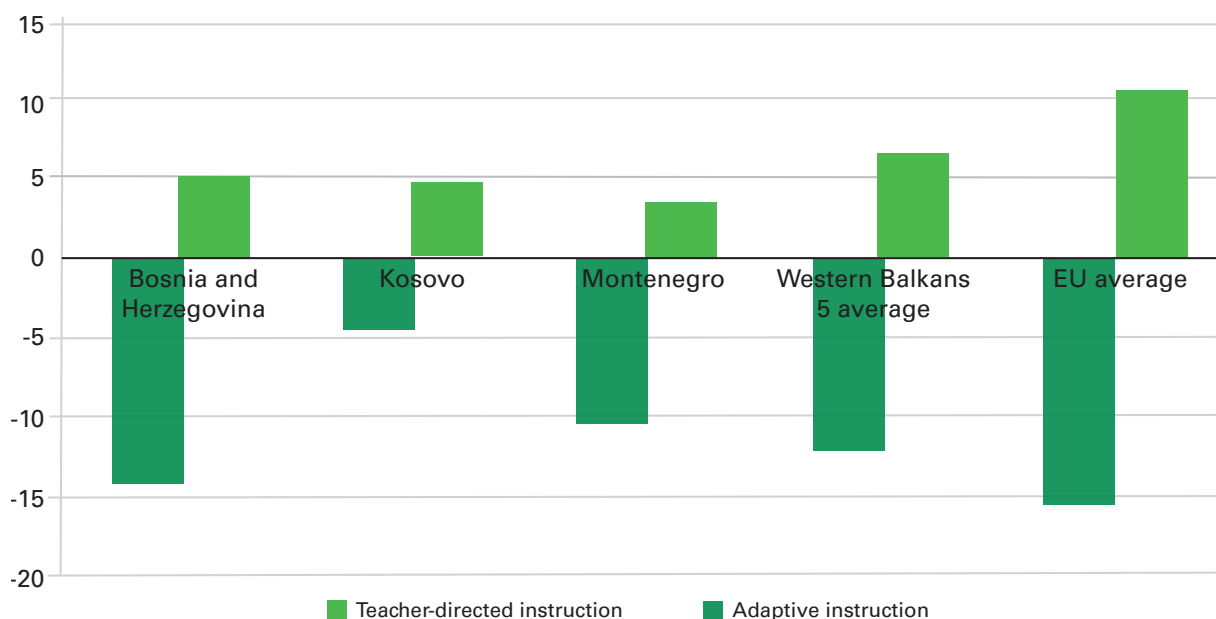
Notes: Results based on linear regression analysis after accounting for gender and students' and schools' socio-economic status. All values are statistically significant. Results for North Macedonia are not available.
Source: OECD, 2020, Education in the Western Balkans: Insights from PISA

Evidence from PISA suggests that students exposed to adaptive teaching pedagogies score higher in PISA reading assessments than students who were solely exposed to teacher-directed instruction (Figure 2).

Digital tools can be leveraged to support adaptive teaching to meet students' individual learning needs and build foundational numeracy and literacy skills. Adaptable digital content can help teachers teach at the right level in classrooms where students have diverse learning needs, and digital review materials that provides students with instant feedback can help students follow remedial self-paced learning at home (EdTech team 2022; Poleschuk et al. 2023). An evidence review conducted in 2020 suggests that harnessing digital learning to support adaptive teaching may be particularly beneficial in closing educational gaps for lower-attaining students, potentially including those returning to school after an absence (Major and Gill 2020). This is particularly relevant to remediating learning losses triggered by school closures during the COVID-19 pandemic, which could push the share of students in the Western Balkans who cannot comprehend a text of moderate length and complexity from 53 per cent in 2018 to 61 percent, a share similar to that of 2015 (OECD 2016; World Bank 2020).

In the Western Balkans, digital learning came in abruptly as an emergency measure to ensure the continuity of learning during the COVID-19 pandemic. As a result, most teachers and students associate digital learning with emergency remote learning and not with innovative pedagogical approaches that teachers can leverage to enhance the quality of learning (Cárceles and Dreesen 2023b). In Kosovo, qualitative evidence showed that teachers and students frequently associated digital learning with feelings of isolation, unpredictability and irritation (Ibid). In North Macedonia, quantitative data from a needs assessment on teachers' perceptions of digital learning points in the same direction (Reactor – Research in Action 2021). Despite efforts to support teachers in the onset of school closures, a majority of teachers reported feeling stressed and anxious in the transition to remote learning during the COVID-19 pandemic because they were not sufficiently prepared. These feelings can have a lasting impact on teachers' and students' buy-in for digital learning and can hamper their uptake to enhance the quality of learning among teachers. Similarly, much of the digital learning content available in the Western Balkans was rapidly developed during the COVID-19 pandemic to ensure the continuity of learning. As a result, quality digital learning content is often lacking (Cárceles and Dreesen 2023b, 2023a).

In order to bring teachers, parents and students on board with the use of digital learning to enhance the quality of learning, a concerted effort needs to be made, with communication campaigns, teacher guidance, school-level support, and the development of high-quality digital content. Countries in the Western Balkans have implemented different initiatives in support of this goal:

- In Bosnia and Herzegovina, UNICEF supported cantonal Ministries of Education to develop '**Guidelines for the improvement of online and blended teaching and learning for the educational system in Bosnia and Herzegovina in the context of quality (and) inclusive education**' at the federal level. The guidelines, endorsed by all cantons, provide clear instructions for schools and teachers to support the implementation of quality digital learning in a remote or blended learning[6] approach across the country.

- **Kosovo Education Strategy (2022-2026)** includes within its objectives the development of multidimensional digital content, including adaptable digital teaching and review materials to facilitate individualized and differentiated learning, virtual laboratories, animations, as well as educational games for pupils.

- In North Macedonia, Gameathon challenges for EDUINO platform **encouraged parents and caregivers** to develop and share digital learning materials and educational games for early-childhood education. Through the initiative, parents, caregivers and preschool teachers were asked to use videos, photographs and instructions to share the play-based early childhood education games they had developed (Cárceles and Dreesen 2023).

- In North Macedonia, the Bureau for Development of Education developed a **quality assurance system** to ensure that all content uploaded to EDUINO platform was aligned with the national curriculum and met minimum quality standards. Through this process, the audio-visual quality of digital learning materials submitted by teachers and parents around the country was enhanced and standardized, and content was mapped to the national curriculum (Cárceles and Dreesen 2023a).

Teacher training, discussed in the following section, also plays a key role to support the use of digital learning to enhance the quality of learning.

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[6] Blended learning refers to a combination of both traditional classroom instruction and digital learning.

3. Strengthen teachers' professional development through teacher digital competency frameworks, digital learning platforms and peer-learning opportunities

Across countries in Central and Eastern Europe, teachers have a strong likelihood of updating their pedagogical approaches following teacher training (OECD, 2020). Yet, across countries in the Western Balkans, the connection between teacher training and updated pedagogical approaches is not always as strong (Ibid). Teacher training programs in the Western Balkans are often organized at the municipal or school level with various degrees of quality within countries (OECD, 2020). Teacher training programs specifically on digital learning, were in many cases rapidly organized in an ad-hoc manner by schools or municipalities during the COVID-19 pandemic (Cárceles and Dreesen 2023b). As a result, teachers' capacity to utilize digital learning was uneven within countries, based on the variety of teachers training followed (Ibid).

Linking teacher professional development opportunities with competency frameworks that emphasize digital skills, such as The European Framework for Digital Teaching Competence (DigCompEdu) or UNESCO ICT Competency Framework for Teachers, is an important step to strengthening and structuring teachers' professional development for digital learning. Digital teacher competency frameworks include skills that teachers need to deliver quality digital learning and provide a reference by which teachers' skills proficiency can be observed and measured (EdTech team 2021). In the Western Balkans, countries like Montenegro and North Macedonia have taken initial steps to adapt teacher competency frameworks for digital learning and include digital skills among the professional standards of teacher competencies (World Bank, 2020). Improving the link between digital skills, teachers' professional development and career advancement schemes – a common challenge for countries in the region (OECD, 2020) – can also be a powerful lever to encourage effective professional development beyond digital skills.

Building teacher training programs within digital learning platforms can help to increase the accessibility and reach of teacher training opportunities, allowing teachers to choose content and take training courses on demand. In Montenegro, teacher training is one of the most visited content categories within Digitalna škola. The platform includes digital teacher training courses and master training courses which teachers can replicate

to provide training to other teachers in their schools. In North Macedonia, teacher training opportunities were also organized on EDUINO, including webinars or short online tutorials on specific tools, like Kahoot![7], or pedagogical approaches, like flipped classrooms[8] (Cárceles and Dreesen 2023a). Building teacher training programs within digital learning platforms can also facilitate structuring teacher training paths in alignment with competencies required by the Ministry of Education and standardizing the quality of teacher training opportunities. This allows teachers to build up their skills in a structured way, through different levels of teacher training paths, based on their initial competencies and their intended objectives. Alongside this, digital teacher training content can also enhance the quality of learning for teachers, for instance, by making teacher training content adaptable to the learning needs and styles of different teachers (Quota et al. 2021).

Peer-learning opportunities and practical teacher training can also motivate teachers to incorporate technology in their classrooms. Results from teacher training programs facilitated by UNICEF Montenegro showed that practical teacher training helped teachers incorporate technology in their everyday teaching (UNICEF 2023). This process can be further expanded and facilitated by nurturing communities of practices, where teachers can share digital learning resources, lesson ideas or tools. In North Macedonia, the scale up of EDUINO, North Macedonia's national platform for digital learning, put a strong emphasis on building a community of practice where teachers could share experiences and lesson plans (Cárceles and Dreesen 2023a). The community of practice was also used as a way to encourage teachers to contribute to the platform with videos and digital content, with highly engaged teachers recognized as EDUINO ambassadors. EDUINO ambassadors were celebrated in the media or by political figures and were invited to take part in the EDUINO talks campaign, where ambassadors shared their expertise and passion for particular topics, including social-emotional learning or ICT tools in math. This helped to raise the visibility of EDUINO and helped other teachers understand how they could incorporate digital learning as part of their lessons (Cárceles and Dreesen 2023a).

"EDUINO is a community of innovative educators ready for cooperation, connection, support and exchange of advice and good practices." - Hilda Dimitrievska, EDUINO ambassador.

4. Field testing digital learning solutions before scaling-up

Multiple challenges can arise when introducing and scaling digital learning solutions in schools. Evidence suggests that merely introducing technology into a classroom is insufficient for digital learning to be successful (Brossard et al. 2021). Challenges can emerge at various implementation levels, from the student level to the system level. Identifying these challenges and support needs from early on is important for planning a successful scale up of digital learning solutions across different contexts.

Due to the urgency brought about by the COVID-19 pandemic, education policymakers in Bosnia and Herzegovina, Kosovo, Montenegro, and North Macedonia deployed large-scale digital learning solutions within a short time frame. Given the emphasis was on education continuity, the response focused on facilitating emergency remote learning by scaling access to ICT equipment and developing one-size-fits-all online and TV learning content (OECD 2022; Cárceles and Dreesen 2023c). As schools reopen, testing and researching different modalities of digital learning that fit specific educational needs can provide stakeholders with timely data to inform decisions regarding the necessary support and conditions for scaling up in real-world classroom settings. Starting small to field test can help identify and manage challenges as they arise, in a controlled environment. It is important however that this field testing is managed closely within the larger education system to facilitate further scale once implementation has been tested and refined. Testing digital learning solutions also helps determine whether a given solution can be used to address a certain pedagogical challenge, if it meets the needs of particular learner groups, if it is easy to use or whether certain characteristics need to be refined before scale up.

Before its launch, UNICEF Montenegro conducted user testing with parents and teachers of early-grade students to understand how they were able to interact with Digitalna škola. This user testing identified that teachers and parents did not have trouble navigating the platform, but they struggled with monitoring students' learning while they engaged with the platform (Cárceles and Dreesen, 2023a). Digitalna škola was also launched with an initial focus on early-childhood education (ECE), starting with a specific learning goal helped to attract, engage and retain

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[7] Kahoot! is a game-based learning platform that allows teachers to create short quizzes or formative assessments for students to promote engagement, collaboration and learning.

[8] Flipped classroom, or flipped learning, is a pedagogical approach in which students acquire knowledge before the class and use classroom time for active learning, practicing and applying concepts and ideas through interaction with teachers and peers.

ECE learners, parents as teachers, and focus efforts to create quality digital content around this goal (Ibid). Progressively, Digitalna škola has expanded its target and content but ECE content continues to be among the most visited content within the platform (Ibid).

In Bosnia and Herzegovina, the Akelius digital learning application was first introduced in 2020 with a focus on refugee and migrant children in Temporary Reception Centers. In 2022, the platforms was expanded to be used in classrooms in seven primary schools to assess its use in the context of formal education. Embedding research in the implementation of the digital learning application within classrooms on tablets helped to identify different strategies, levers and challenges for its use in formal schools with teachers (Poleschuk et al. 2023). Research showed the importance of schools planning for the safe storage of digital devices on their premises and the importance of providing clear guidance for teachers to identify curriculum-aligned content within the Akelius digital learning application. Lessons learned from this field testing are being used by education authorities in both cantons as they scale up digital learning and design further teacher training.

5. *Provide students in need with sufficient access to devices, connectivity and support*

There are considerable within-country inequities in access to devices, connectivity and digital content among countries in the Western Balkans. Children in low-income households and those in rural areas frequently have lower opportunities to engage with digital learning (Figure 3). This is particularly true among children from marginalized communities, including Roma, Ashkali and Egyptian students, whose access to devices, connectivity and electricity at home is considerably lower when compared to other students' (Mihalache, 2020). In Kosovo, 30 per cent of students who did not have a digital device at home could not access technology for homework at all during the COVID-19 pandemic (Cárceles and Dreesen 2023b). In North Macedonia, three out of four teachers (77 per cent), reported facing difficulties in reaching students and parents during school closures, while 1 in every 3 teachers reported not being able to establish any contact at all with some students (Reactor – Research in Action 2021). Quality digital content in their native tongue is less frequently available for students from minority linguistic groups. Lack of access to digital content in their native tongue can also widen the learning gap between linguistic student groups, which is already considerable. In 2018 PISA assessments, the learning gap between linguistic student groups in reading was greater than 70 points within education systems in the Western Balkans (OECD 2020), equivalent to more than one academic year of learning (OECD 2019). Students with disabilities also face barriers to engage with digital learning, as access to assistive technologies and accessible learning content is not widespread in the region.

Figure 3. % of students reporting access to a home computer for schoolwork: lowest and highest socio-economic (ESCS) quintiles, 2018
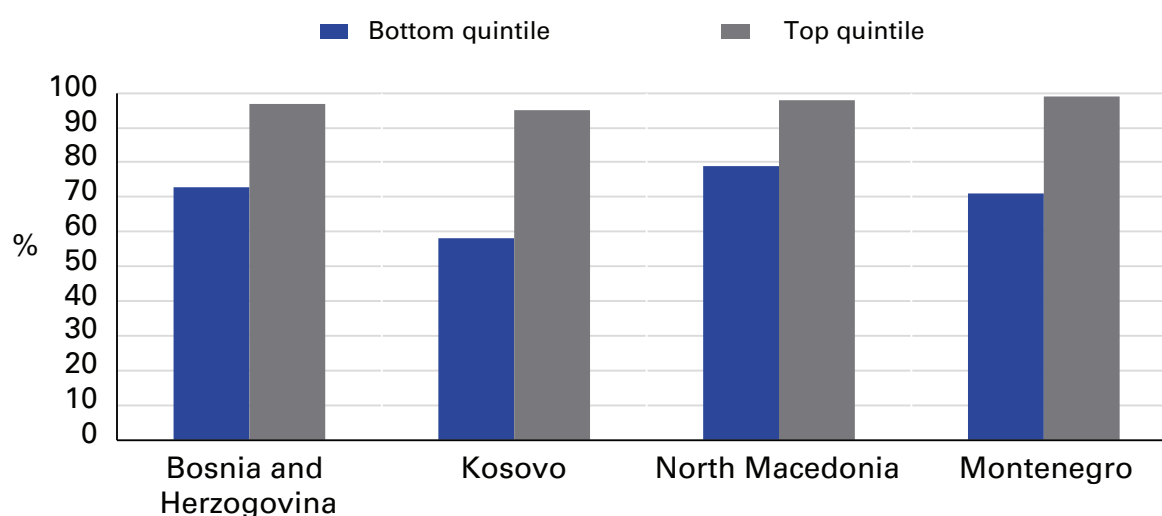
Source: OECD, PISA 2018 Database.

To help bridge these gaps, countries in the Western Balkans scaled up support in access to devices and digital content for vulnerable students. For instance, in Montenegro, the Ministry of Education, supported by UNICEF and the Red Cross, distributed 770 tablets and physical prints of learning materials to vulnerable groups of students, primarily Roma and Egyptian children with limited or no access to TV or the Internet, and children with disabilities (United Nations Montenegro 2020). In North Macedonia, the Ministry of Labour and Social Policy provided USB sticks for mobile internet access to about 30,000 students from low-income households that receive social assistance. In Kosovo, UNICEF is collaborating with the MESTI to develop Digital Equipment Request Forms, which can be filled by Municipal Education Directories to request digital equipment for their schools going forward. In Kosovo, Montenegro and North Macedonia, digital content for minority linguistic groups was developed and made available through national digital learning platforms.

As schools have reopened, continued support to scale up access and usage of devices, quality content and connectivity at home and school will be necessary for digital learning to reach the most vulnerable. Beyond ensuring that schools are connected to the internet, it is important to ensure that students can effectively access this connection in the classrooms where they use devices. Similarly, schools and households in need should be provided with enough devices and technical support for children to engage with digital learning when needed, in and out of school. This includes digital devices, such as tablets, but also logistical equipment to store devices securely (i.e., charging racks for tablets) and guidance for their effective use.

Conclusion

School closures during the COVID-19 pandemic put digital learning on the spot across countries in the Western Balkans. Building on these experiences, education policymakers are embedding digital learning with national education policies and strategies to enhance the quality of learning. Nonetheless, ensuring the effective implementation of digital learning across schools in the Western Balkans requires looking beyond the development of national platforms or legislative and policy changes to address challenges in implementation to how they would be utilized at a classroom or household level.

This research presents key challenges and implementation strategies in the scale up of digital learning across countries in the Western Balkans, with a focus on Bosnia and Herzegovina, Kosovo, Montenegro and North Macedonia. Digital learning can be leveraged in the Western Balkans to enhance the quality of learning, in and out of the classroom, in times of crisis as well as in normalcy, if certain conditions are met. Key challenges for the implementation of digital learning in the region include limited implementation capacity at the school level, partial buy-in for digital learning among teachers, gaps in teachers' and school administrators' preparedness to deliver digital learning and inequities in access to devices and connectivity within countries in the Western Balkans. To support education policymakers in the region to proactively address these challenges, here are key recommendations:

(1) **Think beyond the development of national digital learning platforms, to coordinate and support their implementation at the school level.** While digital learning platforms and content are key components of a digital learning system, they are just one component of what it takes to make digital learning work in the classroom. There is a strong need to ensure that digital learning pedagogies can be easily incorporated by teachers to improve students' learning in and out of the classroom. Coordination across a variety of actors, including Ministries of Education, municipalities, teachers and parents, is crucial to align policy efforts and to support schools effectively in this process. School-level factors such as having a dedicated, well-prepared ICT coordinator, a supportive school leadership team and sufficient access to connectivity and devices can help teachers harness digital learning in the classroom.

(2) **Adapt the use and perception of digital learning from an emergency measure used during COVID-19 to a tool that enables adaptive and differentiated learning for students.** Teachers, students and parents in the Western Balkans frequently associate digital learning with emergency remote learning during the COVID-19 pandemic and related challenges. Careful planning and communication are needed so that teachers can leverage the promising pedagogical practices that digital learning can enable. For instance, adaptable digital content can help teachers teach at the right level in classrooms where students have different competency levels, and interactive digital content that provides students with instant feedback can help students follow remedial self-paced learning at home. This is particularly relevant to remediating learning losses triggered by school closures during the COVID-19 pandemic.

(3) **Strengthen teachers' professional development (TPD) by utilizing teacher digital competency frameworks, digital learning platforms and practical peer-learning opportunities.** Quality teacher professional development, with a practical focus and structured around clear and progressive learning goals, is required to utilize digital learning effectively across the Western Balkans. This process can be facilitated by linking training programs with existing frameworks for digital competencies, such as the European Framework for Digital Teaching Competence (DigCompEDU), and with career advancement schemes for teachers. Providing opportunities for teacher professional development within national digital learning platforms can help to ensure and standardize their quality and to organize learning around structured learning paths. Facilitating peer learning opportunities for teachers to learn from others who have utilized digital learning in the classroom can also be a powerful lever to upskill teachers.

(4) **Provide students in need including those from marginalized communities and children with disabilities access to devices, connectivity and support, to ensure that the benefits of digital learning are realized by the most vulnerable**. Equity needs to be at the center of digital learning policies to close existing gaps in access and use of technology in education among schools and learners in the Western Balkans.

(5) **Invest in implementation research to test and refine new digital learning solutions to identify and manage challenges in implementation as they arise**. Embedding strong monitoring and research into the delivery of programs at a systems level will help to assess how specific digital learning solutions or pedagogies meet the needs of different learners. Testing digital learning solutions in classroom settings will help plan for a successful scale up at the systems level by providing education stakeholders with relevant data to inform decisions regarding support and infrastructure requirements for effective implementation.

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