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Delivering digital learning in Montenegro with the Learning Passport: The case of Digitalna škola

Key research findings and recommendations

This research examines the implementation and scale up of Digitalna škola, Montenegro's national platform for digital learning. Digitalna škola was launched in 2020 by the Ministry of Education in Montenegro and UNICEF Montenegro to facilitate the continuity of learning during the COVID-19 pandemic. The platform includes the largest repository of curriculum-aligned digital learning content in the country, along with resources and tools for learners, parents, caretakers, and teachers. Beyond the COVID-19 pandemic, Digitalna škola can help to enhance the quality of education in Montenegro, providing interactive and personalized learning experiences for learners both inside and outside the classroom. This research compiles and triangulates the existing evidence on Digitalna škola to inform improvements in the programme, and provides key recommendations for Montenegro and other countries developing digital learning systems:

1. **Ensure that all learners, including learners from minority backgrounds and learners with disabilities, can engage with digital learning content at school and home.** To promote equal opportunities for all students,

it is essential to provide continued support to children from minority backgrounds and those with disabilities. In Montenegro, strategies such as scaling access to devices among Roma and Egyptian students, providing resources to schools with limited ICT capacity, and prioritizing digital learning content that can be accessed on devices that learners have access to (such as smartphones) and content that follows Universal Design Principles (UDL) can help bridge equity gaps in digital learning.

2. **Emphasize practical aspects during teacher professional development programs for digital learning.** Practical training programs, involving hands-on activities such as creating lesson plans incorporating digital learning solutions are helpful to provide teachers with tangible examples of how to incorporate digital learning solutions as part of their work. For teachers to engage effectively with training opportunities, scheduling and length of training sessions should be mindful of teachers' workload and schedule. When possible, offering teacher training content online, through interactive digital training programs, handbooks or video recordings can help teachers to refer to learnings when needed. This process can be facilitated by Digitalna škola which can become

a valuable repository centralizing self-paced teacher training opportunities for teachers, organized around structured learning paths.

3. **Harness teachers', parents' and students' experiences to improve the usability and content of digital learning solutions.** Gathering feedback from teachers and parents through user-testing is critical in optimizing digital learning solutions for everyday use. Digitalna škola received positive reviews for usability, yet monitoring students' learning while using the platform proved difficult for some parents and teachers. Beyond getting technology ready, providing sufficient quality curriculum-aligned content that is accessible for children with and without disabilities is also crucial for the successful deployment of digital learning solutions.
4. **Research and strengthen school-level factors that can drive the take-up of digital learning solutions at the school level.** ICT support staff, school infrastructure, or school leadership support for digital learning solutions can have ripple effects on the number of teachers that embrace digital learning at the school level. Planning for and resourcing the implementation of digital learning at the school, and classroom level, is important to ensure a supportive school environment for digital learning.
5. **Leverage data at the systems level to monitor the effective implementation of digital learning strategies and to update implementation objectives as new needs arise.** Montenegro already has in place a comprehensive digital learning strategy, which includes specific objectives, earmarked financial resources and assigned roles and responsibilities for its implementation. Digitalna škola is embedded in the strategy, which also aligns with education sector plans and the national strategy for digitalization. To ensure its effective implementation, leveraging data from different stakeholders involved in the delivery of digital learning will be important to monitor progress and update the strategy's action plan as new needs emerge in relation to digital learning.

Introduction

The COVID-19 pandemic highlighted the role of digital learning in building resilient education systems. While emergency remote learning was a necessity during school closures, quality digital learning can also foster interactive and personalized learning experiences for learners both inside and outside the

classroom, provided certain conditions are met. In Montenegro, UNICEF is working with the Ministry of Education (MoE), in direct cooperation with its ICT department, to enhance Montenegro's digital learning ecosystem through advocacy, teacher capacity-building, and the development of a national platform for digital learning: Digitalna škola.

In 2020, Digitalna škola was initially developed with the support of UNICEF to assist schools in organizing emergency remote learning during the COVID-19 pandemic. In 2021, the platform was expanded to incorporate Digionica, or digital classroom, Montenegro's version of the Learning Passport¹. The Learning Passport is a one-stop platform for self-paced learning that incorporates tools for learning, teaching, cooperating, and communicating in a digital environment. The platform spans pre-school to secondary education, providing curriculum-aligned resources and tools for learners, parents, caretakers, teachers, and other professionals in the education system (Box 1).

Digitalna škola is comprised of four key building blocks:

1. **Digionica**, or digital classroom, seeks to reduce gaps in access to high-quality learning resources and to ensure the continuity of education in the event of disruption. Digionica includes over 1,000 courses in 54 categories, organized in 21 learning paths, with approximately 12,000 curriculum-aligned lessons in the form of videos, audiovisual materials, interactive games, simulations of scientific experiments or printable exercises, and over 500 online assessments. These resources can be leveraged by children, adolescents, educators, teachers, and families in the classroom or at home and provide opportunities for adaptive and differentiated teaching and self-paced learning.
2. **School digital environment** includes Microsoft365 tools for teaching, learning and collaborating in a digital environment. Schools can leverage these tools to enable an efficient organization of educational activities, whether during a complete interruption of regular teaching, during partial teaching at school, or during regular teaching in classrooms.

¹ The Learning Passport is an online, mobile, and offline platform delivered by UNICEF and powered by Microsoft Community Training.

3. **Web directory of national educational resources online:** A structured, searchable catalog of educational websites and resources, organized into categories and subcategories. This catalog offers information on national educational institutions, services, and projects. Soon, the directory will also include online resources of schools and preschool institutions in Montenegro.
4. **Information portal,** which provides guidance and simple access to relevant information and news about learning resources available on Digitalna škola.

Digitalna škola has great potential to enhance the quality of education in Montenegro, where 76 per cent of teachers have the necessary technical and pedagogical skills to integrate digital devices into their instruction (OECD 2020). However, for digital learning systems to deliver effective and equitable learning a number of conditions need to be met (Brossard et al 2021).

This research synthesizes key lessons from the implementation of Digitalna škola in Montenegro to inform its implementation and scale up. In addition, the research aims to provide guidance to other governments implementing similar digital learning systems. To meet this objective, this brief addresses the following research questions utilizing data from Digitalna škola in Montenegro:

1. What are the most effective ways to support **learners** in accessing and using digital learning solutions, and what are the main challenges they encounter?
2. What are the key components of effective training for **teachers**, and what additional support do they require to effectively utilize digital learning in and out of the classroom?
3. What are the most effective strategies to support **schools** in leveraging digital learning to facilitate student-centered learning?
4. What policies and strategies can encourage the use of digital learning to enhance the quality of learning within the **education system** in Montenegro?

Methodology

Evidence for this research brief was compiled by triangulating quantitative and qualitative data collected during the implementation of Digitalna škola in Montenegro. These include:

- (i) **Needs assessment data** was collected by UNICEF Montenegro in April-June 2021 to assess the capacity for delivering digital learning in the Northern, Central and Coastal regions of Montenegro. Questionnaires were completed by 190 schoolteachers, 95 pre-school teachers, 110 middle school learners, and 320 parents including 20 parents of children with disabilities and 11 parents of children from minority groups such as Roma and Egyptian children.
- (ii) **Data on teachers' attitudes, knowledge and practices around digital learning** was collected through an online questionnaire with 298 teachers trained by UNICEF and the Bureau of Education. This data was collected as part of a cross-country developmental evaluation of digital learning carried out by UNICEF Europe and Central Asia in 2022-2023.
- (iii) **User testing data** was collected by UNICEF Montenegro to understand which features of the platform worked and did not work for diverse users, and to collect specific suggestions for improving the platform. User-testing data was collected from 85 teachers and 18 learners' parents in 2021.
- (iv) **User analytics from Digitalna škola** is routinely used to monitor key aspects of implementation including user engagement with different types of content. All data used for analysis is de-identified to remove any personally identifiable information.
- (v) **Literature, policy and legislative frameworks for digital learning in Montenegro** were consulted through desk review to assess the institutional context for the implementation of Digitalna škola.

Findings from this research brief can inform future decision-making on the implementation and scale up of Digitalna škola in Montenegro. These findings derive from data collected during the implementation of Digitalna škola in Montenegro. As such, limitations may exist to the external validity of findings beyond the context of Montenegro or the implementation of different digital learning solutions. Given the reduced size of the sample, generalizations to the broader population of Montenegro should also be done with caution.

Digital learning in Montenegro

Efforts to strengthen digital learning in Montenegro were underway before the onset of the COVID-19 pandemic. Montenegro's Strategy for Information Society Development (2016-2020), aligned with the Digital Agenda for Europe 2020, identified digital

learning as a strategic priority for education in the country since 2016 (MIDT 2016). By 2018, 49 per cent of principals already reported that an effective online learning platform was available in their schools - above average for the Western Balkans (34 per cent) and slightly below the EU average (52 per cent). The ICT department at the MoE drove these efforts and led the remote learning initiative #UčiDoma (#LearnAtHome) to ensure the continuity of education during school closures caused by the COVID-19 pandemic. Through the initiative, classes and teaching content in Montenegrin and Albanian were published on the Youtube channel UčiDoma and broadcast on TV. School closures highlighted the need for a nationwide digital learning platform in Montenegro. The MoE and UNICEF started a collaboration to develop Digitalna škola as Montenegro's national platform for digital learning. To facilitate interactive remote learning, the MoE also collaborated with UNICEF between May and August 2020 to train approximately two-thirds of teachers in the country in using Microsoft Office 365 tools.

The MoE recognizes the potential of quality digital learning to deliver interactive, student-centered education not only during times of crisis but also in normal circumstances, both inside and outside the classroom. Digitalization has remained a priority for the MoE and the Government of Montenegro at large. To support systemic change in the education system, UNICEF collaborated with the MoE to develop the Strategy for Digitalization of Education (2022-2027), with funding from DG NEAR. The strategy articulates three main goals: (1) improving the education information system (2) developing and improving the digital ecosystem, and (3) developing and improving digital skills and competencies. The strategy recognizes the central role that Digitalna škola can play to address these challenges and plans for its scale up.

Research findings

The following section presents research findings from the implementation of Digitalna škola to support its scale up and facilitate cross-country peer learning on the implementation of digital learning solutions. Findings are organized around five key takeaways for education policymakers:

1. Ensure that all learners, including learners from minority backgrounds, such as Roma and Egyptian children and children with disabilities, can engage with digital learning content at school and home
2. Support the use of Digitalna škola as a central

repository of online self-paced teacher training courses, organized through structured learning paths

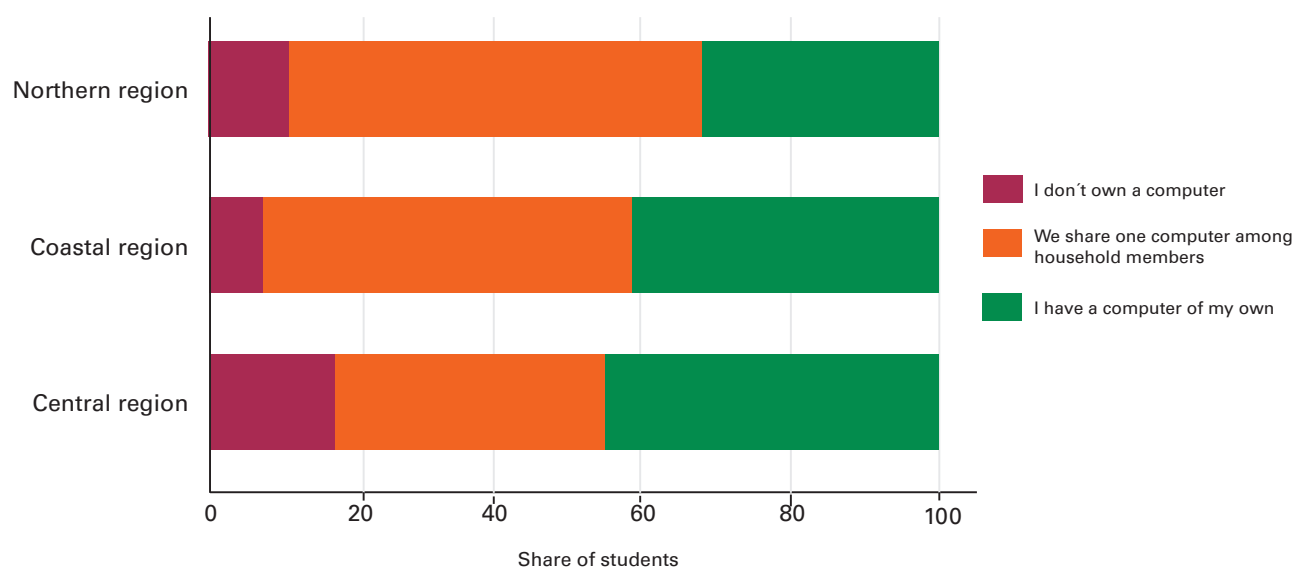
3. Harness teachers', parents' and students' experiences to improve the usability and content of digital learning solutions
4. Research and strengthen school-level factors that can drive the take-up and effective use of digital learning in the classroom
5. Leverage data at the systems level to inform the effective implementation of digital learning strategies

1. Ensure that all learners, including learners from minority backgrounds and learners with disabilities, can engage with digital learning content at school and home

Despite increased support during the COVID-19 pandemic, limited access to computers in schools in Montenegro still presents a hurdle for the implementation of quality digital learning. The computer-student ratio in schools of Montenegro has remained at 1:15 since 2016, compared to the EU average of 1:7 education (MIDT, 2016; MESCS, 2022; Ipsos MORI, Deloitte 2020). In the needs assessment conducted by UNICEF Montenegro in 2021, 30 per cent of schoolteachers did not have a computer in their classroom and could not borrow any within their schools for their teaching. 76 per cent of teachers reported using their personal computer at school often or sometimes. This can prevent teachers from leveraging technology when needed to deliver digital learning in or outside of the classroom.

Inequities also exist in access to computers for learners to engage with digital learning at home.

Learners without access to computers at home can miss out on online lessons and interactive learning experiences. This is also true for learners who need to share one computer among multiple household members, which can create challenges to engage with digital learning when needed. In 2020, 28 per cent of households in Montenegro did not have access to a computer at home, while 32 per cent did not have access to the internet at home (ITU and UNICEF 2021). In 2021, the needs assessment sample conducted by UNICEF Montenegro shows greater access to devices among students in the sample, but inequities remain: 13 per cent of students had no access to computers at home, while 49 percent had to share a computer among household members and 38 per cent of learners had a computer of their own. Computer ownership was lower in the Northern region compared to the

Figure 1. Computer ownership among learners in Montenegro

Coastal or Central regions (Figure 1). On the other hand, access to smartphones among learners in the needs assessment sample was considerably higher: 96 per cent of learners owned a smartphone. While the quality of certain digital learning activities may be affected by the screen size of smartphones, ensuring that digital learning solutions can be accessed on smartphones can help bridge gaps in access to digital learning.

Gaps in access to devices and internet are remarkably salient for learners from minority backgrounds. No Roma and Egyptian household in the needs assessment sample owned a computer at home, while almost half, 46 per cent, did not have access to internet at home. Smartphones were owned by 8 out of 11 respondents (73 per cent). These results are in line with existing evidence on access to internet and digital devices among Roma and Egyptian households in Montenegro. In 2020, according to the Ministry of Justice, Human and Minority Rights, a majority of Roma and Egyptian households in Montenegro did not have a computer at home (80 per cent), 35 per cent did not have any access to internet and 10 per cent did not have electricity at home (MPVCG 2021).

Parents of learners with disabilities also shared that additional support is needed to assist their children engage with digital learning. Most parents of children with disabilities in the needs assessment sample did not have access to any kind of assistive technology at home (80 per cent). More than half (60 per cent) of parents in the sample also reported that the lack of online classes adapted to their children's learning needs was the biggest challenge as schools

closed during the COVID-19 pandemic. To address these challenges, 95 per cent of parents shared it would be useful to have a platform centralizing resources for children with disability including: games that stimulate everyday activities (90 per cent), personalized interactive activities (i.e. audio, videos) (85 per cent), personalized digital textbooks (i.e. DAISY textbooks) (65 per cent) or custom applications for speech and communication (i.e. C-board) (55 per cent). In terms of content, parents also recommended the inclusion of tips for spending quality time with children, for studying together or for parental self-care.

Continued support is required in Montenegro to bridge equity gaps in digital learning. To support access to digital learning during the COVID-19 pandemic, UNICEF in cooperation with the MoE and the Red Cross, distributed 770 tablets and paper-based take-home packages to vulnerable groups of learners, primarily Roma and Egyptian and children with disabilities (United Nations Montenegro 2020). In 2021, Montenegro Bureau for Education, in cooperation with UNICEF and with the support of DG Near, also issued the teacher guide *Improving the Quality and Inclusiveness of Education in the Digital Environment* (Zavod za školstvo and UNICEF 2022) which shows institutional commitment to improve inclusiveness within digital learning and recognizes the need for specific policies to address it. Going forward, continued support to ensure that children from minority backgrounds and children with disabilities can engage with digital learning is important to ensure equitable opportunities for all children. Scaling access to devices among Roma and Egyptian students, resourcing schools with limited

ICT capacity and prioritizing digital learning content that can be accessed on smartphones and content that follows Universal Design Principles² (UDL) can help to bridge equity gaps in digital learning.

Key research findings:

Ensure that children can engage with digital content on smartphones and enhance access to computers and assistive technologies in and out of schools. Children in Montenegro do not always have access to a computer at home or school. This is particularly true for children from minority backgrounds or children with disabilities, who often lack access to assistive technologies too. Developing digital learning content that can be accessed on devices that households have available at their disposal, usually smartphones, can help to bridge gaps in access to digital learning. Together with this, continued support in scaling-up access to computers in and out of schools is needed for the successful scale up of digital learning in the country. In this process, students from marginalized backgrounds and schools with limited ICT infrastructure should be prioritized to ensure equitable access to devices. Finally, developing content for Digitalna škola following Universal Design Principles is important to ensure that children with and without disabilities can engage with digital content.

2. Support the use of Digitalna škola as a central repository of online self-paced teacher training courses, organized through structured learning paths

In collaboration with UNICEF and with the support of the European Union, the Bureau of Education in Montenegro conducted extensive teacher training programs for digital learning, with a special emphasis on inclusive education. From 2021 to 2022, a total of 1,200 teachers (20% of all teachers) from 54 different schools in 25 municipalities were trained on delivering quality and inclusive education in a digital environment.

Teacher training programs delivered by the Bureau of Education increased teachers'

² Universal design learning principles accommodate individual learning differences and styles by making use of flexible learning environments to facilitate the inclusion of children with and without disabilities in the classroom

motivation to incorporate technology as part of their work and provided useful guidance for doing so effectively. More than two-thirds of teachers that took part in teacher training (68 per cent) reported being more motivated about using technology in their work following teacher training (UNICEF 2023). While the COVID-19 pandemic had driven teachers to use technology since 2020, teachers reported training sessions helped them to understand the benefits of using technology in education outside of the emergency response (71 per cent), or the digital tools that are more suitable for their work (43 per cent) (Idem). Teachers whose motivation to incorporate technology as part of their work did not increase following teacher training shared different causes. These included unreliable access to internet (30 per cent), belief that technology can expose children to dangerous online content (30 per cent) or preference for their current teaching practices (24 per cent) (Idem).

Feedback to fine-tune teacher training programs was collected during the implementation of teacher training. Most teachers shared positive feedback training programs, together with actionable recommendations to improve them going forward:

1. **Focus on practical learning by doing:** Teachers highlighted the usefulness of practical lessons in the training which included examples and exercises to include in their everyday work. Teachers also suggested creating a handbook compiling tools, pedagogical approaches and lesson ideas discussed during the training, so that teachers can refer to it in their everyday.
2. **Careful scheduling:** Teachers suggested shorter training sessions, scheduled to facilitate participation. As teachers frequently have a busy schedule during the week, training sessions were often scheduled during weekends. This, together with the length of training (three two-day modules), created barriers for some teachers to complete the training.
3. **Streamline focus on training:** Teachers suggested that focusing on many different tools could create confusion, as teachers would need to create multiple user accounts for each. Rather, focusing as much as possible on specific tools, such as Office 365 tools, could help teachers to streamline their toolbox.

Teachers also shared different areas where additional training would be useful to support them in incorporating technology as part of their everyday work. These included more guidance and training on technical aspects of using technology for education (36 per cent), training on

using technologies to create individualized learning pathways (34 per cent), or using technologies to make learning accessible for children with disabilities (32 per cent) (UNICEF 2023). Interviews conducted as part of the developmental evaluation also suggest that teachers are usually not familiar with the concept of using technologies to facilitate individualized learning, including for learners with disabilities (Idem).

Supporting the role of Digitalna škola as a central repository of teacher training programs can expand access to quality teacher training on digital learning. Teacher training programs are one of the most frequently accessed content categories within Digitalna škola. Supporting the role of the platform as a central repository of practical teacher training on digital learning can help to increase teachers' access to training opportunities on-demand, with standardized quality. Organizing these teacher training programs around learning paths can also help teachers to progress in a structured way and according to their learning needs along with teacher standards for digital learning.

Key research findings:

Training programs for digital learning should have a practical focus and their scheduling should be mindful of teachers' time and workload. Practical training opportunities with a participative approach can help teachers understand the benefits of using technology in education, encourage their use and help teachers make a more effective use of technology. Teacher training programs on digital learning should pay particular attention to the role of technology to facilitate individualized learning, including for children with disabilities. Scheduling of training programs should also be particularly mindful of teachers' workload to facilitate their attendance and protect their well-being. When possible, offering teachers opportunities to engage with self-paced teacher training content online, through interactive digital programs, handbooks or video recordings can help teachers to refer to learnings when needed, even if teachers were unable to attend training. This process can be facilitated by Digitalna škola which can become a valuable repository centralizing self-paced teacher training opportunities for teachers, organized around structured learning paths.



3. *Harness teachers', parents' and students' experiences to improve the usability and content of digital learning solutions.*

User testing of Digitalna škola revealed both positive user experiences and areas for improvement. Most teachers and parents (95 per cent) reported having no issues logging into the platform, while 96 per cent of teachers and all parents confirmed that lessons, videos, games, and PDFs loaded properly. Teachers gave the platform's navigation a rating of 4.3 out of 5, and 99 per cent found the materials easily searchable. The main challenge reported by teachers was monitoring students' learning (24 per cent), followed by navigating courses and quizzes (22 per cent). For parents, the top challenge was also monitoring their children's learning (33 per cent), followed by using interactive materials (22 per cent) (Figure 2).

In terms of content, teachers and parents shared the need to include more activities for learners and ideas for lesson plans as part of Digitalna škola. Most teachers reported being satisfied with the quality of content (90 per cent). One in every ten teachers (10 per cent) reported courses had too much information or were too long. Around half of teachers (52 per cent) reported learning something new while using the platform. Following this, teachers' suggestions for additional materials to be incorporated into the platform included: activities for learners (67 per cent) or ideas for lesson plans (26 per cent) (Figure 3).

Figure 2. Most reported challenges by teachers and parents

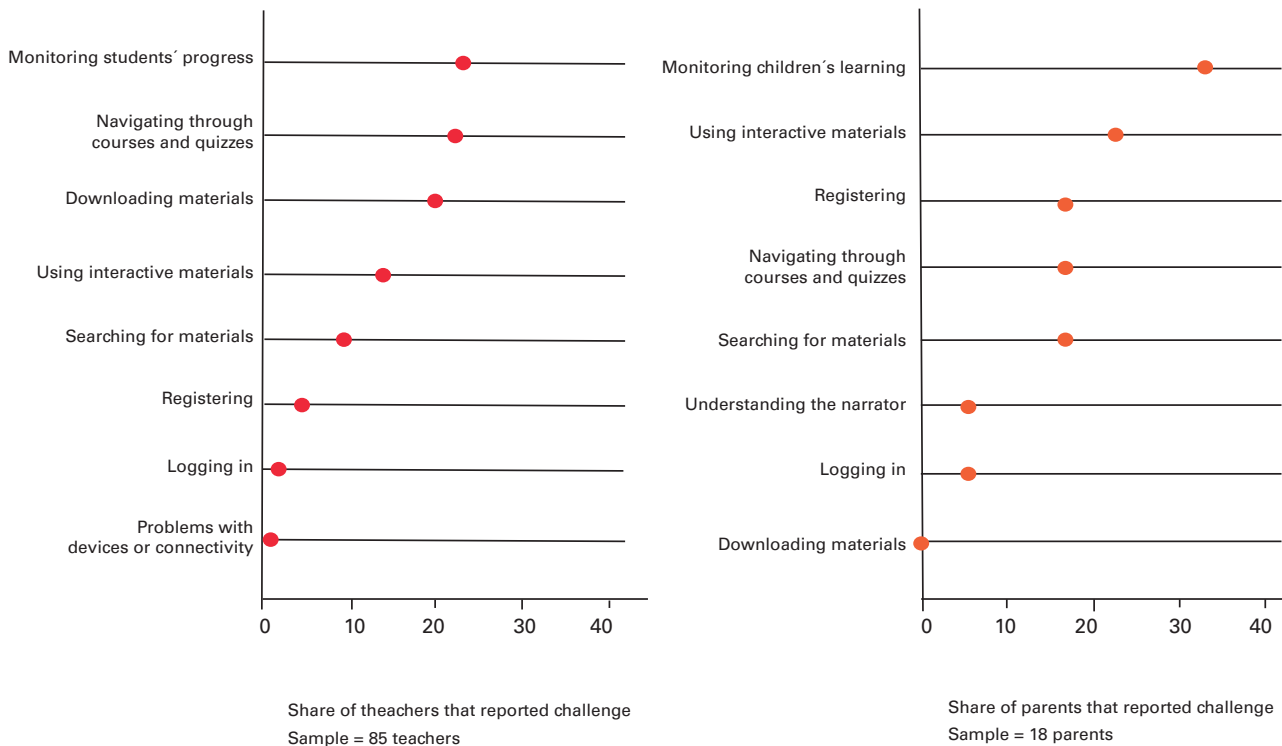
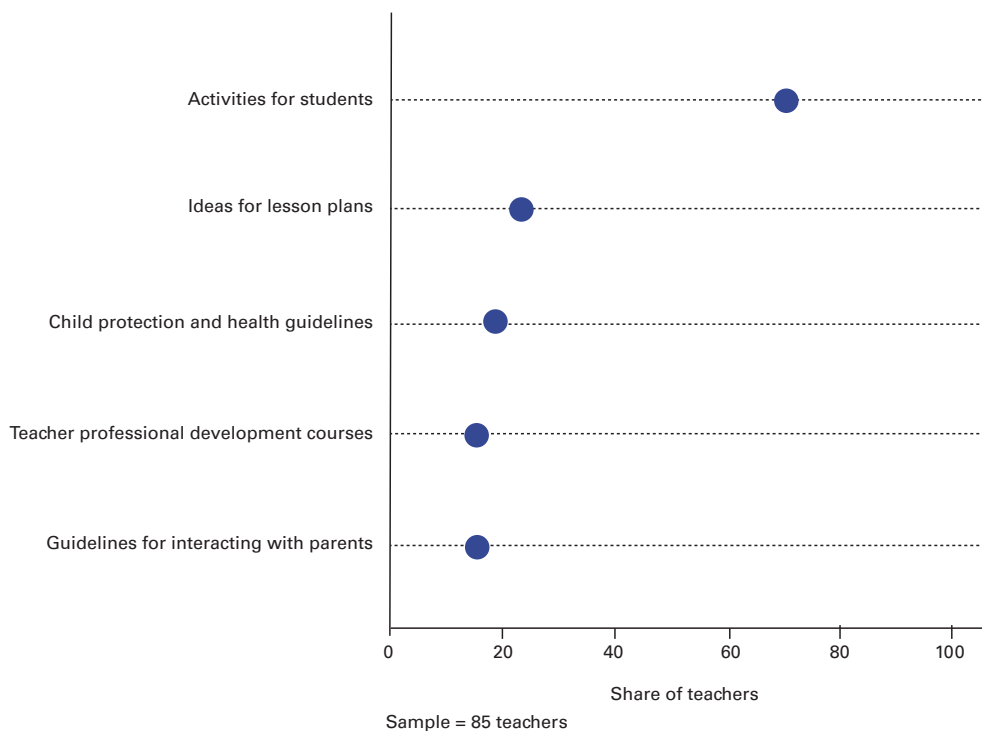


Figure 3. Additional content to be included in the platform



Key research findings:

Gathering feedback from teachers and parents through user-testing is critical for optimizing digital learning solutions for everyday use. Digitalna škola received positive reviews for usability. Yet, monitoring students' learning while using the platform proved difficult for some parents and teachers. Beyond getting technology ready, providing sufficient quality curriculum-aligned content that is accessible for children with and without disabilities is also crucial for the successful deployment of digital learning solutions.

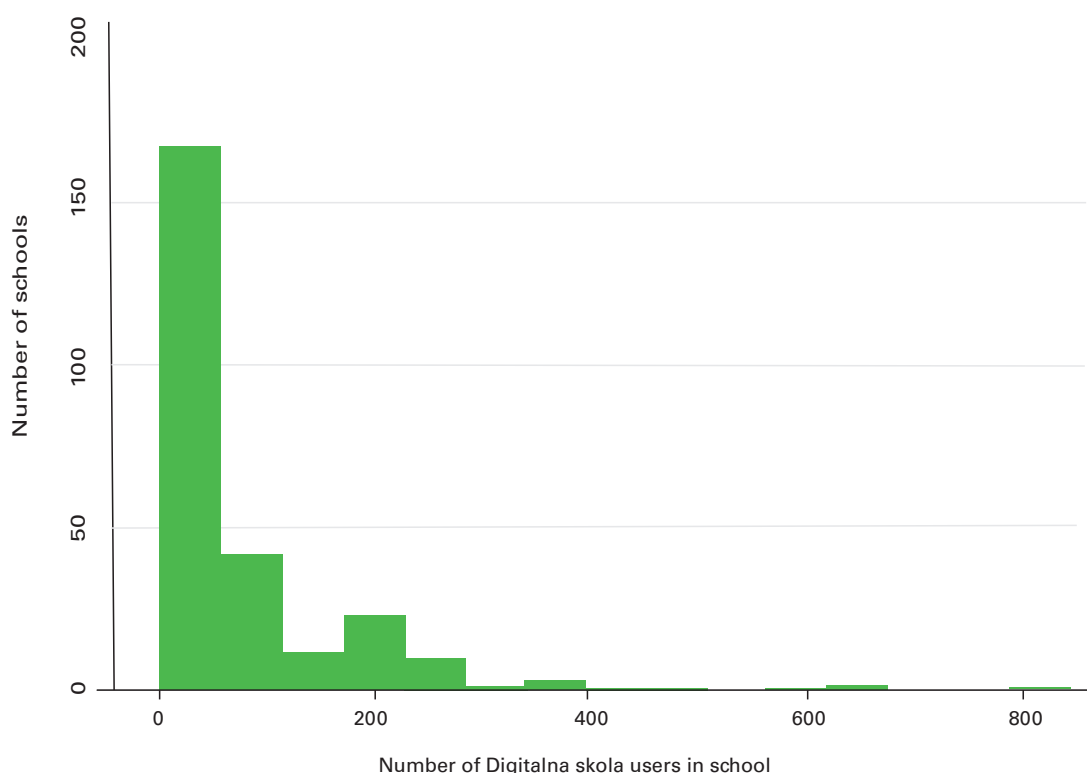
4. Research and strengthen school-level factors that can drive the take-up and effective use of digital learning in the classrooms

A large share of users of Digitalna škola is clustered in specific schools. As of March 2023, Digitalna škola has more than 28.000 registered users. Around half of these users are primary and secondary teachers or ECD teachers (45 per cent) and four out of five teachers are women (81 per cent). In terms of geographical location users come more frequently from populated urban areas

including Podgorica (29 per cent), Nikšić (14 per cent), Bar (8 per cent) or Kotor (6 per cent). Users in the platform belong to 264 educational institutions across Montenegro. Variation in the number of users per school is high, 62 schools (23 per cent) have more than 100 users registered representing 52 per cent of all users, while there are 95 schools (36 per cent of all schools in the platform) with less than 20 registered users (Figure 4). On average, schools that took part in training for Digitalna škola had a greater number of users (166), when compared to schools that were not targeted by the training (59). Additionally, findings from the developmental evaluation conducted by UNICEF Europe and Central Asia (2023) suggest that school-level characteristics can have a strong impact on teachers' adoption of technology in education. In particular, different teachers shared during evaluation interviews that school leadership support for digital technology and ICT coordinators can play an important role in encouraging teachers to incorporate technology in their work (idem).

Additional research would be helpful to identify key factors that encourage the uptake of Digitalna škola at the school and user levels. UNICEF has conducted research on the implementation of digital learning solutions in the Western Balkans, including Bosnia and Herzegovina, Kosovo, and North Macedonia, to identify mechanisms for

Figure 4. Digitalna škola users by school



scaling up. In North Macedonia, a community of practice was nurtured around the EDUINO digital learning platform, providing teachers with peer learning opportunities and encouraging their participation in digital learning (UNICEF Innocenti 2023a). In Kosovo, a lack of engaging digital learning content created obstacles to the implementation of blended learning in the classroom (UNICEF Innocenti 2023b). Further research is needed to identify best practices for encouraging the take-up of digital learning in Montenegro at the school level, including the role of school leadership, ICT coordinators, school ICT protocols, successful blended learning pedagogies, and the governance of digital learning policies. Strengthening data collection around digital learning in Montenegro will also be important to support evidence generation. This includes encouraging users to complete their user profiles upon enrolling in Digitalna škola, to gain a better understanding of their use of the platform. Obtaining clear-cut statistics about which types of users engage most frequently with the platform is challenging, as almost half of registered users do not report their location or which user category they belong to (43 per cent).

Key research findings:

Additional evidence is needed to identify school-level factors that drive the take-up of digital learning solutions at the school level. Teacher training on digital learning platforms and school-level characteristics can have a great influence on the take-up of digital learning solutions at the school level. Additional research can explore the role of school leadership, ICT coordinators, school ICT protocols, successful digital learning pedagogies, or the governance of digital learning policies. This research can be leveraged to design evidence-informed policies for steering the use of digital learning, such as appropriate mechanisms to support the role of ICT coordinators or effective school-level training opportunities on digital learning for the school leadership team and schoolteachers.

5. Leverage data at the systems level to inform the effective implementation of digital learning strategies

Compared to other countries in the Western Balkans, Montenegro has a relatively strong strategic and legislative framework for digital learning. The MoE, with support from UNICEF

and funding from DG Near, developed the Strategy for Digitalization in Education (2022-2027), with an action plan for 2022 and 2023. The strategy identifies key challenges affecting the delivery of quality digital learning in Montenegro and links them with specific goals to overcome them. Each goal in the strategy is broken into specific objectives, linked with baseline values, and target values to track progress. The strategy also outlines sources of finance for each objective, roles and responsibilities. The strategy aligns with the broader strategy for education in Montenegro and with the Strategy for Digital Transformation in Montenegro 2022-2026, which coordinates efforts across ministries. This approach facilitates coordination and monitoring efforts to track progress against key targets.

Evidence was leveraged to inform the development of digital learning policies and strategies. To develop the strategy, evidence was compiled through a desk review and consultations with ICT coordinators, school directors, teachers, parents, and representatives of educational institutions, as well as through SELFIE³ assessment data. Teachers in 197 primary and secondary schools (out of 211) used SELFIE to self-assess their digital competencies.

The Strategy for Digital Transformation in Montenegro 2022-2026 is complemented by different guidelines to support the delivery of quality digital learning, including the *Quality standards for digital textbooks and auxiliary digital educational materials*, developed by the Textbook authority in collaboration with UNICEF. The standards provide textbook editors and authors with quality and methodological guidance for the development of curriculum-aligned digital textbooks and instructional materials.

Going forward, continued efforts to strengthen Montenegro's education information system (MEIS) will help decision-makers to monitor implementation progress, increase accountability and update the strategy's action plan beyond 2023. The Strategy for Digitalization in Education (2022-2027) already incorporates recommended principles for the development of digital learning strategies, including a holistic focus, an understanding of the existing ecosystem or a design for scale (Caitlin Coflan et al. 2022). Collecting quality data from different stakeholders involved in the delivery of digital learning will be important

³ **SELFIE** (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies) is an assessment tool designed by the European Commission to help schools embed digital technologies into teaching, learning and assessment

Key research findings:

Montenegro has a relatively strong strategic and legislative framework for digital learning, which is evidence-informed and supported by guidelines and standards for implementation.

Informed by Montenegro's digital learning context, the strategy identifies key areas for action and links them with specific achievable goals in its action plan for 2022 and 2023. Continued efforts to strengthen Montenegro's MEIS can help to track implementation progress on current targets and identify emerging needs in relation to digital learning for updating the strategy's action plan going forward.

to monitor its implementation and update the strategy's action plan beyond 2023, as new needs emerge in relation to digital learning. This includes, for instance creating a database of the state of digital infrastructure available for schools or data which can be used to help decision-makers understand the needs of teachers, students, school leaders, caregivers and other education stakeholders.

Conclusion

Montenegro's Strategy for Digitalization of Education (2022-2027) recognizes that beyond a tool for emergency remote learning, quality digital learning can be leveraged by teachers to provide student-centered learning in and out of the classroom. Digitalna škola, Montenegro's national platform for digital learning can play a crucial role in this process. However, effective implementation requires certain conditions to be met

This research leveraged quantitative and qualitative data collected during the implementation of Digitalna škola to support its scaling up and facilitate peer learning across countries developing digital learning solutions. Key research findings and related policy implications, presented below, provide strategies to support schools, teachers, parents and learners in leveraging digital learning to enhance education delivery in Montenegro:

1. **Ensure that all learners, including learners from minority backgrounds and learners with disabilities, can engage with digital learning content at school and home.** To promote equal opportunities for all students, it is essential to provide continued support to children from minority backgrounds and those with disabilities. Strategies such as scaling access to devices
2. **Emphasize practical aspects during teacher professional development programs for digital learning.** Practical training opportunities, involving hands-on activities such as creating lesson plans incorporating digital learning solutions are helpful to provide teachers with tangible examples of how to incorporate digital learning solutions as part of their work. For teachers to engage effectively with training opportunities, scheduling and length of training sessions should be mindful of teachers' workload and schedule. When possible, offering teacher training content online, through interactive digital training programs, handbooks or video recordings can help teachers to refer to learnings when needed. This process can be facilitated by Digitalna škola which can become a valuable repository centralizing self-paced teacher training opportunities for teachers, organized around structured learning paths.
3. **Harness teachers', parents' and students' experiences to improve the usability and content of digital learning solutions.** Gathering feedback from teachers and parents through user-testing is critical in optimizing digital learning solutions for everyday use. Digitalna škola received positive reviews for usability. Yet, monitoring students' learning while using the platform proved difficult for some parents and teachers. Beyond getting technology ready, providing sufficient quality curriculum-aligned content that is accessible for children with and without disabilities is also crucial for the successful deployment of digital learning solutions
4. **Research and strengthen school-level factors that can drive the take-up of digital learning solutions at the school level.** ICT support staff, school infrastructure, or school leadership support for digital learning solutions can have ripple effects on the number of teachers that embrace digital learning at the school level. Planning for and resourcing the implementation of digital learning at the school, and classroom level, is important to ensure a supportive school environment for digital learning.
5. **Leverage data at the systems level to monitor the effective implementation of digital learning strategies and to update**

implementation objectives as new needs arise. Montenegro already has in place a comprehensive digital learning strategy, which includes specific objectives, earmarked financial resources and assigned roles and responsibilities for its implementation. Digitalna škola is embedded in the strategy, which also aligns

with education sector plans and the national strategy for digitalization. To ensure its effective implementation, leveraging data from different stakeholders involved in the delivery of digital learning will be important to monitor progress and update the strategy's action plan as new needs emerge in relation to digital learning.

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