Bulgaria's "Equal Access to School Education in Times of Crisis" Project

Final evaluation

Foreword

This report is an output under the OECD's agreement to support the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027.

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Executive summary

The COVID-19 pandemic posed an unprecedented challenge to Bulgaria's education system. Within a short timeframe, schools in Bulgaria and around the world had to transition to distance learning. In order to prevent the widening of disparities across the EU Member States and to avoid an uneven recovery process, the European Commission provided additional resources for the Structural and Investment Funds for the period 2020-2022. These additional resources were designated as REACT-EU (Recovery Assistance for Cohesion and the Territories of Europe).[1]

In Bulgaria's education system, the REACT-EU funds were used for the "Equal Access to School Education in Times of Crisis" project, which ran from February 2021 to December 2023. The project's aims were to:

- Improve the conditions and ensure equal access for distance learning in electronic environment.
- Create the conditions for improving the digital skills of teachers to work more effectively in a virtual environment.
- Promote the use of innovative teaching and learning methods.
- Encourage parents' motivation to engage more actively in the educational process at a distance in an electronic environment in order to support students in the family environment.

The REACT-EU regulation required that at least one evaluation be conducted by 31 December 2024 to assess the effectiveness, efficiency, and impact of the REACT-EU funds.[2] This report presents this evaluation. It examines whether and how the project met its aims according to seven criteria, covering the required criteria of effectiveness, efficiency, and impact, as well as the project's relevance, coherence, EU added value, and sustainability. It draws on an extensive review of national and international evidence, data from a non-representative evaluation survey (178 schools and school principals in 6 regions of Bulgaria, with 748 teachers, 1 115 students, 44 representatives of Regional Education Departments (REDs)) and a series of in-depth interviews and focus groups with principals, teachers, students, parents, social partners, NGOs, and ministry officials.

The evaluation concludes that the project successfully improved equality of access to digital devices and helped build basic digital skills for teachers, students, and educational mediators, addressing clear needs in the Bulgarian education system. By supplying devices and training, the project reduced the risk that future moves to online learning in the short and medium term would widen educational disparities, especially among vulnerable groups, such as Roma communities. This was a notable achievement, particularly for a limited one-off project taking place in the context of an international health crisis. The project efficiently distributed devices and provided training across Bulgaria's education system, aligning

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[1] The REACT-EU funds were created by amending Regulation (EU) No 1303/2013. The "Equal Access to School Education in Times of Crisis" project was created through an amendment to Bulgaria's Operational Programme "Science and Education for Smart Growth" 2014-2020 (OPSESG).

[2] The requirement for evaluation is specified in art. 92b, paragraph 12 of Regulation (EU) № 1303/2013. This evaluation report is provided under the OECD's agreement to support the evaluation plan of the current Operational Programme (Programme "Education" (2021-2027) in Bulgaria).

with national and European inclusive education and digitalisation strategies, and receiving positive feedback from most stakeholders.

However, there is limited evidence that the provision of devices and basic digital skills led to a significant increase in innovative digital teaching and learning methods. More advanced, subject-based training in digital pedagogy, and a longer timeframe, would have been necessary to create a meaningful impact in this area. Furthermore, there is little evidence that the project had a major impact on increasing parental and caregiver involvement in remote learning. A large-scale return to remote learning did not take place within the project period, meaning that parental involvement in remote learning could not be tested, but the evaluation also finds that digital skills were not the only barrier to parental engagement in remote learning. The evaluation highlights key lessons for future policymaking, including the importance of equal access as a starting point but not an end point for ensuring equity and inclusion in distance and digital education contexts. It also emphasises the importance of a long-term strategic approach to both parental involvement and the development of advanced digital skills.

1 Overview

Key findings by evaluation criteria

This section provides an overview of the key messages of this evaluation, covering each evaluation criteria of relevance, effectiveness, impact, efficiency, coherence, sustainability and EU added value. It also provides a summary of the project's promising practices, along with lessons and recommendations for improvement.

Relevance

- **Improving equal access to devices was a key need**: Whilst more than half of surveyed schools (60%) did not identify access to devices before the project's activities as a major issue, a notable proportion of disadvantaged schools did. Schools with higher proportions of students who did not speak Bulgarian at home and smaller schools reported more significant access problems. Despite progress in expanding digital provision in Bulgaria, gaps in access were still evident when the project began, which highlighted the initiative's relevance.

- **Improving digital skills was a key need**: One-third of students reported their teachers struggled with online platforms during the pandemic, and nearly half of students reported that they themselves didn't know how to use online platforms. Both national and international evidence from the time showed the need for improved digital skills for teachers and students. The project therefore addressed a highly relevant need in providing training on basic digital skills. However, advanced digital skills are necessary for effective distance teaching and learning. While other initiatives were addressing some aspects of advanced digital skills, the REACT-EU training could have also incorporated attention to the skills needed for interactive pedagogy, differentiated approaches for equitable learning, the creation of digital assessments, and supporting students to produce digital products. Expanding the scope to cover these areas could have enhanced the project's ability to promote more innovative and effective distance and digital education.

- **Supporting parental involvement was a key need**: Over 60% of principals, especially in smaller and vocational schools or those with higher ethnic minority populations, reported that some parents lacked the digital skills to assist with remote learning. Addressing the digital skills of parents was therefore a key need. Yet, digital skills were not the only barrier preventing parental engagement in distance learning. Research participants also cited unfamiliarity with the curriculum, distrust or negative relationships with institutions, stress, language barriers, and competing priorities as challenges to parental engagement in remote learning. While other European-funded projects in Bulgaria were using targeted strategies to involve parents in student's education generally, participants felt broader measures were needed to promote parental engagement in distance education specifically.

- **Additional areas of training addressed key needs**: The project's amendment in 2023 extended project activities to include a range of additional training, including for supporting students with Bulgarian as a second language, supporting pre-school children to overcome crisis and promoting socio-emotional learning. Research participants agreed that these matched emerging needs

BULGARIA'S "EQUAL ACCESS TO SCHOOL EDUCATION IN TIMES OF CRISIS" PROJECT © OECD 2025

related to responding to varied crisis situations. The programme adjustments were seen as relevant to the evolving crisis, and this was supported by both national and international data.

- **Some additional needs were important but were outside of the scope of the project:** Internet connectivity and power outages affecting the local community were also reported as barriers to continued education, especially by smaller and rural schools. Whilst schools could use REACT-EU funds for internet access within school premises, addressing wider infrastructure issues was outside of the scope of the project and was not addressed.

Effectiveness

- **Supporting equal access to devices:** The project successfully distributed over 85 000 digital devices, which contributed to increasing equality in access to technology. By 2022, Bulgaria's device availability exceeded the OECD average, and the project met its targets for device provision. Feedback from stakeholders was strongly positive.

- **Supporting basic digital skills:** The project provided training in digital skills to over 185 000 individuals, meeting most of its targets to enhance digital capabilities among teachers, students, and parents. This supported the transition to distance learning during localised school closures due to flu epidemics and flooding but played less of a role during the COVID-19 pandemic as schools returned mostly to in-person learning during the project implementation.

- **Supporting distance learning:** The project took place after most schools had returned to in-person learning, meaning its role in supporting continued learning during the initial, most disruptive phase of the pandemic was limited. The procurement and delivery of devices was rapid in the context of extensive disruption to supply chains. However, a widespread return to distance learning did not take place during the project period and so the devices were not widely used to support distance learning. Instead, the devices were used in schools for digital education, sometimes involving project-based learning, when not being lent to students for distance learning.

- **Supporting involvement of parents and educational mediators:** More than 40% of principals reported increased parental engagement, though this was less common in schools with higher concentrations of ethnic minorities. The project could have better targeted outreach efforts to engage the most disadvantaged parents and provided additional support for educational mediators to engage harder-to-reach families.

Impact

- **Crisis preparedness**: More than 90% of principals reported feeling better equipped to handle future crises and transition to remote learning if needed. The project made a significant contribution to preparing Bulgaria's education system and digital infrastructure for crises in the short and medium-term. However, schools may still lack the more advanced skills required to adapt to changes in digital learning environments and platforms over the long-term.

- **Limited impact on teaching and learning**: Most participants reported that the training improved teachers' ability to use online platforms, and over 80% of principals saw improvements in collaboration among teachers. However, 25% of teachers felt the training was too basic, and about one-third of both teachers and principals felt it had limited impact on improving teaching and learning outcomes. Whilst the project specifically targeted basic digital skills, this focus limited its ability to create more widespread and sustained impact.

- **Student's ability to use online platforms:** While more than 70% of principals indicated that the training strengthened students' basic digital skills, students' confidence in using digital platforms remained below the OECD average. The training could have included some attention to developing

students' more advanced digital skills. This would have supported students not just to access digital platforms, but to confidently use them for effective digital learning and product creation.

- **The enabling environment**: The project's potential impact was hindered by areas in which Bulgaria's digital ecosystem is under-developed, and the lack of some key components for effective distance learning. For example, more support on digital pedagogy and assessment could have helped teachers better engage students in online environments.

- **Completion rates**: While the dropout rate decreased by 4.6% during the project period, this trend may reflect pre-existing patterns rather than the project's direct effect.

Efficiency

- **Fairness, transparency, and coordination**: More than 70% of principals expressed confidence in the fairness and transparency of the device procurement process, and almost 90% felt that accessing the information needed to manage the project was straightforward. Almost all reported having adequate support and indicated that they thought the project was managed efficiently.

- **Costs and benefits**: Despite costs associated with purchasing devices and training, the benefits of providing equal access to digital tools and skills appeared to outweigh the expenses, especially in relation to the social costs of not addressing digital disparities, which would have been substantial.

- **Administrative burden**: Participants highlighted a high administrative burden involved in managing the project, particularly around compliance checks, and suggested that monitoring data could be used more effectively to inform decision-making. Reducing administrative complexity whilst strengthening the collection of relevant monitoring data could help improve efficiency in future projects.

Coherence

- **Internal coherence**: Stakeholders reported positive views on the coherence of the project, though some suggested that alignment between the project's objectives and activities could have been stronger. A more explicit focus on whether the enabling conditions for digital and distance teaching and learning were present (e.g. curricula, pedagogy, and assessment) would have enhanced the project's ability to align its activities with its broader objectives, including the objective to promote the use of more innovative teaching and learning methods.

- **External coherence**: More than half of REDs felt the project did not duplicate existing initiatives and that it aligned well with national and European strategies. However, some stakeholders suggested that coordination across related projects could have been improved through more regular meetings, experience-sharing events, and better communication channels.

Sustainability and EU Added Value

- **System preparedness**: More than 90% of schools reported feeling better prepared for future disruptions, and many stakeholders agreed that the provision of devices and training improved the system's preparedness for crises. The flexibility provided to move devices between schools was seen as an important measure for ensuring sustainability.

- **Sustainability measures**: However, many schools noted a lack of funding to replace devices once they reach the end of their lifespan or to update and maintain digital skills. This points to a need for more robust mechanisms to ensure the long-term sustainability of both the provided resources and the training.

- **Crisis response**: The project demonstrated clear EU added value by providing crisis response measures at a scale made possible through REACT-EU funding, and which would not have been feasible without such support.

Promising practices

The project demonstrated several promising practices that could be built upon in future initiatives:

Increased access to digital devices: Schools reported that increased access to digital devices enabled them to reach students in need. This is a significant achievement, especially in a context where access to devices was uneven prior to the pandemic, helping to reduce disparities and equip schools to transition to distance learning and respond to education disruptions in the short and medium-term future.

Putting equity issues at the centre of digitalisation: The project made efforts to prioritise equity by including a focus on providing resources and support to disadvantaged students. This equity-centred approach is important to creating a more inclusive education system.

Support for basic digital skills: Although the training initiatives were limited in scope, they addressed an important need by aiming to strengthen the digital skills of teachers, students, parents, and educational mediators. Improving digital literacy is essential for both student and teachers to engage effectively with distance learning.

Mobilising educational mediators and providing training: Educational mediators played a critical role in bridging communication gaps between schools and marginalised communities. Providing these mediators with training helped equip them to support the digital learning of vulnerable students and families, even if they were not able to reach all parents.

Crises preparedness, risk management and flexibility: The project represented an important crises response measure to manage the risk of disruptions to online learning in the short and medium term. The project demonstrated adaptability by extending its activities to address crisis-related needs, such as socio-emotional learning and support for non-native Bulgarian speakers. This flexibility was important to the system's ability to respond to emerging challenges during and after the COVID-19 crisis.

Moving towards greater teacher collaboration and a culture of resource-sharing between schools: While not fully developed, the training promoted greater collaboration among teachers whilst the ability to move devices between schools could be useful in future educational disruptions. Such measures could enhance collective capacity and innovation in addressing educational challenges in the future.

A good level of communication and transparency between different levels of the education system: The project highlighted some strengths in the Bulgarian system that supported crisis management. For example, the level of coordination and communication between national, regional, and school levels of education were well-regarded, even if there could have been further communication horizontally across related projects.

Lessons and recommendations

The evaluation offers several lessons and recommendations, as set out in Figure 1.1.

Figure 1.1. Lessons and Recommendations

Ensuring basic access is only the first step towards equity	**Recommendation 1:** Future projects could integrate measures to promote equitable learning outcomes, not just equitable access to digital devices.
Basic digital competences are not enough	**Recommendation 2:** Future projects could go beyond basic digital skills and one-off training to give attention to more advanced competencies, pedagogical approaches and ongoing skills development to support more effective digitalisation.
Digital skills are not the biggest barriers preventing parental involvement	**Recommendation 3:** Future projects could take a more comprehensive approach to enhancing parental engagement in digital and distance learning by expanding the role and support provided by educational mediators.
A systems approach is crucial even in times of crisis	**Recommendation 4:** Future projects, even in times of crisis, could benefit from taking a more systems-based approach to digital education, one that not only addresses immediate needs but also builds long-term sustainability.
Monitoring as a learning tool, not just a compliance exercise	**Recommendation 5:** In future projects, monitoring could more clearly focus on learning and improvement, helping stakeholders identify ongoing needs and draw lessons to better support learning for all.

2 Introduction: Purpose and objectives of the evaluation

This report provides a final evaluation of Bulgaria's "Equal Access to School Education in Times of Crisis" project (BG05M2OP001-5.001), which ran between February 2021 and December 2023. The project was supported by the Recovery Assistance for Cohesion and the Territories of Europe (REACT-EU) funds and co-financed through the European Structural and Investment Funds.[3] This report evaluates the project's relevance, effectiveness, efficiency, coherence, EU added value and sustainability. It also assesses what available evidence reveals about its impact.[4]

The evaluation took a mixed-methods approach, informed by a realist evaluation methodology. Data collection included an extensive review of relevant national and international evidence, an ad hoc OECD survey with 178 schools and principals, 748 teachers, 1 115 students, and 44 representatives of Regional Educational Departments (REDs), 4 school visits, and interviews and focus groups with 25 teachers, 20 students, 4 principals and 20 parents. It also included input from NGOs, social partners and ministry and government agency representatives. The evaluation took place between March and December of 2024.

The COVID-19 pandemic brought extraordinary challenges for education systems worldwide, prompting a rapid move to remote instruction to ensure students could continue learning during school building closures. This project was conceived as part of Bulgaria's COVID-19 response and recovery measures. As such, it was designed and implemented in an accelerated timeline amid widespread disruption to both education and working life. This report aims to evaluate the project's success in achieving its objectives within this challenging context. Additionally, it explores lessons learned beyond the project's immediate goals, offering insights for improving educational programming in Bulgaria and enhancing the Bulgarian education system's resilience in future crises.

The evaluation finds that the project successfully strengthened equal access to digital devices and supported the development of basic digital skills for teachers, students, parents, and educational mediators. These were clear needs within the Bulgarian education system. By delivering devices and training, the project helped to mitigate the risk that transitions to remote learning in the short or medium term would exacerbate disparities in learning outcomes, particularly for vulnerable groups, such as Roma communities. This was a significant achievement, especially given the crisis context. The project was efficient in its delivery of devices and training across the Bulgarian education system. It aligned with national inclusive education policies and was well-regarded by most stakeholders in Bulgaria.

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[3] As part of measures to support recovery from the COVID-19 pandemic, the European Commission provided additional "REACT-EU" funds for the Structural Funds for the period 2020-2022, by amending Regulation (EU) No 1303/2013. In Bulgaria, the Operational Program "Science and Education for Smart Growth" 2014 – 2020 (OPSESG) was amended to add new Priority Axis 5 "EQUAL ACCESS TO SCHOOL EDUCATION IN CRISIS CONDITIONS" and procedure "Equal access to school education in times of crisis" to be launched.

[4] This evaluation is provided under the agreement for the OECD to provide evaluation support for the evaluation of Bulgaria's Programme Education. The Agreement between the OECD and the Executive Agency "Programme Education" was ratified by the Bulgarian Parliament and entered into force on 23 February 2024.

However, there is little evidence to suggest that the project's provision of access and basic skills supported significant increases in innovative teaching and learning methods. More advanced, subject-based training in digital pedagogy, and a longer timeframe, would have been necessary to create a meaningful impact in this area. There is also little evidence to suggest that the project had a large impact on increasing parents' and caregivers' involvement in children's remote education, particularly because a lack of digital skills was not the only barrier that prevented their engagement. Other barriers included lack of familiarity with the curriculum, distrust or negative relationships with institutions, stress and overwhelm, language barriers and competing priorities and pressures. The report highlights several lessons from the project, including the importance of equal access as a starting point but not an end point for ensuring equity and inclusion in distance and digital education contexts and the need for a long-term strategic approach to parental involvement and the development of digital skills.[5]

The report is organised as follows: this section introduces the purpose of the REACT-EU funds, outlines the project's activities, presents a logic model to illustrate its theory of change and outlines how the project aimed to create impact. Section 3 discusses the evaluation context, providing a brief snapshot of the COVID-19 pandemic in Bulgaria, and outlining existing challenges of digitalisation and equity in education as they stood at the beginning of the pandemic. The context section also outlines some of the programmes that were taking place concurrently with the REACT-EU project. Section 4 outlines the evaluation approach, including research design and data collection methods. Sections 5-10 provide the main findings, organised by each evaluation criteria and question. The findings are organised by first addressing the provision of digital devices, and then the training provided for a) teachers, b) students, and c) parents and educational mediators. Finally, these sections address the additional training activities that took place after the 2023 programme amendment and other relevant findings. Section 11 outlines lessons, recommendations, and conclusions. Annex A contains the full evaluation questions, judgement criteria and illustrative indicators, along with an assessment of whether these have been met. Annex B provides detailed overview of the budget allocations for project activities and corresponding expenditure.

The REACT-EU funds

In response to the COVID-19 pandemic, the European Commission (EC) topped up the European Structural and Investment funds, with the aim of avoiding an uneven recovery process and preventing the widening of disparities between European member states[6]. The REACT-EU funds were intended to support the continuation and extension of crisis response and repair measures in European countries.

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[5] The project's first aim was to improve the conditions of distance education during the COVID-19 pandemic. More broadly, it also aimed to support the digital education ecosystem in Bulgaria. This report uses the terms *distance*, *remote*, and *online education* interchangeably to refer to a method of education in which students and teachers are physically separated, relying primarily on digital technology to connect and conduct classes virtually. In contrast, the term *digital education* is used to describe a broader educational approach that incorporates technology to enhance and support teaching and learning, both inside and outside of the traditional classroom. Digital education includes a wide range of tools, resources, platforms, and pedagogical techniques that can be applied in various settings, whether for in-person, blended, or fully online instruction.

[6] Regulation (EU) 2020/2221 of the European Parliament and of the Council of 23 December 2020 amended Regulation (EU) No 1303/2013 implementing additional resources and arrangements to aid with fostering crisis repair in the context of the COVID-19 pandemic and its social consequences and for preparing a green, digital, and resilient recovery of the economy (REACT-EU). The Regulation introduced a new thematic objective 'Fostering crisis repair in the context of the COVID-19 pandemic and its social consequences and preparing a green, digital and resilient recovery of the economy" and an investment priority with the same title.

Funds were distributed in 2021 and 2022 and were to be spent before 31 December 2023. The REACT-EU funds aimed to enable countries to respond rapidly to the COVID-19 pandemic with a focus on crisis recovery, preparation for green and digital transformations and prevention of further crises. In particular, they were intended to support member countries to develop and maintain infrastructure of different kinds (e.g. human, social, technical etc.), with the underlying goal of encouraging economic growth in the EU. Evaluations of REACT-EU-funded activities were required before the end of December 2024.

The Equal Access to Distance Education in Times of Crisis Project

In the Bulgarian education system, REACT-EU was used for the activities under procedure "Equal Access to School Education in Times of Crisis". The main objectives of these activities were to prevent interruptions in education and to ensure inclusive education during the COVID-19 pandemic and in any future crisis situations. Specifically, the activities aimed to:

- Support equal access to distance learning and improve the conditions of distance learning.
- Create the conditions for improving the digital skills of teachers for more effective teaching and learning in distance and digital environments and promote the use of innovative teaching and learning methods.
- Encourage more active involvement of parents in distance education in order to support students to learn in the family environment.

The REACT-EU initiative in Bulgaria was designed first to respond to the possibility of a prolonged pandemic by providing equal access to devices and skills and supporting parental involvement in distance education. This was intended to promote continuity and inclusivity in education during the COVID-19 pandemic. However, the broader objectives focussed on preparing the system for future crises, enhancing the digital education ecosystem in terms of digital infrastructure and improved teaching, and learning practices, and on strengthening equity and quality in both distance and digital education in general. The activities aimed not only to address urgent needs but also to build a foundation for ongoing improvements in digital and remote learning contexts.

The project was originally designed with five main components:

1. Provision of digital hardware (laptops, tablets, and storage cabinets).
2. Training for students in distance and digital learning, including for vulnerable groups such as Roma communities.
3. Training for teachers and pedagogical staff in distance and digital teaching and learning.
4. Training of parents and educational mediators for distance and digital learning.
5. Support for additional synchronous distance learning in an electronic environment.

With a total budget of EUR 52 million, the project was implemented from February 2021, with an expected duration of 35 months (see Table 2.1 for a breakdown of funds). It aimed to cover all schools in the country and hoped to help 210 000 people to acquire distance-learning skills (European Commission, 2023[1]). However, in 2023 due to the invasion of Ukraine, the project was adapted to extend Activity 5 and to add Activity 6, which included the following:

A. *Teaching Bulgarian as a foreign language*: Developing methodologies, models, and training to improve teaching Bulgarian as a foreign language to Bulgarians returning from abroad who had missed some of their education.

B. *Supporting Socio-emotional learning*: Training and developing and testing methodologies and tools for social-emotional learning in innovative schools.[7]

C. *Support for children in pre-school education to overcome crises*: Intensive work with parents to support the personal development of children in preschool education, including children from Ukraine.

Some training also took place on responses to potential terrorism or school violence and other related topics.

These activities were related to the project's broader strategic goal to strengthen the Bulgarian education system's resilience to future crisis. The focus of this report will be activities 1-4 above. However, the report will also consider the relevance and coherence of activities 5-6 and provide brief findings on their effectiveness and outcomes.

Table 2.1. Allocation of funds across project activities after the 2023 March amendment

Activity	Sub-activity	Funds allocated
Activity 1: Purchase of technical resources for pedagogical specialists and students to ensure the educational process in times of crises		71 233 248.50 BGN
	Laptops for students	46 779 259.15 BGN
	Tablets for students	2 429 272.86 BGN
	Laptops for teachers	20 103 153.66 BGN
	Universal cabinet for charging up to thirty laptops and tablets	1 921 562.83 BGN
Activity 2: Training for students, including from vulnerable groups to acquire skills for distance learning in an electronic environment		2 800 000.00 BGN
Activity 3: Training pedagogical specialists to improve their skills, including teaching/conducting remote activities in an electronic environment, as well as teaching Bulgarian as a foreign language		419 100.00 BGN
Activity 4: Training of educational mediators and parents to acquire skills to work in an electronic environment (including educational platforms, search for e-content, etc.,)		450 000.00 BGN
Activity 5: Support for additional synchronous training, including remotely in an electronic environment and development and approbation of methodology/tools/models for socio-psychological/emotional support		8 427 460.00 BGN
Activity 6: Support for children in pre-school education to overcome crises		11 975 198.77 BGN
Indirect costs		6 337 395.21 BGN
Total		101 642 402.48 BGN

Note: See Annex B for details on budget allocation and spending, broken down by specific cost categories.
Source: Executive Agency "Programme Education" (2023[2]), Agreement: Equal access to school education in times of crisis, after the 2023 amendment

Project management

The Ministry of Education and Science was the grant beneficiary, receiving and further administering the funds. They also managed the project activities, with a team being coordinated at the central level for this purpose. Regional teams within REDs and school teams managed the project at the regional and school levels (EUMIS, 2020[3]).

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[7] In Bulgaria, *Innovative Schools* are those that have been officially recognised by the Ministry of Education and Science for implementing new teaching methods, curricula, or management practices that improve educational outcomes. These schools join a network dedicated to advancing innovation and excellence in line with national and EU educational objectives.

Distribution of resources

Devices were distributed at school level, in proportion to the number of students in the school and funding group the school belonged to. The funding group of a school depends on the concentration of children from vulnerable groups in the school. This means that small schools with higher concentrations of pupils from vulnerable groups were provided with more devices than similar sized schools with lower concentrations of children from vulnerable groups. Within their allocated funds, schools were able to declare the number and type of devices needed for students and teachers and how many students, teachers, parents, and educational mediators would receive training (EUMIS, 2020[3]). Schools temporarily lent devices to students as needed, and organised training sessions, lasting 4 hours for students, 6 hours for pedagogical specialists, and 2 hours for parents and educational mediators. The training took place mainly in-person in small groups.

The implementation of project activities was required to comply with the horizontal principles of:

- Sustainable development
- Equal opportunities and non-discrimination
- Gender equality

Box 2.1 provides an example of what the project activities involved in one school.

Box 2.1. An example of "Equal Access to School Education in Times of Crisis" project activities in one school

One primary school received about 30 laptops for students, 10 laptops for pedagogical specialists, and one cabinet universal charger. When applying for the project, the principal held a meeting to ask parents if they needed devices, with 24 families later responding positively. The principal knew that some other families within the school also needed devices from prior discussions. As a result of the project, these families were temporarily provided with the necessary devices during periods of distance learning. The school noted that, once returned, the devices were stored in the computer lab and continued to be used regularly for classes.

Training for the project began in the early part of the 2022/2023 school year and, for students, concentrated on first graders. Students were taught how to log on, mute and use the chat function of Microsoft Teams. Teachers felt that although these were not complicated tasks, it was important to ensure first graders were able to complete them independently. A total of 45 students participated in training during the 2022/2023 school year and 35 participated in 2023/2024. The topics remained the same across both school years. For teachers, the training focussed on how to work with Teams, as there had been challenges with incorrect class links or links being sent to the wrong students. The training was designed and delivered by another teacher from the school with an IT specialism.

Prior to the project, the school had worked with Scratch (a visual programming language for children) and was actively making efforts to integrate innovative use of technology into teaching and learning. Examples of this included using Kahoot, teaching Java and Python and having students teach other students and staff how to program. The laptops provided by the project were used by teachers to create teaching resources, manage the class diary, and present materials to students.

When the school building had to close due to a recent flu epidemic, staff felt confident in their ability to continue engaging students, and there were no significant issues with student participation in remote learning. These experiences are indicative of a school which already has an established approach to digital learning – as detailed in the findings (see Section 8), they may not have been consistently replicated elsewhere.

Source: Interviews with the evaluation team

The project's theory of change

Developed in an accelerated timeframe in the middle of a global pandemic, the REACT-EU project did not have an explicit theory of change. However, the hierarchy of objectives was relatively clear and is set out below in a reconstructed theory of change.

Figure 2.1. Reconstructed theory of change for the "Equal Access to School Education in Times of Crisis" activities (as originally conceived before the 2023 amendment)
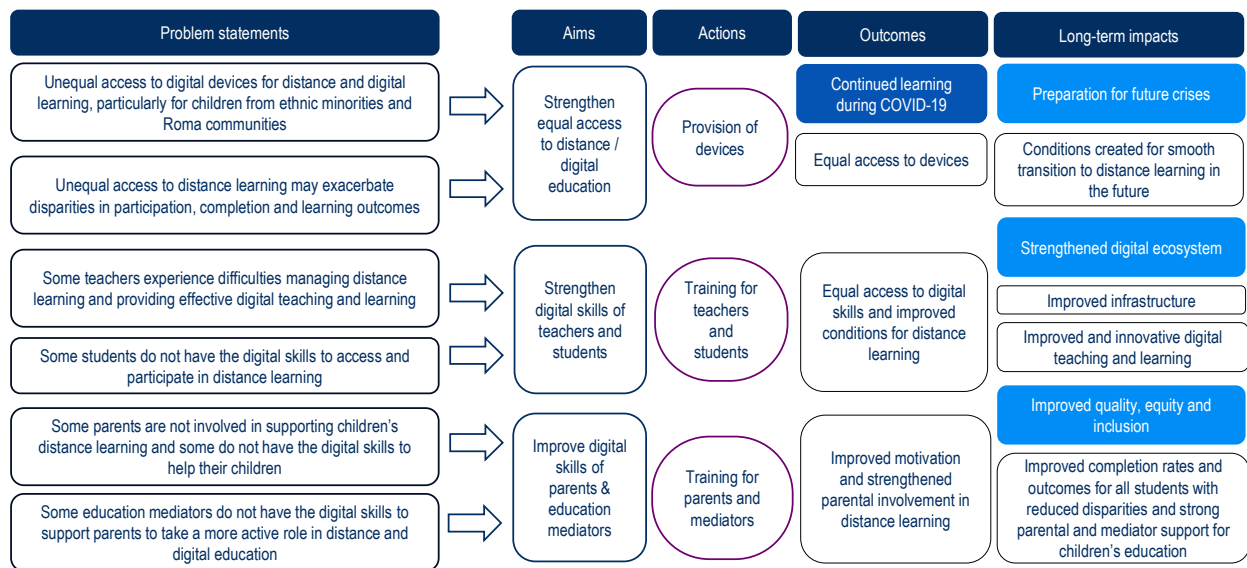
Source: Developed by the OECD after reading programme documentation: Executive Agency "Programme Education" (2023[4]), *Operational Programme "Science and Education for Smart Growth" 2014-2020*

This logic model highlights that the project's primary objective was to provide equal access to devices and skills, to counteract the risk of dropping out in a situation of distance learning and encourage greater parental involvement in distance education, so supporting continued learning during COVID-19. In achieving this, it also aimed to create wider impact by preparing Bulgaria's education system for a smooth transition to distance learning in future crises and strengthening the digital ecosystem generally, improving both digital infrastructure and digital teaching and learning. Although not represented here, the project's training activities after the 2023 amendment also aimed to help respond to crisis and prepare for future crisis. The ultimate and more distal aim of such actions was to support quality, equity and inclusion in distance and digital education, implying improved completion rates and outcomes for all students, with reduced disparities. Understanding the sequence of goals and envisioned causal chain – or theory of change – underpinning them is essential for evaluating the project's effectiveness and overall impact.

The theory of change is based on several assumptions, including:

- Providing targeted additional hardware will ensure equal access to distance learning.
- Providing training will enhance the digital skills of students, teachers, parents, and educational mediators and improve the conditions of remote and distance learning.
- Providing digital skills training to parents and educational mediators will promote parental motivation to be actively involved in their children's distance learning and strengthen the ability of educational mediators to engage parents in vulnerable communities.
- Enhanced skills will support more effective participation in distance learning by students, teachers, parents, and educational mediators.

Underlying these assumptions, was the idea that ultimately:

- Increasing access to digital hardware and skills will lead to increased readiness in the system to respond to future crises (and enable all students to be included in distance learning in the event of future school closures).

- Increasing access to digital hardware and skills will strengthen the digital education ecosystem in terms of infrastructure, skills and digital teaching and learning practices.
- Enhancing teachers' digital skills will lead to more effective teaching in a virtual environment and encourage the use of innovative teaching and learning methods.
- More innovative teaching and learning methods and increased involvement from parents will keep vulnerable students engaged in education, mitigate drop-out, and increase equity in the system.

The envisioned causal chain centred on providing devices and upskilling educational actors. However, there was less attention to how equal access and enhanced skills would translate into improved practices, such as greater parental involvement, more effective digital teaching, and learning, and ultimately, enhanced equity and student outcomes. The concluding section of this evaluation critically examines whether the theory of change and its assumptions held in practice and identifies key lessons to inform future policymaking in Bulgaria.

References

EAPE (2023), *Agreement: Equal access to school education in times of crisis (after 2023 amendment)*.   [2]

EAPE (2023), *Operational Programme "Science and Education for Smart Growth" 2014-2020*.   [4]

EUMIS (2020), *Agreement: Equal access to school education in times of crisis*.   [3]

European Commission (2023), *Education and Training Monitor 2022*, [1]
https://op.europa.eu/webpub/eac/education-and-training-monitor-2022/en/country-reports/bulgaria.html (accessed on 4 November 2024).

3 The evaluation context

It is not possible to understand the outcomes of the "Equal Access to School Education in Times of Crisis" activities without some knowledge of the backdrop in which they took place. This backdrop helps to explain not only the nature of the activities but also how key actors in Bulgaria responded to them. This section therefore provides a snapshot of the project context, focusing on the COVID-19 pandemic in Bulgaria, the state of digitalisation and equity in education at the outset of the project, and detailing other related activities that were taking place at the time the project was conceived and implemented.

The Covid-19 pandemic in Bulgaria

The "Equal Access to School Education in Times of Crisis" activities were a response to the extraordinary difficulties posed by the COVID-19 pandemic for education around the world. In Bulgaria, school buildings were closed, and learning took place digitally from 13 March to June 2020 during the first wave of the COVID-19 pandemic. In subsequent waves during 2021 and 2022, schools implemented a mix of in-person and distance learning depending on the prevailing COVID-19 conditions and social distancing regulations in place. In preschool and primary schools, priority was given to in-person learning wherever possible. In secondary schools, a rotational system of in-person and distance learning was adopted, with students in grades 6 and 9 spending more time than other grades in distance learning. The 2022 cycle of the OECD's Programme for International Student Assessment (PISA) revealed that, on average, 46% of Bulgarian students experienced school closures exceeding three months due to COVID-19, similar to countries across the OECD (51%) (OECD, 2023[1]). Pandemic conditions gradually improved over the course of 2021 and by around February 2022, the closure of schools or classes was relatively rare in Bulgaria. The activities covered in this evaluation were designed in 2020, a period still marked by extensive school closures and distance learning. They were implemented from February 2021 onwards in a period where in-person learning was increasingly becoming the norm.

Digital education in Bulgaria before and in the early pandemic period

The pandemic accelerated the adoption of digital tools and platforms in Bulgarian education, but digitalisation in education was already being developed in Bulgaria before the crisis. Pre-pandemic efforts to improve digital education were supported by EU-funded projects and national programmes aiming to enhance the digital competencies of both teachers and students, upgrade schools' digital infrastructure, and strengthen the cooperation between the IT sector and vocational schools. For example, in 2018 coding was introduced in third grade, and ICT-focused classes expanded in upper secondary schools. Some of these efforts focused on teaching specific IT skills, rather than on using digital tools to support educational practices overall. However, by 2018, the ratio of school computers available to 15-year-olds for educational purposes was 0.7, comparable to the OECD average of 0.8 (OECD, 2023[1]). Even though digitalisation was advancing, there was still a need to develop digital pedagogy to make digital learning more impactful.

When the pandemic hit, Bulgarian schools were relatively well-prepared for remote instruction. According to the PISA 2022 index of schools' preparation for remote instruction pre-pandemic, Bulgaria's schools

were better prepared than those in many other countries, scoring 0.4 compared to the OECD average of 0.1 (OECD, 2023[1]). For instance, 37% of students were in schools where principals reported that staff had been trained in using video communication tools before the pandemic, higher than the OECD average of 21%. However, there were also some disparities in school preparedness within Bulgaria's school system. For example, urban schools were better equipped for digital learning, with a score of 0.6 compared to 0.2 in rural areas (OECD, 2023[1]). These inequalities had the potential to limit the effectiveness of distance learning for students in less-connected regions. In addition, the wide-spread move to distance education as a result of the pandemic raised the importance of existing challenges with digital education, such as ensuring access and inclusion of vulnerable and marginalised groups, including Roma communities, and creating engaging and interactive learning experiences.

Equity in education in Bulgaria before and in the early pandemic period

When schools closed during the pandemic, concerns grew that the shift to distance learning could exacerbate existing equity challenges, particularly related to disparities in parental involvement, participation and completion rates, and student outcomes, especially for disadvantaged students and marginalised communities, such as Roma. These challenges were often amplified by geographical inequities, with students in smaller schools and rural areas facing additional barriers to access and resources compared to their urban counterparts.

Parental involvement

Family involvement in children's learning is often regarded as a crucial element of children's success in school. In many education systems, policy has focused on supporting parental involvement, especially among disadvantaged students or those at risk of drop-out (Weiss et al., 2009[2]). Bulgaria is no exception and in 2018, PISA found that about 38% of parents took the initiative to discuss their child's progress with a teacher, while 51% did so at the teacher's request —both only slightly below OECD averages (41% and 58%) (OECD, 2019[3]). However, there was a 19-percentage point gap between advantaged schools (27%) and disadvantaged schools (45%) for parent-initiated discussion (OECD, 2019[3]). Parental support for learning became more crucial during the pandemic, as students were learning at home. Thus, disparities in parental involvement, influenced by factors such as socio-economic status, access to technology and skills, and parents' educational backgrounds, risked further amplifying existing educational inequities, and leaving already disadvantaged students at even greater risk of falling behind. It was in this context that the project aimed to promote equal access to continued learning by, among other initiatives, increasing parents' motivation and digital skills to better support their children's remote learning.

Participation and completion rates

Low and uneven participation and completion rates have historically been a key equity concern in Bulgaria. Between 2010 and 2018, the share of early leavers was steady at about 13-14%. Overall, this improved during the pandemic. Bulgaria experienced a decline in early school leavers from 12.8% in 2020 to 9.3% in 2023, bringing it below the EU average of 9.5% (Eurostat, 2024[4]). However, regional disparities in drop-out rates persisted. **For example,** the Southeastern region, home to a large Roma population, recorded the highest drop-out rate in the country at 21.4% in 2021, despite a slight overall decline (Eurostat, 2024[4])**.** In contrast, the capital region of Sofia maintained the lowest drop-out rate at 8.5%.

In the first year of the pandemic, when the project was conceived, data was revealing some concerning indications that remote learning could increase disparities in school participation rates between different groups. Bulgaria saw a rise in absenteeism from an average of 7.4 unexcused absences in 2020 to 12.5 in 2021 (Ministry of Education and Science, 2021[5]). In PISA 2022, Bulgaria had one of the highest rates

of long-term absenteeism (11.7%) across the OECD (7.6%) and EU countries (7.4%) (OECD, 2023[1]). This was unevenly distributed, with students in disadvantaged schools being significantly more likely to be long-term absent— a 16-percentage point difference compared to their peers. A 2021 study by the Institute for Research in Education also highlighted this gap: daily class participation was 29% for children of parents with less than primary education, 55% for those with parents who completed primary education, and 82% for children whose parents had higher education (IRE, 2021[6]). Class attendance also varied between rural and urban areas, with 14% of students in villages attending their online classes less than half of the time, compared to just 2% in large cities (see Figure 3.1). Between 2020 and 2021, engagement declined across all student groups. However, Roma-speaking students were less engaged than their Turkish and Bulgarian peers, with over a 10% difference in cognitive engagement (e.g., actively participating in learning, e.g. by asking questions) and more than 15% in behavioural engagement (e.g., attending classes regularly, completing assignments) (Ministry of Education and Science, 2021[5]).

Figure 3.1. Students in rural areas participated in online classes less frequently than those in urban areas, with some students in villages not having any online classes at all

% of students attending online classes regularly in a typical study week during the last three months of the 2020-2021 school year (based on principals' assessment)
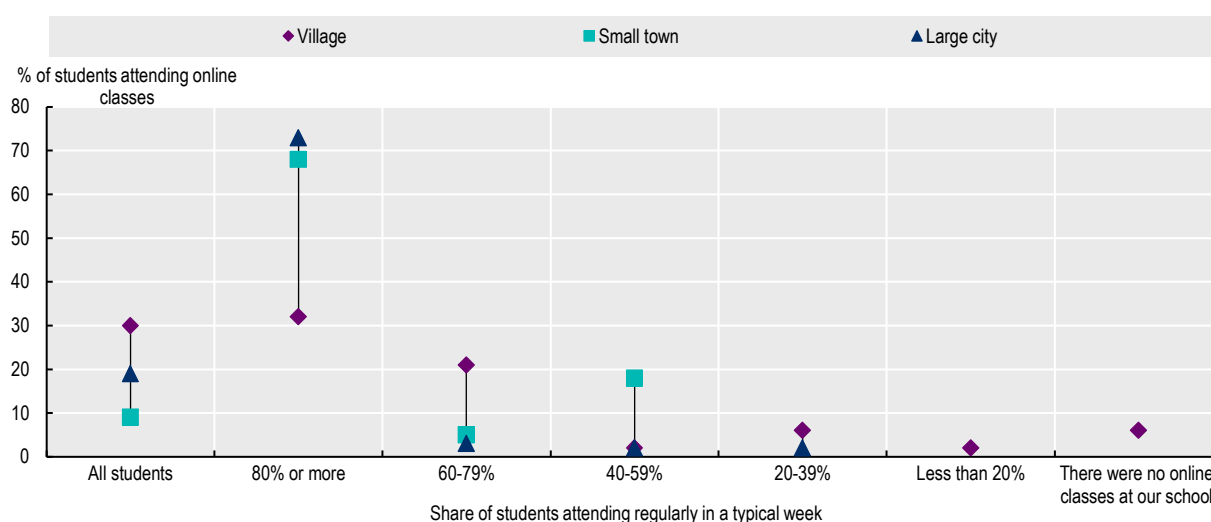
Source: Ministry of Education and Science (2021[5]), *Distance learning in an e-environment 2020-2021: Consequences and looking ahead*

Student outcomes

Concerns about uneven participation and completion rates exist within a broader context of generally low and uneven outcomes in Bulgaria. Before the pandemic, PISA 2018 showed that Bulgarian students scored below the OECD average in reading, mathematics, and science, with significant educational disparities among sub-groups (OECD, 2019[7]). There was a 74-point gap in reading scores between native and non-native speakers – the widest in the EU. Socio-economic disparities were also present, with advantaged students outperforming disadvantaged peers by 106 points in reading, wider than the OECD average of 89 points (OECD, 2019[7]).

Underachievement in core subjects was twice the European average (47.1% in reading, 44.4% in mathematics and 46.5% in sciences), reaching 70% among disadvantaged students (OECD, 2019[7]). Only 6% of advantaged students were top performers in reading, compared to almost none among disadvantaged students (see Figure 3.2). Similar disparities existed in mathematics and science, where

socio-economic status explained 14% and 16% of performance variation, respectively. Bulgaria aims to reduce the proportion of underachieving students to 25% by 2030. These challenges within the Bulgarian education system made it all the more crucial to ensure that pandemic-related distance learning did not exacerbate existing inequities.

Figure 3.2. In PISA 2018, Bulgaria had about twice as many low performers in reading compared to OECD countries across all socio-economic status groups

Share of students who scored below proficiency Level 2 or Level 5 and above in reading, by national quarters of the PISA index of economic, social, and cultural status (ESCS)
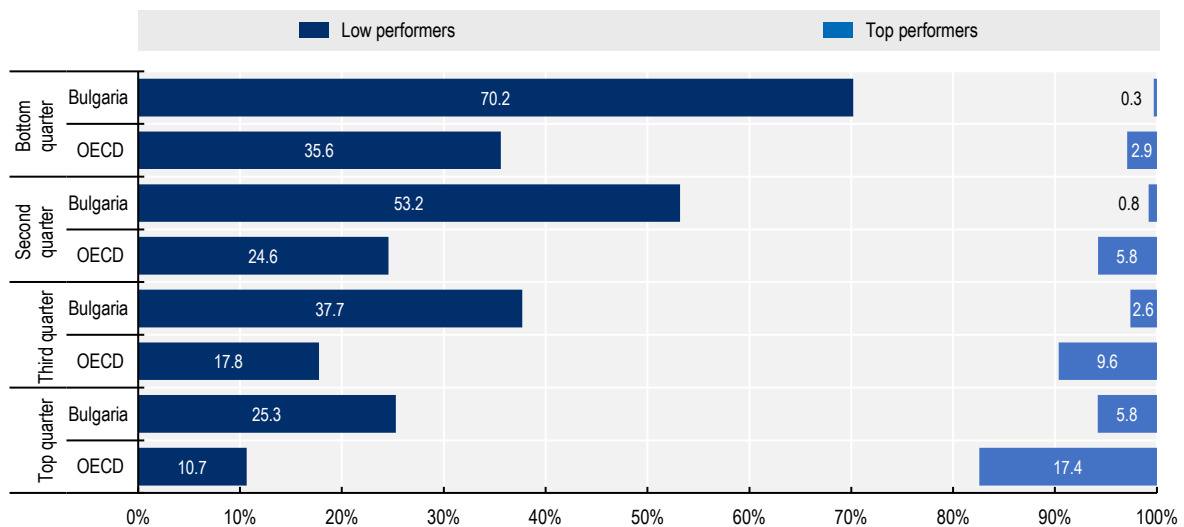
Note: Low performers refer to students who score below Level 2 in PISA, while top performers refer to students who score Level 5 or above. Please note that these disparities have increased in PISA 2022, with 77.6% of students in the bottom quarter of ESCS scoring below Level 2 in Bulgaria.
Source: OECD (2019[7]), *PISA 2018 Database*, https://doi.org/10.1787/b5fd1b8f-en .

Related programmes and strategies for digital and inclusive education

Several related projects, programmes and strategies for digital and inclusive education were being implemented concurrently in the Bulgarian education system. Most notably, the "Education for Tomorrow" project (BG05M2OP001-2.012), launched in 2019 with a budget of BGN 1.03 million, and co-financed by the European Structural and Investment Funds, aimed to modernise Bulgaria's educational system by integrating digital technologies. A major component of the project was the development of a digital platform, the Digital Backpack, designed to facilitate online meetings and interactive classes. The initiative also introduced electronic IDs for students, allowing both students and parents to access educational resources and monitor progress, with the aim of improving home-school engagement. Professional learning for teachers was another key aspect, with 7 000 teachers receiving training in basic computer literacy, 8 000 in specialised ICT training, and 18 000 receiving extensive training on the use of the Digital Backpack. The REACT-EU project was designed to build upon "Education for Tomorrow".

Other related initiatives

During the pandemic period, Information Technology (IT) (which was gradually replaced by computer modelling) became compulsory in lower secondary schools and a national external assessment was introduced to measure the acquisition of IT competencies (European Commission, 2023[8]).

The national programme 'Digital Bulgaria 2025' provides a framework for modernising education through the provision of digital equipment (European Commission, 2023[8]). Other digital education initiatives that were taking place at the time of the project are outlined below in Table 3.1.

Table 3.1. Overview of digital education initiatives during the pandemic (2020 – 2023)

Type of initiative	Year	Project/Funding Instrument	Description
Provision of equipment	September 2020	BGN 14 million, aligned with the National Program "Information and Communication Technologies (ICT)	Purchase of 16 000 laptops
	December 2020	Additional BGN 6 million, aligned with the National Program "Information and Communication Technologies (ICT)	Purchase of 5 000 devices, comprising 2 000 portable computers and 3 000 tablets
	2021	Under the National Program "Increasing the competencies of academic staff from the public higher education institutions preparing future teachers"	A Virtual Library was established with over 250 000 visits, offering free access to 60 multimedia interactive presentations, 32 vide lectures, 6 instructions, and other materials.
	2022	Under the project "Education for Tomorrow" project of the operational programme 'Science and Education for Smart Growth 2014-2020', co-financed by the European Structural and Investment Funds.	Purchase and delivery of 2 000 interactive displays for schools, 2 000 laptops and 500 portable My Fi access points
Development of software solutions for e-learning	April 2022	"Digital Backpack platform," under the project "Education for Tomorrow" project of the operational programme 'Science and Education for Smart Growth 2014-2020', co-financed by the European Structural Funds.	Establishment of a national cloud ICT infrastructure for e-learning, enabling teachers to create digital learning content, such as lessons, exercises, or tests, by using different electronic resources.
Trainings	2021	Under the National Program "Increasing the competencies of academic staff from the public higher education institutions preparing future teachers"	Training more than 400 academics from state higher education institutions, involved in teacher education, received training in innovative technologies, focusing on digital competences.
	2021	Under the National Program "Digital Qualification"	Trainings to teachers from the secondary education system -over 700 teachers; representatives of the business who want to become trainers in secondary schools – 25 candidates; academic teachers – over 1 000 candidates
	2022/2023 school year	Under the project "Education for Tomorrow" project of the operational programme 'Science and Education for Smart Growth 2014-2020', co-financed by the European Structural Funds.	6 200 teachers to be trained on how to use the cloud ICT infrastructure and another 12 000 on how to work with the platform
	2022/2023 school year	"Digital Backpack platform," under the project "Education for Tomorrow" project of the operational programme 'Science and Education for Smart Growth 2014-2020', co-financed by the European Structural Funds.	Over 7 000 pedagogical specialists have participated in ICT training

References

European Commission (2023), *Education and Training Monitor 2022*, https://op.europa.eu/webpub/eac/education-and-training-monitor-2022/en/country-reports/bulgaria.html (accessed on 4 November 2024). [8]

Eurostat (2024), *Early leavers from education and training by sex and NUTS 2 regions*, https://doi.org/10.2908/EDAT_LFSE_16. [4]

IRE (2021), *Educational inequalities in times of a pandemic*, https://ire-bg.org/wpsite/wp-content/uploads/2021/03/%D0%9E%D0%B1%D1%80%D0%B0%D0%B7%D0%BE%D0%B2%D0%B0%D1%82%D0%B5%D0%BB%D0%BD%D0%B8-%D0%BD%D0%B5%D1%80%D0%B0%D0%B2%D0%B5%D0%BD%D1%81%D1%82%D0%B2%D0%B0-%D0%BF%D0%BE-%D0%B2%D1%80%D0%B5%D0%BC%D0%B5-%D0%BD%D0%B0 (accessed on 4 November 2024). [6]

Ministry of Education and Science (2021), *Distance education in e-learning 2020-2021: Implications and Looking Ahead*. [5]

OECD (2023), *PISA 2022 Results (Volume II): Learning During - and From - Disruption*, https://doi.org/10.1787/a97db61c-en. [1]

OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en. [7]

OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/acd78851-en. [3]

Weiss, H. et al. (2009), "Reframing Family Involvement in Education: Supporting Families to Support Educational Equity", *Equity Matters: Research Review*, Vol. 5. [2]

4 Evaluation approach

This section explains how the OECD approached this evaluation. It starts by outlining how the evaluation methodology is informed by a realist paradigm, before discussing the evaluation criteria, questions, research design and data collection methods, including sample design and analysis. The section finishes with the limitations of the research design and how these have been mitigated.

Realist evaluation

This evaluation takes a realist or theory-based approach. Realist evaluation goes beyond simply evaluating whether projects or activities are effective; it seeks also to understand why and how projects have led to observed outcomes. A realist approach is based on the premise that outcomes are caused not just by the nature of the activity, but by the response of actors to the opportunities and constraints provided by the activity and by the overall implementation environment (HM Treasury, 2020[1]). Programme activities and outcomes do not take place in a vacuum; the context, culture, and set of conditions actors experience are key to shaping their response. Realist evaluation therefore aims to understand "what works in which circumstances and for whom?" (Pawson and Tilley, 1997[2]). It is especially helpful in complicated policy landscapes or when activities are implemented over time in changing contexts, as was the case for these activities as a result of the COVID-19 pandemic.

This report, therefore, looks at the extent to which the impact of the REACT-EU activities was shaped by the wider digital education environment, including digital infrastructure and levels of digital skills of teachers, students, parents, and educational mediators. This is informed by recent OECD work in the area, which outlines eight enabling factors that allow digital technologies to be used effectively in education systems (OECD, 2023[3]):

Strategic vision

Adapting pedagogical approaches, curricula, and assessment

Governance, guidance, and regulation for digital education

Funding and procurement for digital education

Infrastructure and innovation for digital education

Capacity building for digital education

Human resource policies for digital education

Effective monitoring and evaluation

These dimensions are used in the analysis to help explain findings concerning effectiveness, outcomes, and impact.

Evaluation criteria

This report employs the five standard criteria set out in the European Commission's Better Regulation Guidelines (European Commission, 2021[4]):

Relevance: This criterion looks at whether the REACT-EU activities respond to clear needs and priorities in the Bulgarian system and whether they target the most significant need related to equal access to school education in times of crisis.

Effectiveness: This criterion examines how successful REACT-EU project was in achieving its objectives

Impact: This criterion looks at how successfully the project created its desired outcomes and what difference the activities made to teaching and learning in Bulgaria.

Efficiency: This criterion looks at the relationship between the changes generated and the resources used by the project.

Coherence: This criterion allows examination of how well the project activities work together (internal coherence) and in relation to other education and skills policies, practices, activities, and strategies in Bulgaria and Europe (external coherence). It looks at synergies and complementarity as well as checking for duplication and inconsistencies.

EU added value: This criterion considers whether the project introduced changes that would not have been possible without European intervention.

The report also examines:

Sustainability: the likelihood that any effects will last beyond the implementation period and the factors that might aid/impede sustainability.

Evaluation questions

The agreed evaluation questions are:

1. To what extent was it a key need and priority to a) strengthen **equal access** to digital **devices** and b) offer **training** on basic digital skills to teachers, students and parents and educational mediators during the relevant time period? (Evaluation criteria: Relevance)

2. To what extent did the activities achieve their objective to **improve (equal) access to distance and digital learning,** including for marginalised communities such as Roma, and across different socio-economic and gender groups and geographical locations? To what extent did the activities encourage **more active involvement of parents** from different groups? To what extent did training activities introduced after the amendment of the original Programme achieve their objectives? (Evaluation criteria: Effectiveness)

3. To what extent did the activities support **improvements to teaching and learning** in Bulgaria during the pandemic and recovery period? In particular, to what extent did they strengthen the **digital skills** of teachers and students and the use of more effective and innovative digital teaching and learning methods? (Evaluation criteria: Impact)

4. To what extent was the procurement, distribution and implementation of digital hardware and training provision effectively governed to **be equitable, transparent, and efficient**? (Evaluation criteria: Efficiency)

5. To what extent were the **activities part of a strategic, coordinated, and coherent approach** to the integration of digital technologies in education in Bulgaria, **and coherent with EU objectives**? (Evaluation criteria: Coherence)

6. To what extent did the provision of digital hardware and training support **sustainable improvements** to digital and distance education and enhance the Bulgarian education system's **capacity to respond** to future crises? (Evaluation criteria: Sustainability, EU-added value, Impact)

See Annex A for more information about each of these questions and their associated judgement criteria and illustrative indicators.

While the project aimed to produce positive effects for all learners across socio-demographic groups, special focus is given in the report to evaluating the support offered to those from marginalised communities, such as Roma.

Research design and data collection methods

Research for this evaluation took a mixed methods multi-pronged approach. Data collection involved desk research and an extensive review of national and international comparative evidence, a fact finding visit to Bulgaria in March 2024, interviews with 18 key stakeholders including non-governmental organisations, social partners, and ministry and government agency representatives. Two online interviews, field visits to four schools (two primary schools, a VET school, and a secondary school) in three districts - Sofia city, Sofia district and Pazardzhik. These visits included meetings with four principals and eight focus groups with approximately 25 teaching staff, 20 parents, and 20 students. The OECD also surveyed four stakeholder groups: principals, teachers, students, and 44 representatives from all 28 REDs. Survey data was collected using the LimeSurvey online platform between 10 and 30 June 2024.

Sample design

For the qualitative data collection, purposive sampling was used to identify individuals, organisations and bodies with relevant experience and insights for the research questions. This method selects participants based on specific characteristics to ensure they provide valuable perspectives and information. For example, the research team sought to speak to those who were actively involved in designing and managing the activities, as well as a range of principals, teachers, students, and parents who participated in activities. Social partners and NGOs who represent or work with teachers and ethnic minorities were also included. School visits were selected to include different school types, education levels, districts, sizes, and concentrations of vulnerable groups.

For the quantitative data collection, the OECD used quota sampling to ensure that high-quality data was collected from a range of geographical areas and ethnic minorities. Quota sampling is a non-probability sampling method in which the population is divided into specific sub-groups or "quotas" (e.g., by district, age, gender etc) and participants are selected from each subgroup until a pre-set quota for each group is met (Taherdoost, 2016[5]). For the evaluation survey, one district was selected from each of Bulgaria's six geographical regions for inclusion in the sample – Montana, Razgrad, Varna, Sofia city, Pazardzhik and Sliven.

The selection of regions was guided by the objectives of the REACT-EU project. As the project aimed to address educational disparities and promote equity across varied contexts, so too did the survey aim to collect information from a range of contexts in Bulgaria. The selection process attempted to capture districts with varied poverty rates, income inequality, urbanisation levels, unemployment rates, educational outcomes, and ethnic composition (see Figure 4.1). Each chosen district reflects a distinct combination of these factors, allowing observations in both urban and rural areas, as well as districts with varying economic challenges and educational outcomes.

Figure 4.1. Socio-economic, educational, and demographic characteristics of the selected districts
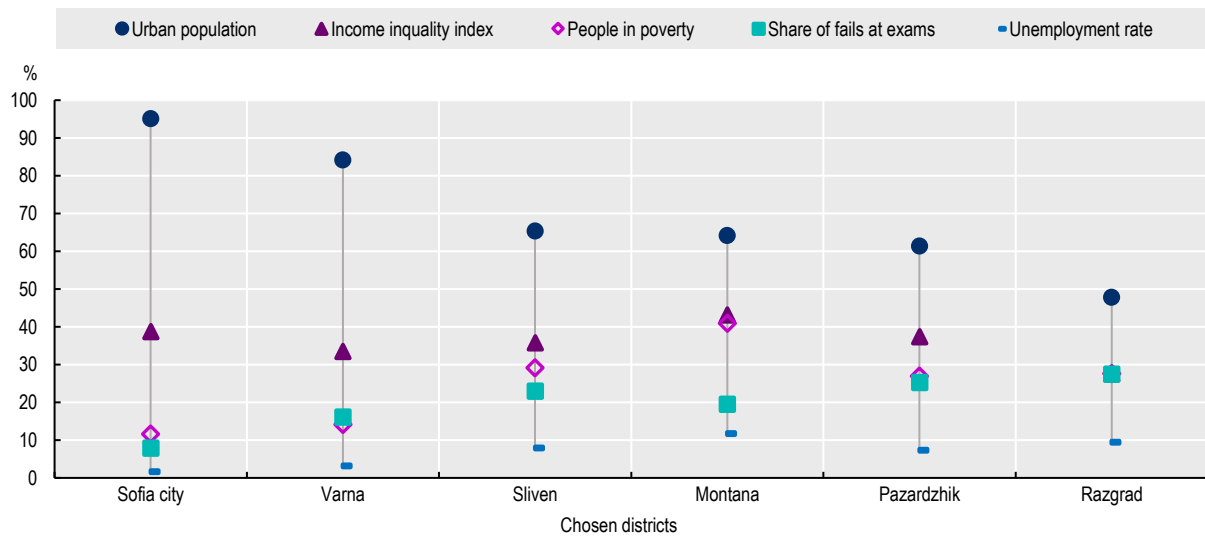
Note: Districts are ranked in descending order for share of urban population. Indicators include: 1. Share of urban population, 2022; 2. Gini coefficient of income inequality in 2022; 3. Unemployment rate of population aged 14-64 (annual average); 4. Share (%) of failed students at state matriculation exams, 2023; 5. Gini coefficient of income inequality in 2022.
Source: Institute for Market Economics (2023[6]), *Regional Profiles: Indicators of Development*, https://www.regionalprofiles.bg/en/#map

School quotas for each district were based on the proportion of the total number of schools in each region. This approach ensured that each district's representation in the survey corresponded to its significance within the region in terms of number of schools. Schools within each region were selected randomly. To account for an assumed 50% response rate, the survey was sent to twice as many schools as needed to meet the quota. In the event, more than 50% of schools responded, and so most school quotas were exceeded. As principals invited teachers and students to participate, information about the exact response rate for these groups is not available. However, in regions where quotas were exceeded or not met, responses were adjusted (or "weighted") using coefficients based on the ratio of the assigned quota to the actual number of responses received. This ensured that districts are appropriately represented in the overall analysis and prevented over-represented districts from skewing the results. See Table 4.1 for a break-down of the quota targets and actual responses.

Table 4.1. Sample for each district

Region	District	Total number of schools	School / principal quotas	Number of responses from schools / principals	Teacher quotas (x5)	Number of responses from teachers	Student quotas (x10)	Number of responses from students
Northwestern (Severozapaden)	Montana	59	12	23	60	117	120	225
North Central (Severen tsentralen)	Razgrad	56	11	14	55	45	110	66
Northeast (Severoiztochen)	Varna	127	26	34	130	137	260	205
Southwestern (Yugozapaden)	Sofia city	287	58	57	290	189	580	149
South Central (Yuzhen tsentralen)	Pazardzhik	111	22	22	110	123	220	211
Southeastern (Yugoiztochen)	Sliven	68	14	28	70	137	140	259
Total		708	143	178	715	748	1430	1 115

Survey data were also **weighted**, using population data from the Ministry of Education and Science and the National Statistical Institute of Bulgaria, to ensure data were not unintentionally skewed by an over-representation of particular groups. Weighting was applied to demographic variables of age, gender, and geography, where imbalances were identified. Weighting was not applied for language spoken at home[8], as the sample had deliberately over-represented those from ethnic minority backgrounds to enable large enough sub-groups for meaningful analysis about the perceptions of minority groups, such as Roma. In addition, ethnicity data on the student population is typically self-reported and not collected by the Ministry of Education and Science. Weights were calculated by determining the ratio of the population benchmark to the sample proportion for each demographic group. The weighting allowed underrepresented groups in the sample to be given more weight in the analysis, while overrepresented groups were given less. This adjustment aimed to increase the validity of the findings across the target population.

Overall, the sampling techniques used were not designed to arrive at a representative sample, although the proportion of schools from each district is equal to the distribution of schools across Bulgaria's regions. Instead, they were designed to ensure that the data provided a focus on the key perspectives important to the evaluation questions (e.g. from each of Bulgaria's geographical regions and from ethnic minorities). The results of the survey should not therefore be generalised to the whole population of Bulgaria.

Analysis

For quantitative data analysis, simple methods such as descriptive statistics and cross-tabulation were used to identify key patterns relevant to the evaluation's focus areas. These approaches prioritise highlighting trends and relationships within the data and capture similarities and differences in participants' experiences rather than aiming for population-wide inferences. For qualitative data, thematic analysis was applied again to identify patterns and variations, and to enable a more detailed exploration of different perspectives. Findings from the qualitative analysis were cross-referenced with data from the ad hoc evaluation survey and reviewed against national and international datasets to provide context and ensure consistency across different sources of information. Data was routinely disaggregated across a wide range

[8] In this report, language spoken at home is used as a proxy for ethnic minority groups.

of subgroups, including by ethnic minority, gender, region, and type of school to identify any differences in self-reported measures that might indicate varying views.

Limitations

This evaluation report makes use of the substantial national and international data available to the OECD. It also draws on a small non-representative sample of Bulgarian schools, selected through quota sampling. While quota sampling ensures the inclusion of key demographic groups, it does not use random selection (except in this case to fill school quotas). The non-random selection limits the ability to generalise findings to the entire population and to explore variations within regions. The selection of teachers and students by principals may also have introduced bias into the findings. For example, principals may have been chosen teachers and students based on their motivation, academic performance, or availability. This could result in a sample that overrepresents certain groups and underrepresents others. Such biases make it more difficult to ensure that weighted adjustments accurately reflect the broader population.

In addition, the evaluation survey asked participants - some of whom are students - to recall what happened three to four years ago. The accuracy of self-reported recall data is an inherent challenge. The survey did not specify that participating teachers and students needed to have been at the school during the pandemic. As a result, some teachers may have referred to experiences from other schools when completing the survey. In addition, there are also challenges around attribution. There were several programmes providing devices and training at the time of the REACT-EU project and there is a possibility that some respondents, particularly students, may not have known which programme provided the resources they received, despite the scope being explained in the survey introduction. Finally, although the OECD conducted four focus groups with parents, they were not surveyed directly. Some information about parents' digital skills and the impact of parental training comes from the perceptions of principals, teachers, and students.

The research triangulated multiple data sources to mitigate any limitations associated with individual data sources and provide a more comprehensive understanding of diverse contexts. Qualitative data, offering in-depth insights and data from the evaluation survey were corroborated with national and international data to capture broader patterns and trends. Findings were systematically cross-checked across sources to identify consistencies and discrepancies with the aim of reducing potential biases and enhancing accuracy. The analysis also incorporated perspectives from sub-groups, including Roma communities, to ensure their experiences are reflected. While limitations remain, triangulation helped to substantiate the findings and situate them with the broader context.

References

European Commission (2021), *Better Regulation Guidelines*, https://commission.europa.eu/system/files/2021-11/swd2021_305_en.pdf (accessed on 14 November 2024). [4]

HM Treasury (2020), *Magenta Book Supplementary Guide. Realist Evaluation*, https://assets.publishing.service.gov.uk/media/5e96c869d3bf7f41224bf3c3/Magenta_Book_supplementary_guide._Realist_Evaluation.pdf (accessed on 16 November 2024). [1]

IME (2023), *Regional Profiles: Indicators of Development*, https://www.regionalprofiles.bg/en/#map (accessed on 15 November 2024). [6]

OECD (2023), *OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem*, OECD Publishing, Paris, https://doi.org/10.1787/c74f03de-en. [3]

Pawson, R. and N. Tilley (1997), *Realistic evaluation*, Sage Publications, https://www.torrossa.com/en/resources/an/5409538. [2]

Taherdoost, H. (2016), "Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research", *International Journal of Academic Research in Management (IJARM)*, Vol. 5, https://hal.science/hal-02546796 (accessed on 14 November 2024). [5]

5 Key findings: Relevance (EQ1)

Key Messages: Relevance

Devices

- More than half of schools (60%) did not see access to devices before the project activities as a major problem. However, this perception was unevenly spread. Schools serving a high proportion of ethnic minorities and smaller schools were much more likely to report problems of access than their counterparts. A range of reliable evidence also showed gaps in access to digital devices at the time the project was conceived. Although the project took place against a backdrop of significant progress in expanding digital provision in Bulgaria, it met a relevant need in addressing remaining gaps in access.

Training

- A third of students reported their teachers struggled with managing online platforms in the early months of the pandemic, and nearly half of students indicated that they did not know how to use these platforms themselves. National and international evidence from the time also highlighted the need to enhance the digital skills of teachers and students.

- The project did not address the more advanced skills needed for effective and innovative digital teaching and learning. These include developing interactive digital pedagogy tailored to specific subjects, using differentiated approaches to support equitable learning in digital environments, designing effective digital assessments, and supporting students' ability to create digital products. Other concurrent projects were targeting some aspects of these more advanced skills. However, there remained room for the REACT-EU project to address a wider range of digital skills to support more effective, equitable, and innovative digital teaching and learning.

Parental involvement

- Over 60% of principals – particularly those from smaller schools, vocational schools, and schools with higher concentrations of ethnic minorities – reported that at least some parents lacked the digital skills to help children with remote learning. Increasing parents' digital skills and their involvement in remote education were key needs and priorities.

- A lack of digital skills was not the only barrier to effective parental support for children's remote learning. Interviewees suggested that some parents also experienced a lack of familiarity with the curriculum, distrust or negative relationships with institutions, stress and overwhelm, language barriers and competing priorities and pressures. Other European-funded projects in Bulgaria were already using targeted strategies to engage parents in children's education. However, some research participants felt that broader measures were needed to support parental engagement specifically in digital and distance education. In particular, they felt that additional support for educational mediators may have helped schools engage harder-to-reach

parents from vulnerable communities, including Roma, as part of sustained efforts to support parental involvement.

Additional areas

- Additional areas of training, such as teaching students with Bulgarian as a second language and addressing socio-emotional learning matched key needs in the system. Stakeholders viewed the 2023 programme adjustments as relevant to the evolving crisis, a perspective supported by national and international data.
- Internet connectivity and electricity cuts in the local community were also reported as barriers to continued education especially by small and rural schools. These needs were outside of the scope of the project and so were not addressed.

This section examines whether the project activities were well-conceived and relevant to the needs and challenges students, teachers, schools, and parents were facing during the COVID-19 crisis and recovery period, especially those from vulnerable and marginalised groups such as Roma communities. It addresses Evaluation Question 1:

> **To what extent was it a key need and priority to a) strengthen equal access to digital devices and b) offer training on basic digital skills to teachers, students, parents, and educational mediators during the relevant time period?**

The section begins by examining whether there was a need for improved and more equal access to devices before considering the need for training to improve digital skills for teachers, students, and parents and educational mediators in turn. It finishes by looking at whether there was a need for the activities that took place after the amendment (e.g., training in teaching Bulgarian as a second language and other subjects) and whether there were other important needs and priorities in the system that the project left unaddressed. The section also highlights pre-existing trends in this direction which inform the evaluation's reasoning about the effectiveness of the activities and their outcomes.

Relevance of access to devices

1.1. Strengthening equal access to digital devices was a key need and priority

The evaluation finds that strengthening access to digital devices was a key need and priority when the project was conceived. Equal provision of the digital devices necessary for continued learning was an appropriate crisis response and risk management measure, especially given uncertainty about the duration of the pandemic. Survey data from this evaluation, along with available data at the time, confirm that inequalities in access to digital devices were ongoing. If disparities in access had not been addressed, and education continued to be disrupted, this would have further exacerbated existing inequity in student outcomes and participation.

1.1.1. Some schools did not see access to devices as a major problem - but this was unequal across sub-groups

In the 2024 evaluation survey, most schools reported retrospectively that access to digital devices had not been a major issue at the start of the pandemic. About 60% of principals and teachers, and 80% of students, indicated that access to devices was either not a problem or only a minor one. However, 11% of students reported it was a problem to some extent and a further 7% to a large extent. Importantly, these averages mask disparities among sub-groups. Students who did not speak Bulgarian at home reported slightly more difficulties than their Bulgarian-speaking peers, with a 3-percentage point gap (OECD

unpublished, 2024[1]). Schools with a high proportion of ethnic minority students, however, were much more likely to report problems of access (56%), than schools with lower proportions of ethnic minorities (23%). Similarly, smaller schools also faced more challenges in providing devices for students compared to larger institutions (a 15-percentage point difference), with vocational students encountering more barriers than those in profile schools[9] (see Figure 5.1). These disparities also came up in focus groups with teachers and interviews with principals, with those from small and VET schools reporting difficulties in ensuring access to resources. These differences suggest that equitable access to devices was a valid concern. Notably, they also align with national and international data from the time, confirming unequal access to digital devices.

Figure 5.1. Device availability was unequal among schools before the project activities

Share of principals reporting that their school's capacity to provide remote instruction was hindered by lack of devices for students
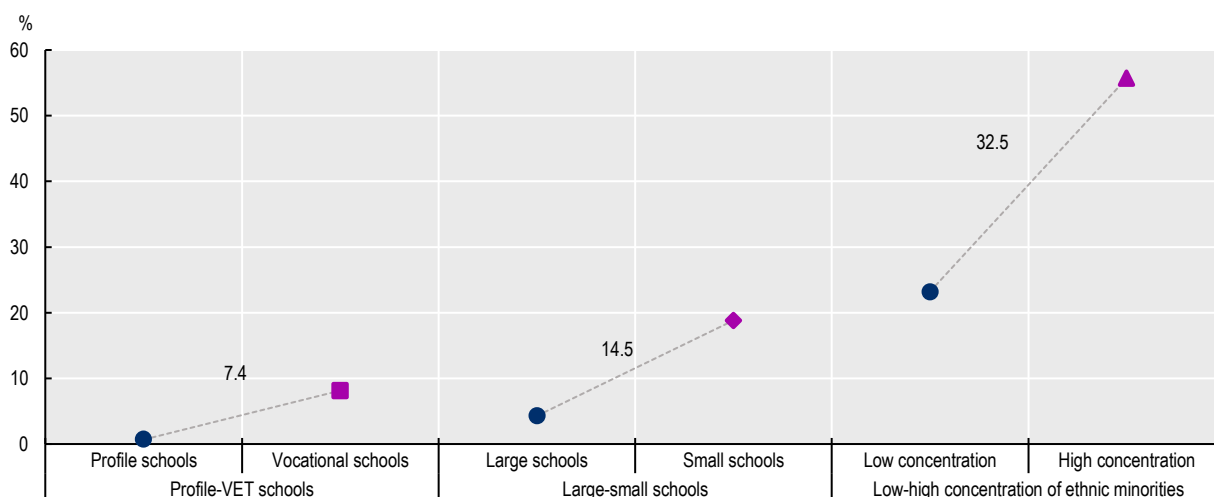
Note: "Low concentration" refers to schools where less than 10% of students have a mother tongue different from the official language of instruction, while "high concentration" refers to schools where more than 70% of students have a different mother tongue. "Small schools" are those with fewer than 300 enrolled students, while large schools have 500 or more students. Profile schools primarily offer a general education with a focus on specific subjects or fields of study, designed to prepare students for higher education and academic pursuits, while vocation focus on providing practical skills and training in specific professions, with the competencies need for immediate employment after graduation. Please note that the data is based on relatively small number of observations (143), which could influence the reliability of these findings.
Source: OECD unpublished (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results.

1.1.2. A range of reliable evidence shows a need for digital hardware and gaps in access at the time the project was conceived

According to a mixed methods UNICEF study, 8% of Bulgarian students were unable to regularly participate in online classes during the first wave of school closures due to a lack of technological devices or internet access, and 58% of parents struggled to support their children's education (Yankova, 2021[2]). Some families had devices but not enough for all children in the household whilst parents were also working from home (Institute for Research in Education, 2020[3]). Ministry data from 2021 showed that one-third of students relied only on smartphones (Ministry of Education and Science, 2021[4]), which may be less

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[9] In Bulgaria, "profile schools" refer to specialised secondary schools, often focusing on academic tracks, such as foreign languages or mathematics.

suitable for educational purposes compared to laptops or tablets (see point 1.1.4 below). Roma and Turkish students were particularly affected, with 46% and 43%, respectively, using phones to study. Only 18% of students across Bulgaria attended schools where ensuring access to digital devices for remote instruction was standard practice before the pandemic (OECD, 2023[5]). Again, these figures suggest that at the time the project was designed in late 2020, equal access to devices for distance learning was a valid concern.

1.1.3. The project was taking place at a time characterised by trends towards increased device provision

When evaluating evidence of relevance and need, it is important to consider pre-existing trends rather than treating projects in isolation from broader efforts. Initiatives to improve students' access to digital devices were already underway before the REACT-EU project. For example, the Amalipe Centre's "Old Devices for New Beginnings" campaign encouraged donations, including new devices from some companies to schools with a high concentration of Roma children. Additionally, the national budget and other European funds were also being used to procure devices. The "Education for Tomorrow" project purchased 2 000 electronic devices, while an additional 16 000 devices were obtained through the national budget between 2020 and 2021. These efforts suggest that the need for digital devices was gradually being addressed before the project began. However, it remained a valid and relevant concern to offer a targeted top-up of these efforts, so aiming to eliminate remaining disparities in access and address the risk that continued distance learning would worsen equity in the Bulgarian education system.

1.1.4. Students may have been using their mobile phones out of choice rather than necessity – but the project ensured that this was a choice not a necessity

Data on students' use of mobile phones for learning was used as evidence of the need for better access to laptops and tablet devices. This assumes that the use of mobile phones was a necessity for students rather than a choice. However, principals and teachers reported that when school buildings first closed in March 2020, they used Viber, Messenger, emails, or even door-to-door delivery of printed materials to reach students. Much like in many other countries, phones quickly became an essential communication mechanism between students and teachers (Vincent-Lancrin, Cobo Romaní and Reimers, 2022[6]).

Mobile phones may have offered some convenience to students – being more portable, offering connectivity via network coverage as well as Wi-Fi (in a context where lack of internet connectivity and electricity cuts are relatively common), and in some cases being more powerful than older laptops. However, there is also evidence to suggest that smaller screens are not suitable for intensive online learning, being associated with more screen fatigue and distraction (Gierdowski, 2021[7]; Katz, 2017[8]). Laptops and tablet devices may provide enhanced functionality, such as multitasking capabilities, and the ability to run complex software, which make them more effective tools for learning and academic tasks (Johnes, 2022[9]).

Anecdotally, some teachers spoke of students texting photos of their work, making grading cumbersome due to small screens and the difficulty of amending images. More research is needed on the affordances of mobile phones as distance learning devices in the Bulgarian pandemic context. In the absence of such evidence, caution is needed in interpreting the use of phones as a workaround for the lack of more appropriate devices rather than a matter of preference. However, given the crisis context, it remains fair to conclude that the Bulgarian authorities identified a relevant priority in designing the project to ensure that all students and teachers had equal access to a basic level of equivalent devices and did not need to use their mobile phones for learning.

Relevance of training for teachers

1.2. Training to improve <u>digital skills for teachers</u> was a key need and priority, but the need went beyond the ability to manage video conferencing software

The project also proposed training for teachers to boost digital skills. The evaluation finds that enhancing digital skills for teachers was a relevant priority, especially as many students reported their teachers had difficulty accessing online platforms. Both national and international data highlights gaps in teachers' digital proficiency. However, more advanced, subject-based training in digital pedagogy was also necessary to support effective and innovative remote teaching and learning.

1.2.1. A third of students reported their teachers had problems managing online platforms at the start of the pandemic

PISA 2022 found that before the pandemic, only 37% of Bulgarian students were in schools where teachers were trained in video communication programmes for remote learning (OECD, 2023[5]). In the ad hoc survey for this evaluation, teacher's ability to use digital platforms at the start of the pandemic emerged as a concern for students. Around 30% of students reported that teachers experienced difficulties managing online platforms. Urban students reported such issues more often than students in rural areas (a 5-percentage difference), but there were minimal gender differences (OECD unpublished, 2024[1]). In focus groups, teachers noted challenges during school closures in managing online platforms and helping students access learning materials. These difficulties were sometimes heightened in schools with many ethnic minority students as devices were frequently set to languages other than Bulgarian, requiring teachers to explain platforms in unfamiliar interfaces. However, students who spoke Bulgarian at home reported notably more teacher difficulties with online learning platforms than those who spoke other languages at home, with a 15-percentage point difference. These findings highlight the relevance of strengthening teachers' basic digital skills to ensure that all students in Bulgaria were taught by educators who were able to manage online platforms and help students access digital resources – a fundamental requirement for more advanced distance teaching.

1.2.2. National and international evidence also highlights the need to enhance teachers' digital skills in Bulgaria

The need to strengthen teachers' digital skills is also supported by the evidence that was available when the project was being designed. A 2021 survey from the Institute of Research in Education showed that while half of all teachers had over 5 years of experience using digital tools in the classroom, many more experienced educators lagged in adopting ICT (IRE, 2021[10]). For example, 43% of teachers with over 20 years of experience had used digital technologies for less than 5 years. Additionally, nearly 6% of teachers – mostly those with over two decades of experience – had never used digital tools before distance learning was implemented. Teachers in rural areas were particularly lacking in digital experience, with 37.5% having more than 5 years of ICT experience, compared to one in two teachers in urban areas (IRE, 2021[10]). In the 2018 OECD Teaching and Learning International Survey (TALIS), teachers identified ICT skills for teaching as their biggest training need, with 17.7% of teachers across OECD countries and 22.6% in Bulgaria reporting this area as a high-level need for professional development (OECD, 2019[11]). Evidence from multiple sources therefore indicates that the project identified a key need and priority in enhancing teachers' digital skills.

1.2.3. Effective digital learning requires more advanced teacher skills than were targeted by the project

International experience highlights that effective digital teaching requires more than just basic digital proficiency and platform navigation. The Technological Pedagogical Content Knowledge (TPACK) framework identifies three crucial elements of teacher expertise for digital teaching and learning: *technological* knowledge (selecting and using technology to support learning), *pedagogical* knowledge (understanding and applying digital pedagogy), and *content* knowledge (teaching specific subjects) (OECD, 2023[12]). Successfully integrating technology into teaching involves teachers applying all three of these types of knowledge concurrently. This requires not only generic digital competence (e.g. using technology) but also digital teaching competence (facilitating student learning through technology, using digital assessments etc.) and professional digital competence (managing and co-ordinating student learning and platforms) (OECD, 2023[12]).

Although the project funds and timeline were limited and other projects were also working on some aspects of this area (e.g. to support teachers to use the Digital Backpack), there may have been value in targeting the training not just to the most basic skills required to access digital platforms but also on how to use those skills for effective teaching and learning. The skills needed for effective distance and digital teaching and learning are so essential and expansive that they could justifiably be targeted by several initiatives with different foci. It would have been highly relevant to support the development of more advanced digital teaching competence (i.e. pedagogical and content knowledge), rather than limiting the focus to the arguably less transformative area of targeting basic and generic digital capabilities like managing video conferencing platforms. A focus on digital teaching competencies may, for example, have supported teachers to explore ways to make their digital pedagogy more interactive and promote active, rather than passive, student learning through digital technologies (Greenhow et al., 2020[13]; Redecker, 2017[14]; Tondeur et al., 2017[15]). While 77.5% of Bulgarian schools have formal guidelines for the use of digital devices for teaching and learning in specific subjects, which is higher than the OECD average (66.8%) (OECD, 2023[5]), the project may also have benefited from including measures to further develop and mobilise these guidelines to provide more guidance on effective, innovative, and equitable use of digital technologies to support distance and digital learning.

Relevance of training for students

1.3. Training to improve equal access to <u>digital skills for students</u> was a key need and priority, but the need went beyond the basic digital skills covered by the training

The project also proposed training for students, with a focus on younger students, to ensure that students entering the Bulgarian school system would be able to seamlessly transition to online learning should the need arise. The evaluation finds that this was relevant given the evidence showing low levels of digital skills among some students in Bulgaria. However, the need for digital skills was not just related to the ability to access online platforms and video conferencing platforms.

1.3.1. Many students reported not being able to use Microsoft Teams or other relevant learning platforms before the training – and this was unevenly distributed amongst sub-groups

Much of the project's training for students focused on how to use online platforms such as Microsoft Teams. The evaluation survey found that this was indeed a relevant need. Before training, about 40% of students lacked familiarity with Teams or similar platforms, with variations among sub-groups. In rural areas, about one in two students (52.7%), reported not knowing how to use Teams, compared to about 35% in urban

areas (see Figure 5.2). Urban students also knew better where to find information to solve technical issues (a 7-percentage points higher than rural students) (OECD unpublished, 2024[1]). Ability to use online platforms also varied by language spoken at home. Those who spoke Bulgarian at home experienced fewer issues with online platforms (40%) compared to ethnic minority students on average (48%). Students from Roma and Turkish backgrounds encountered the most difficulties (65% and 59%, respectively). Students in vocational tracks and girls were also less familiar with Teams than students in profile schools and boys, with gaps of nearly 6- and 5-percentage points, respectively (see Figure 5.2). In focus groups, teachers reported that some students initially struggled to access learning platforms, although students tended to minimise these difficulties in the focus groups.

Figure 5.2. Students reported difficulties using video communication programmes before training, with differences among sub-groups

Share of students reporting not being able to use Microsoft Teams before the training received

Share of students reporting knowing where to find information to solve any technical issues on their own
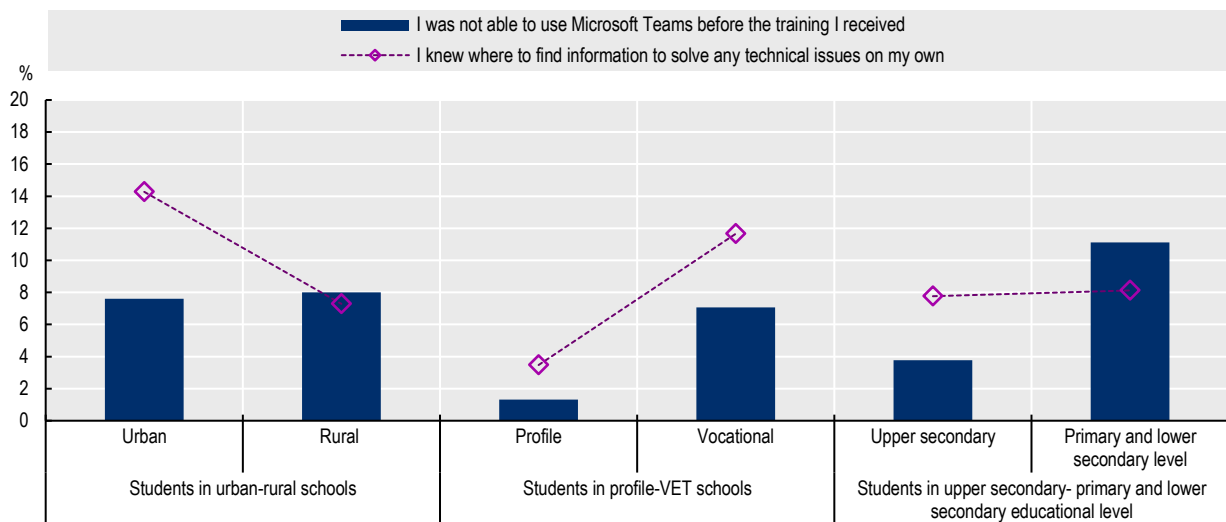
Note: Indicators are ranked in ascending order by percentage point differences between groups. "Urban" schools are those in cities with populations over 100 000, while "rural" refers to schools in villages or areas with fewer than 3 000 people.
Source: OECD (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results

1.3.2. Available data also show a need to strengthen students' digital skills at the time the project was conceived – but this went beyond basic digital competency

In 2021, Bulgaria had one of the lowest shares of 16-29-year-olds with basic or above basic overall digital skills at 49%. This is one of the lowest rates in the EU after Romania (46%) and well below the EU-27 average at 71% (Eurostat, 2024[16]). According to the Digital Economy and Society Index (DESI), which collects data on digital skills based on self-reported information on the use of digital tools, 57% of young Bulgarians aged 16-19 had basic or above-basic digital skills, considerably below the EU average of 82% (European Commission, 2022[17]). In this context, the project's focus on building digital skills was highly relevant. However, it could have extended to move beyond basic digital skills such as accessing platforms like Teams. For example, the European Digital Competence Framework for Citizens (DigComp) identifies 21 key components of digital competence across five areas, comprising information and data literacy, communication and collaboration, digital content creation, safety and problem-solving (European Commission, 2024[18]). Remote learning, especially with innovative teaching methods, demands a broad

range of skills, with accessing online platforms being only one basic requirement. The project could have allocated resources to support more comprehensive student digital competencies, including those needed to participate fully and actively and apply and demonstrate knowledge in remote learning, for example, by creating digital products.

Relevance of training for parents and educational mediators

1.4. Training to improve <u>digital skills for parents and educational mediators</u> was a key need and priority, but broader measures to support parental involvement were also needed

The evaluation finds that improving parental involvement in children's remote learning was an important need and priority in Bulgaria when the project was designed. Strengthening the digital competencies of both parents and educational mediators was a relevant measure to support this, but a lack of digital skills was not the only barrier preventing increased parental involvement.

1.4.1. Some parents lacked the digital skills to help students with their learning at home – and this was unevenly distributed among sub-groups

In the survey for this evaluation, most principals (about 60%) reported that at the start of the pandemic some parents were unable to support their children with online learning due to a lack of digital skills (OECD unpublished, 2024[1]). This was unevenly distributed across different types of schools (see Figure 5.3). Principals of small schools were more likely to report this challenge that those in larger schools, with a 23-percentage point difference. Similarly, lower secondary schools faced more issues with parental involvement than upper secondary schools, with a 15-point gap. Within upper secondary schools, vocational schools experienced more difficulties than profile schools. Notably, schools with higher concentration of ethnic minority students were more affected – around 31% of principals in these schools reported difficulties with parental support for remote learning, compared to 24% in schools with fewer minority students (OECD unpublished, 2024[1]).

Figure 5.3. The lack of digital skills among parents was unevenly distributed

% of principals reporting that their school's ability to provide instruction was hindered by parents' lack of digital skills for remote learning at the onset of the pandemic
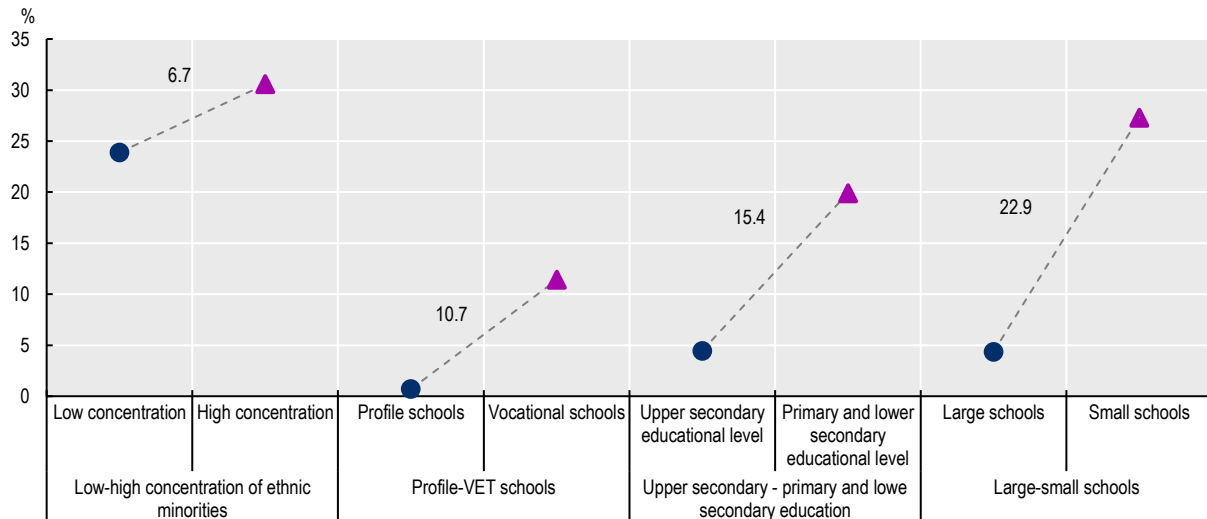
Note: Indicators are ranked in ascending order based on the percentage point differences between the groups. "Low concentration" refers to schools where less than 10% of students have a mother tongue different from the official language of instruction, while "high concentration" refers to schools where more than 70% of students have a different mother tongue. Profile schools primarily offer a general education with a focus on specific subjects or fields of study, designed to prepare students for higher education and academic pursuits, while vocation focus on providing practical skills and training in specific professions, with the competencies need for immediate employment after graduation. "Small schools" are those with fewer than 300 enrolled students, while large schools have 500 or more students. Please note that the data is based on relatively small number of observations (143), which could influence the reliability of these findings.
Source: OECD unpublished (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results.

The views of principals were also reflected by teachers in focus groups, who reported different levels of parental support for learning at home as one of their biggest challenges during the pandemic. This was also found in student perspectives in the evaluation survey. A quarter of students who spoke Bulgarian at home reported that their parents were unable to assist with technical issues, this number was nearly double for students from Roma and Turkish communities at 49% and 51%, respectively (OECD unpublished, 2024[1]). Furthermore, students who spoke Bulgarian at home were 24-percentage points more likely to seek help from their parents when facing technical or learning difficulties compared to their peers whose parents did not speak Bulgarian at home. These findings are aligned with national and international data showing similar disparities in parental involvement in remote learning during the pandemic in Bulgaria and suggesting that this was a relevant priority to address through the project.

1.4.2. National and international evidence shows disparities in parental involvement and student attendance in remote instruction at the time the project was conceived

In a 2020 survey commissioned by UNICEF, over 50% of parents reported having little or no digital skills to support their children's online learning. This, again, was unevenly spread. A study by the Institute for Research in Education from March 2021 found that only 29% of children whose parents had less than primary education attended classes regularly, while 55% of children whose parents completed primary education did so. In contrast, participation rates were higher for students whose parents had spent more time in education, with 76% attending regularly if their parents had finished secondary education and 82% if their parents had finished higher education (Ministry of Education and Science, 2021[4]). Additional data

points related to parental involvement and student participation are provided in the evaluation context section.

Both the evaluation survey and evidence available at the time suggest that the project identified a relevant priority in the objective to address disparities in parents' digital skills and increase parental involvement in children's education. This is especially the case because, according to a survey by the Ministry of Education and Science, 1 450 out of the 9 874 parents trained were educational mediators, meaning they played a critical role as intermediaries between schools and marginalised communities (Ministry of Education and Science, 2021[19]).

1.4.3. A lack of digital skills was not the only or the most important barrier to effective parental support for children's remote learning

While a lack of basic digital skills was one important element that prevented some parents from being involved in their children's remote learning, both research participants and existing research evidence suggests that this was probably not the primary barrier (Hornby and Blackwell, 2018[20]). In 2022, about 26% of parents in Bulgaria discussed their child's progress with a teacher on their own initiative —close to the OECD average of 29%. However, this figure had declined by 7-percentage points since 2018 (OECD, 2023[5]). Meaningful involvement in children's education requires a deep, ongoing relationship between parents and schools (Greenhow et al., 2020[13]; Weiss et al., 2009[21]; Kong, 2018[22]). Some research studies have differentiated parental involvement, which is often initiated by the school in one-off events, from parental engagement, which is parent-led and reflects a continuous commitment to children's learning (Goodall and Montgomery, 2014[23]). Parental engagement is based on high parental expectations, supportive relationships, and a shared sense of responsibility, and this requires more than just technical skills – it demands a partnership approach between families and educators (Spear et al., 2021[24]).

Factors such as parents' time and life contexts all play a role in their ability to support their children's learning. For many parents, especially those from disadvantaged or marginalised communities, juggling multiple responsibilities, economic hardship, and a lack of time and resources may be more significant barriers than motivation or digital skills (Hornby and Lafaele, 2011[25]). In focus groups with teachers, they suggested that the parents of some of their students experienced these factors in amplified form during the pandemic. Whilst they felt that the pandemic generally brought better understanding and co-operation between schools and families, they also spoke of some parents that remained unengaged and distrustful or struggled to support their children with different areas of the curriculum because of their own lack of education. Not acknowledging these deeper barriers, means that the project risked placing undue responsibility on individual parents rather than addressing the systemic issues that can perpetuate educational disadvantage (Goodall, 2019[26]).

The REACT-EU project was a time-limited one-off project taking place at a time of unprecedented health crisis and could not be expected to address every barrier to parental involvement. However, the fit between the needs in the system related to parental engagement in distance learning and the project's activities and objectives could have been strengthened further by developing more integrated support structures to engage parents as active partners in their children's distance education (Weiss et al., 2009[21]). The project's training of educational mediators was an excellent base to start from. Some interviewees suggested that providing mediators with additional resources to reach out to parents who had been disengaged in distance learning or providing further support and material to help parents and staff to work effectively together to support digital learning in particular areas of the curriculum would also have been relevant. It may be important for future programming to consider broader methods that target additional barriers to engagement, especially in preparation for similar crises in the future.

Box 5.1. Collaborative educational culture in Finland

Finnish parent-teacher collaboration centres on regular meetings and community-based initiatives, promoting shared responsibility for student success through active parental involvement and support.

Parent-Teacher Collaboration on educational strategies

Finnish schools facilitate collaboration through regular parent-teacher meetings that encourage open communication regarding the educational strategies used to address learning progress. These meetings aim to enable parents to enter partnership with the school and are rooted in the belief that active parental involvement positively influences student motivation and achievement.

Community-Based Initiatives

In addition to formal meetings, Finland promotes community-based initiatives that improve parent-teacher collaboration. These initiatives often take the form of learning workshops and seminars designed to support parents with practical skills that they can use to support their children's learning outside of school. These workshops may cover topics like effective study techniques, fostering literacy skills, and navigating the educational system. By providing parents with resources and knowledge, schools aim to create a supportive learning environment that extends beyond the classroom.

Practical Skill Development

The focus on practical skill development via community initiatives not only equips parents with the tools to assist their children academically but also creates a sense of community among families. Parents often can connect with each other during these events, building networks of support that improve their involvement in their children's education. This collaborative approach not only benefits students academically but also help to cultivate a sense of belonging and partnership between families and schools, ultimately contributing to a more inclusive and supportive educational environment.

During remote learning, schools and parents worked together in the following ways, some of which are similar to activities under the REAT-EU project:

- Schools maintained regular contact with families, with teachers reaching out to parents via phone, emails, and digital platforms to ensure that students stayed engaged and motivated. This communication also allowed teachers to monitor student progress and address any issues arising from the shift to distance learning.
- Schools provided guidance to parents on how to support their children's education, ranging from setting up a conducive learning environment to helping with assignments.
- Many schools offered technical support to families, helping them access online learning platforms by distributing devices and troubleshooting connectivity issues.
- Surveys collected parental feedback on remote schooling, helping schools adjust their approaches to meet family needs.

Finland and Bulgaria are very different contexts despite the similarity of some of their COVID-19 measures for continued education. Any consideration of similar initiatives would need to account for the specific features of the Bulgarian context to ensure their relevance and effectiveness.

Source: Finnish National Agency for Education (2020[27]), *Distance education in Finland during the COVID-19 crisis: Initial observations,* https://www.oph.fi/sites/default/files/documents/distance-education-in-finland-during-covid19_initial-observations.pdf; Rissanen (2020[28]), "School–Muslim Parent Collaboration in Finland and Sweden: Exploring the Role of Parental Cultural Capital", Scandinavian Journal of Educational Research, 10.1080/00313831.2020.1817775.

Relevance of additional project activities after the 2023 programme amendment

1.5. Additional areas of training on teaching students with Bulgarian as a second language and socio-emotional learning matched key needs in the system

In 2023, an amendment was made to the project to extend the training activities into new areas related to crisis conditions. The Ministry of Education and Science had carried out an assessment, "Distance Education in e-Learning 2020-2021: Implications and Looking Ahead", finding evidence that students' knowledge had deteriorated due to distance learning, with the problem being particularly severe for children and young people whose families spoke Roma (Ministry of Education and Science, 2021[4]). According to the assessment, the transition to e-learning had increased the mental pressure on teachers and a significant number of pre-school children had been out of the education system during the pandemic. The subsequent invasion of Ukraine had also created significant migratory pressure on EU countries. The small number of Ukrainian children and students seeking asylum in Bulgaria required access to education and social inclusion measures, with the aim of reintegrating them into the Bulgarian education system.

In 2023, approximately BGN 24 million of the REACT-EU funds allocated to the project had not been used. In order to address the problems identified in the ministry's assessment, the Managing Authority undertook an amendment to the OPSESG proposing to expand the scope of the activities implemented under Priority Axis 5. This was aimed at providing support to children, pupils, parents and pedagogical specialists in case of force majeure events and crisis conditions, including for the integration and inclusion of pupils from other education systems in the school network in Bulgaria, to improve pre-school and school-aged children's access to education and to counteract the risk of drop out in current or future crises.

The evaluation finds that the changes to the activities made after the 2023 amendment also met key needs and priorities relevant to supporting recovery from the COVID-19 pandemic and increasing the Bulgarian education system's preparedness for future crises.

1.5.1. Stakeholders regarded changes in programme activities as relevant to evolving needs in the system related to crisis – and this is supported by national and international data

Most stakeholders viewed the project's expansion into other areas (following the 2023 amendment to the programme) as relevant and understood the rationale behind the shift in activities. For example, most REDs (91%) indicated that extending the project to include teaching Bulgarian as an additional language addressed an important need in their districts (OECD unpublished, 2024[1]). When children who did not speak Bulgarian as their first language had to remain at home, they missed out on the integration and language support typically provided at school. This raised concerns about delays in their Bulgarian language development, and the risk of falling behind academically or dropping out. To address this, the revised activities offered up to 120 hours of supplementary teaching outside school hours in one or more subjects, aiming to help students master the relevant class content.

The war in Ukraine introduced new challenges to the Bulgarian education system. According to UNICEF, Bulgaria welcomed over 50 000 displaced children from Ukraine in 2022 (UNICEF, 2023[29]). The project intended to provide language support for those enrolled in Bulgarian schools. However, only a very small proportion of Ukrainian children attended Bulgarian schools, as many preferred to remain within the Ukrainian education system (European Commission, 2024[30]). Even though the language support service was not widely utilised, its availability addressed an important need and contributed to Bulgaria's efforts to support students forced to leave their homes in Ukraine.

Social-emotional learning also emerged as a crucial need in schools in response to the crisis. The OECD Social and Emotional Skills survey showed notable gender and socio-economic differences among 15-

year-old Bulgarian students. Boys reported lower levels of empathy, tolerance, and curiosity, while girls reported lower assertiveness and stress resistance, which was a consistent pattern across the survey sites (OECD, 2024[31]). However, disadvantaged students in Bulgaria reported lower tolerance, creativity, and persistence than their advantaged peers, with socio-economic disparities larger than average across countries. Since social-emotional skills positively correlate with better academic performance, attendance, aspirations, and well-being (OECD, 2024[31]), the programme's amended activities were well aligned with the broader objectives of strengthening educational resilience and better preparing students for future crises.

The amended activities also aimed to tackle other aspects of crisis, such as the threat of terrorist attacks in school. Overall, the changes made to the programme were relevant in offering a more comprehensive approach to supporting vulnerable students during this challenging time.

Box 5.2. An example of additional training activities on preparing for crisis in one school

One primary school organised a series of four one-hour training sessions for students, led by two external experts, focused on responding to various crises such as earthquakes, fires, and terrorist events. The sessions used an age-appropriate approach and aimed to allow students to express and discuss their emotions around these topics. Students worked in small groups to engage in role-plays and collaborative discussions.

The training also incorporated elements of curriculum knowledge to provide an interdisciplinary perspective. For example, it drew on science for fire containment and geography to understand earthquakes, alongside references to historical events. Younger students participated in a theatre-based activities, starting from a story and collaboratively creating and acting out its conclusion. This exercise encouraged them to explore different choices and actions and how they might result in different outcomes. The sessions also included discussions about safety in urban environments.

Needs that were not addressed

1.6. Some <u>additional key needs</u> and priorities were not met by the project

The evaluation also finds that there were some key needs and priorities that were not addressed by the project, including internet connectivity and electricity cuts in local communities and the need for further support for human resources such as educational mediators. Although the project did provide resources to support the internet connectivity of schools, wider connectivity and electricity issues within local communities were not within the project's scope. A small top-up project cannot be expected to address all issues, especially when they fall outside of the sphere of education (as is the case for digital infrastructure in communities) or are already addressed by existing projects (as is the case for educational mediators). However, given that some regions in Bulgaria are more affected by these issues than others, not addressing them likely influenced the project's ability to full achieve its objectives of ensuring equal access to digital education during times of crisis. These challenges warrant further consideration in future programming.

1.6.1. Many reported internet accessibility or electricity cuts as a significant barrier to continued education, especially in small schools and rural areas

For those surveyed for this report in 2024, internet access posed a greater challenge than device availability, with more principals (42%) and students (21%) reporting it as an issue compared to device shortages (36% and 14% respectively) (OECD unpublished, 2024[1]). In focus groups also, several students mentioned issues with slow internet or sudden internet cuts making participation in online classes and preparing schoolwork more challenging. This suggests that, even when students had the necessary devices, unreliable internet infrastructure in the local community could hinder their ability to fully participate in online learning. The issue was particularly pronounced in rural areas, where nearly 62% of principals in rural schools identified internet access as a major issue for students compared to just 29% in urban areas (see Figure 5.4). Smaller schools (with fewer than 300 students) were also more than three times more likely to face connectivity challenges than larger ones.

These disparities highlight the risk of a broader digital divide in Bulgaria, disproportionately affecting students' learning opportunities based on geography and school size (Katz, 2017[8]). Existing data also corroborates these difficulties. In 2021, only 12.5% of villages provided internet access for all students, compared to 43.5% of urban schools (Ministry of Education and Science, 2021[4]). Frequent electricity cuts were reported to the evaluation team, even in relatively large towns, compounding the challenges of providing equal distance learning opportunities. These data do not subtract from the relevance of increasing access to digital devices and skills – but they do suggest that there may have been other factors that created barriers to effective distance learning in Bulgaria that could be further addressed in future projects, including through building partnerships and collaborations across ministries and areas of government.

Figure 5.4. Internet access was a bigger issue than access to digital devices for students

% of surveyed principals who reported that their school's capacity to provide remote instruction was hindered by lack of access to the Internet and lack of access to digital devices for students
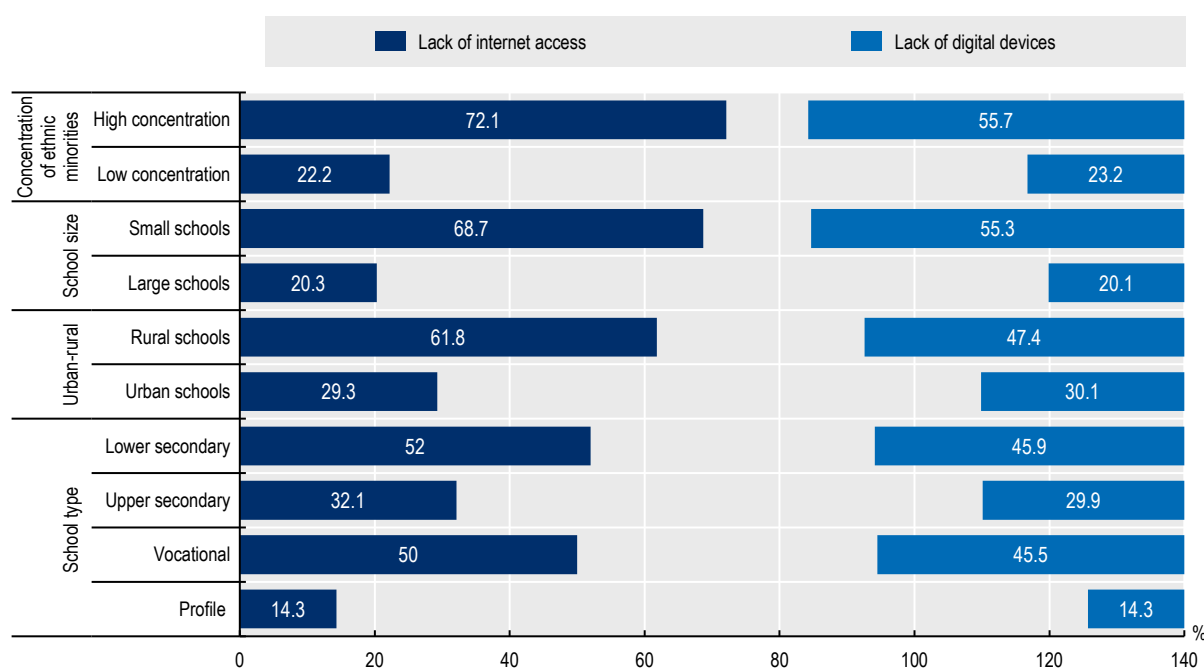
Note: Low concentration" refers to schools where less than 10% of students have a mother tongue different from the official language of instruction, while "high concentration" refers to schools where more than 70% of students have a different mother tongue. "Small schools" are those with fewer than 300 enrolled students, while large schools have 500 or more students. Rural schools are schools located in small towns or rural areas with fewer than 15 000 people, while urban schools are in areas with more than 100 000 population. Profile schools primarily offer a general education with a focus on specific subjects or fields of study, designed to prepare students for higher education and academic pursuits, while vocation focus on providing practical skills and training in specific professions, with the competencies need for immediate employment after graduation. Please note that the data is based on relatively small number of observations (143), which could influence the reliability of these findings.
Source: OECD unpublished (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results

1.6.2. Participants reported that investing in educational mediators was also a key need to prevent dropout

Educational mediators, established under "Support for Success" and "Active Inclusion in the system of pre-school education" projects, were especially important during the COVID-19 pandemic in Bulgaria, serving as a bridge between students, schools and communities and helping to ensure that vulnerable children had the necessary resources to continue their learning, especially Roma students. Many interviewees focused on the key role played by educational mediators in preventing school drop-out both generally and during the pandemic. Some felt that the work of the educational mediators in providing tailored community-based support was more effective in improving student participation in distance learning than simply distributing digital devices and ad hoc training – and that if the project's objective was to support continued digital learning, then investing more in educational mediators may have better addressed this need. There were other initiatives underway to increase school mediators (including the "Support for Success" and "Success for You" projects) and by the 2023/2024 academic year, Bulgaria had appointed 1 184 educational mediators. However, future projects could consider the importance of further investing in human resources in crisis conditions.

References

European Commission (2024), "Digital Competence Framework for Citizens (DigComp)", *EU Science Hub*, http://eu/scientific-activities-z/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp_en (accessed on 23 October 2024). [18]

European Commission (2024), *Education and Training Monitor 2023*, https://op.europa.eu/webpub/eac/education-and-training-monitor-2023/en/country-reports/bulgaria.html (accessed on 4 November 2024). [30]

European Commission (2022), *Education and Training Monitor 2021*, https://op.europa.eu/webpub/eac/education-and-training-monitor-2021/en/bulgaria.html (accessed on 4 November 2024). [17]

Eurostat (2024), *Individuals' level of digital skills by sex and age*, https://doi.org/10.2908/ISOC_SK_DSKL_I21. [16]

Finnish National Agency for Education (2020), *Distance education in Finland during the COVID-19 crisis: Initial observations*, https://www.oph.fi/sites/default/files/documents/distance-education-in-finland-during-covid19_initial-observations.pdf (accessed on 10 December 2024). [27]

Gierdowski, D. (2021), *Student Experiences with Connectivity and Technology in the Pandemic*, EDUCASE, https://www.educause.edu/ecar/research-publications/2021/student-experiences-with-connectivity-and-technology-in-the-pandemic/introduction-and-key-findings (accessed on 16 November 2024). [7]

Goodall, J. (2019), "Educational Review ISSN: (Print) (Parental engagement and deficit discourses: absolving the system and solving parents Parental engagement and deficit discourses: absolving the system and solving parents", *Educational Review*, Vol. 73/1, pp. 98-110, https://doi.org/10.1080/00131911.2018.1559801. [26]

Goodall, J. and C. Montgomery (2014), "Parental involvement to parental engagement: a continuum", *Educational Review*, Vol. 66/4, pp. 399-410, https://doi.org/10.1080/00131911.2013.781576. [23]

Greenhow, C. et al. (2020), "The educational response to Covid-19 across two countries: a critical examination of initial digital pedagogy adoption", *Technology, Pedagogy and Education*, Vol. 30/1, pp. 7-25, https://doi.org/10.1080/1475939X.2020.1866654. [13]

Hornby, G. and I. Blackwell (2018), "Barriers to parental involvement in education: an update", *Educational Review*, Vol. 70/1, pp. 109-119, https://doi.org/10.1080/00131911.2018.1388612. [20]

Hornby, G. and R. Lafaele (2011), "Barriers to parental involvement in education: an explanatory model", *Educational Review*, Vol. 63/1, pp. 37-52, https://doi.org/10.1080/00131911.2010.488049. [25]

Institute for Research in Education (2020), *Distance education: readiness of schools and families for learning in online environment*, http://ire-bg.org/wpsite/wp-content/uploads/2020/05/distance_education.pdf (accessed on 20 December 2024). [3]

IRE (2021), *An analysis of the implications for the learning process, students and teachers from distance learning in the 2020/2021 school year*. [10]

Johnes, S. (2022), "Science and Literacy", *The Ultimate Question — Which is Best for Study: Laptop or Tablet?*, https://scienceandliteracy.org/tablet-vs-laptop-for-school/ (accessed on 12 November 2024). [9]

Katz, V. (2017), "What it means to be "under-connected" in lower-income families", *Journal of Children and Media*, Vol. 11/2, pp. 241-244, https://doi.org/10.1080/17482798.2017.1305602. [8]

Kong, S. (2018), "Parents' perceptions of e-learning in school education: implications for the partnership between schools and parents", *Technology, Pedagogy and Education*, Vol. 27/1, pp. 15-31, https://doi.org/10.1080/1475939X.2017.1317659. [22]

Ministry of Education and Science (2021), *Distance education in e-learning 2020-2021: Implications and Looking Ahead*. [4]

Ministry of Education and Science (2021), *Project No BG05M2OP001-5.001-0001 "Equal access to school education in times of crisis"*, https://react.mon.bg/ (accessed on 2 January 2025). [19]

OECD (2024), *Social and Emotional Skills for Better Lives: Findings from the OECD Survey on Social and Emotional Skills 2023*, OECD Publishing, Paris, https://doi.org/10.1787/35ca7b7c-en. [31]

OECD (2023), *OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem*, OECD Publishing, Paris, https://doi.org/10.1787/c74f03de-en. [12]

OECD (2023), *PISA 2022 Results (Volume II): Learning During - and From - Disruption*, https://doi.org/10.1787/a97db61c-en. [5]

OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/1d0bc92a-en. [11]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [1]

Redecker, C. (2017), "JRC Science for Policy Report: European Framework for the Digital Competence of Educators DigCompEdu", *Publication Office of the European Union*, https://bit. ly/2B4g28w. [14]

Rissanen, I. (2020), "School–Muslim Parent Collaboration in Finland and Sweden: Exploring the Role of Parental Cultural Capital", *Scandinavian Journal of Educational Research*, Vol. 66/1, pp. 1-13, https://doi.org/10.1080/00313831.2020.1817775. [28]

Spear, S. et al. (2021), "Fostering "parental participation in schooling": primary school teachers' insights from the COVID-19 school closures", *Educational Review*, Vol. 75/5, pp. 932-951, https://doi.org/10.1080/00131911.2021.2007054.

[24]

Tondeur, J. et al. (2017), "Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence", *Educational technology research and development*, Vol. 65, pp. 555-575, https://link.springer.com/article/10.1007/s11423-016-9481-2.

[15]

UNICEF (2023), "Documentary by UNICEF and NO BLINK tells the stories of four Ukrainian families in Bulgaria", *Watch online "Childhood 2.0" a film directed by Atanas Christoskov*, https://www.unicef.org/bulgaria/en/documentary-unicef-and-no-blink-tells-stories-four-ukrainian-families-bulgaria (accessed on 13 December 2024).

[29]

Vincent-Lancrin, S., C. Cobo Romaní and F. Reimers (eds.) (2022), *How Learning Continued during the COVID-19 Pandemic: Global Lessons from Initiatives to Support Learners and Teachers*, OECD Publishing, Paris, https://doi.org/10.1787/bbeca162-en.

[6]

Weiss, H. et al. (2009), "Reframing Family Involvement in Education: Supporting Families to Support Educational Equity", *Equity Matters: Research Review*, Vol. 5.

[21]

Yankova, M. (2021), *Rapid Assessment of COVID-19 impact on education in Bulgaria: Deepening learning loss and increasing inequalities*, https://www.unicef.org/eca/rapid-assessment-covid-19-impact-education-bulgaria (accessed on 4 November 2024).

[2]

6 Key findings: Effectiveness (EQ2)

Key messages: Effectiveness

- The project provided more than 85 000 digital devices to support remote learning with almost all principals agreeing that these were targeted to students most in need. Device availability in Bulgaria rose to above the OECD average by 2022. The project contributed to increased equality in access to devices, met its targets for device provision and received a strongly positive response from key stakeholders.

- The project took place at a time when most schools had returned to in-person learning. As a result, it did not play a large part in supporting continued learning during the first and most disruptive phase of the pandemic.

- Participants indicated that devices were used in schools for digital education when not being lent to students for distance learning. Some spoke of students using devices for project-based learning. Others suggested they were mainly used by teachers for presentational purposes.

- The project offered training in digital skills to more than 185 000 individuals, meeting most of its targets to expand access to basic digital training for teachers, students, and parents.

- Changing pandemic circumstances meant the training supported students' and teachers' ability to access online platforms in general, rather than being used directly during COVID-19-related school closures. However, participants reported that access to devices and training smoothed the continuation of learning during localised school closures due to flu epidemics and flooding.

- Research participants suggested that the most disadvantaged parents may not have been fully reached by the training, with participation limited to parents already engaged with schools. Less than half of surveyed principals and teachers reported increased parental engagement in students' education. Schools with high concentrations of ethnic minorities were much less likely to report that the training increased parental involvement than those with low concentrations. Monitoring data was not collected on whether trained parents were already engaged in school activities so cannot verify these perceptions. Nevertheless, the findings suggest that training could have been better supported with further outreach measures.

- The project also provided crisis-relevant training after its 2023 amendment. Although it fell short of fully reaching its target populations, participants spoke positively about the training and felt it met its objective to support schools to respond to a range of crisis conditions.

- The impact of the project on preparing the system for future crises, encouraging more innovative teaching and learning, and promoting participation, equity and quality in distance and digital education is addressed in Section 7.

The main objective of the activities was to secure equal access to distance and digital education and to prevent interruption of education in conditions of crises. This section looks at whether the activities improved equality in access. It provides an assessment of the progress achieved in the implementation of the measures and corresponding indicators programmed before and after the 2023 amendment.

Specifically, this section addresses Evaluation Question 2:

> To what extent did the activities achieve their objective to **improve equal access to distance and digital learning,** including for marginalised communities such as Roma, and across different socio-economic and gender groups and geographical locations? To what extent did the activities encourage **more active involvement in education of parents** from different groups? To what extend did training activities introduced after the amendment of the original Operational Programme achieve their objectives?

It looks first at provision of devices and then at training for digital skills, before addressing whether the project met its objective to support parental involvement in distance learning. Section 7 examines the impact of these devices and training, focusing on evaluation question 3 and looking at whether project activities were successful in preparing the system for future crisis, strengthening the digital ecosystem, and supporting more innovative, quality, and equitable digital teaching and learning.

Increases in device availability

2.1. The project supported equal access to distance learning through its <u>provision of devices</u>

The evaluation finds the project largely met its primary objective to ensure more equal access to digital devices. As shown below, data reveal a large increase in device availability during the project period. Although this increase reflects contributions from several different initiatives, the project served as a final safeguard to ensure that all students had access to equivalent devices. While changing pandemic conditions during the project limited the immediate use of these devices in sustaining education during COVID-19, some were used in subsequent school closures due to flu outbreaks or local flooding. Improved access to digital devices contributed to the project's broader goal of preparing for future crises, although this was limited by some issues related to the project sustainability. This is further discussed in Sections 7 and 10.

2.1.1. The project successfully reached its targets for the provision of devices and was received positively by key stakeholders

Almost all principals (90%) reported that devices were targeted to students who needed them most, a view which was also emphasised in all the interviews and focus groups with principals and teachers (OECD unpublished, 2024[1]). Interviewees explained the list of criteria used to allocate devices to students included students at risk of dropping out, students from larger or low-income families, students who were struggling academically and students from ethnic minorities, amongst other criteria. Students who met more than one criterion were prioritised for receiving devices. Table 6.1 shows the project targets and indicators and its results for device provision, showing that the project provided more than 85 000 digital devices to support remote learning.

Table 6.1. Technical equipment received

	Target	Result
Laptops for students	57 434	64 997
Tablets for students	7 571	
Laptops for teachers	20 732	20 692
Universal cabinet for charging	1 403	1 403

Number of participants with remote learning access in an electronic environment[10]	140 000	133 957

Note: The targets are taken from the agreement between the Executive Agency and the Ministry of Education and Science, while the results are obtained from the project's official website, react.mon.bg.
Source: Executive Agency "Programme Education" (2023[2]), Agreement: "Equal Access to School Education in Times of Crisis" and Ministry of Education and Science (2021[3]), REACT, react.mon.bg

2.1.2. Other data sources corroborate notable increases in equal access to digital devices during the project period

The project supplemented already existing initiatives with the aim of ensuring there were no remaining gaps in access to digital devices. Data suggest that during the project period, schools in disadvantaged and advantaged areas did indeed reach the same level in terms of digital equipment (OECD, 2023[4]). Bulgaria saw significant improvements in digital infrastructure and resource allocation in schools between PISA 2018 and 2022, with one of the largest increases in the index of computer availability at 0.3 compared to the OECD average of 0.01 (OECD, 2023[4]). By 2022, in the second year of the project's implementation, Bulgaria had a high ratio of school computers per student at 0.9, up from 0.7 in 2018, exceeding the OECD average of 0.8 (see Figure 6.1). More computers per student were available in disadvantaged (0.9) and rural (1) schools compared to advantaged (0.8) and urban (0.8) schools (OECD, 2023[4]).

Across the country, only 9% of students attended schools whose principals reported that a lack of digital resources limited instruction, which was well below the OECD and EU averages of 24% and 21%, respectively (see Figure 6.1). The quality or adequacy of the materials was also above the OECD and EU averages of 25% and 23%, respectively as only about 8% of students were in schools whose principals reported poor-quality devices (OECD, 2023[4]). Although this change cannot be attributed entirely to the project, it sent devices to 2 191 out of the 2 222 schools across all regions of the country, after having asked all schools to identify their students' access needs and so effectively identified and addressed any remaining problems of access. This was a significant achievement in a country where educational policies have struggled to address regional disparities in access to resources.

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[10] After the 2023 amendment, the *Number of participants with remote learning access in an electronic environment* indicator includes the number of students and pedagogical specialists who are provided with the necessary devices for implementing distance learning in an electronic environment, as well as the number of children and school students who are integrated/reintegrated into the education system.

Figure 6.1. Availability of digital resources increased substantially between 2018 and 2022 in Bulgaria, surpassing OECD countries on average

Results based on principals' reports
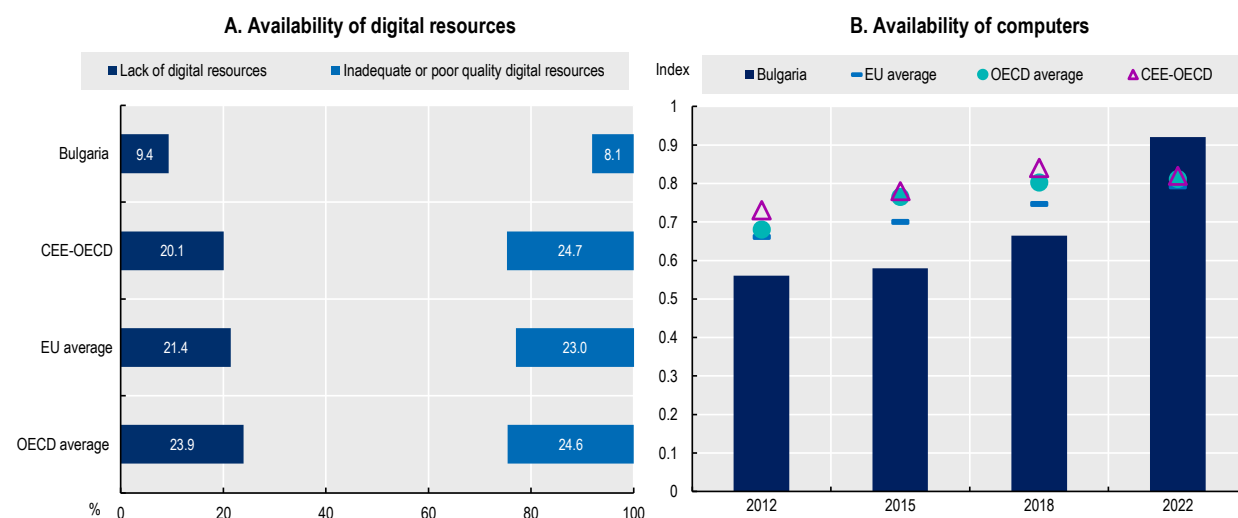
Note: CEE-OECD average includes Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Slovenia, Slovakia.
Source: OECD (2023[4]), *PISA 2022 Results (Volume II): Learning During - and From – Disruption*, https://doi.org/10.1787/a97db61c-en.

2.1.3. The project took place considerably after the start of distance learning, meaning that increased access to devices supported the project's broader objectives but did not support continued learning during COVID-19

While the project aimed to address the digital disparities highlighted by the pandemic, it took place well after the start of distance learning and at a time when in-person learning was becoming the norm. This limited its immediate effectiveness in sustaining education during COVID-19. The project began in February 2021, with devices distributed in phases up to the start of the academic year in September 2021, and was completed in 2023. Since distance learning began in March 2020, this meant that there was a gap of at least 11 months between the start of the pandemic and the project's launch, with some schools potentially receiving devices up to another six months later. As a result, the devices could not support learning during the critical period of the pandemic, although they were later used for distance learning when some schools had to close due to flu epidemics or localised flooding.

Ideally, the need for universal device access would have been addressed earlier in the pandemic and one broader lesson is the importance of acting swiftly on equity concerns in future crises. However, it was beneficial that the initiative was eventually conceived and effectively delivered, with the procurement and delivery of devices being relatively rapid in the context of disruptions to supply chains caused by the pandemic and subsequent war in Ukraine. Despite the timing gap – tied to the availability of the REACT-EU funds – interviewees and focus group participants saw the phased provision as a strategic approach to strengthen risk management and future preparedness. The ongoing uncertainty between 2020 and 2022 about the pandemic's duration underscored the value of this initiative. Maintaining a focus on universal device access meant the project effectively offered an important insurance measure, even though in-person learning resumed for much of the project period.

2.1.4. Although there is limited evidence about how the devices were used, focus group participants reported they were used in the classroom for digital learning

Monitoring processes collected and reported limited information about how the devices were used. However, in focus groups, some teachers suggested that the devices were used regularly in the classroom. For example, one school spoke of the devices being used for project-based learning, providing one example of a project to design environmental sustainability measures for the local area. Some students showed the evaluation team presentations and projects that they had prepared using the devices, including building a website and brochure for the school. However, in some focus groups students reported that the use of digital tools in the classroom was often limited to watching videos or presentations and devices stayed more in the hands of the teacher than in the hands of the students. Section 7 looks more closely on the question of whether the project activities had an impact on digital teaching and learning practices.

2.1.5. Distributing funding based on school size may have caused smaller schools to miss out

Establishing effectiveness means understanding whether project activities successfully reached those who were most in need. Devices were distributed based on the number of students in the school and the school's categorisation within the funding formula. There was also a coefficient used to increase the budget for schools serving higher numbers of vulnerable groups. Within their allocation of funding, schools were invited to apply for as many devices as needed, according to the number of students who met certain criteria (e.g. from disadvantaged backgrounds, large families, or ethnic minorities etc.) and did not have devices. However, smaller schools tend to serve more ethnically diverse communities, including Roma communities, who may be more vulnerable to drop-out. They may need more resources to reach out to and meet the needs of their dispersed populations.

Although reasonable that schools with fewer students should receive fewer resources, smaller schools may also have greater technological needs and challenges and may be concentrated in rural areas, so that funding disparities have the potential to exacerbate regional inequities. Bulgaria has seen a large decline in student numbers in recent years, meaning some principals are managing large school buildings on low budgets due to their small and declining student populations. For example, one school reported a drop in student numbers from 900 to a little over 100 over the 15 years prior to the pandemic.

Despite their sometimes greater need, and even with the coefficient which aimed to increase funding for schools with large populations of vulnerable groups, smaller schools received a smaller funding allocation, meaning they were able to apply for fewer devices. A small number of principals and teachers raised this in focus groups and interviews, speaking of the significant difficulties they faced in ensuring enough resources for their students. One interviewee reported that for some schools with high concentration of Roma students, any shortfall was addressed by the ministry independent of the REACT-EU project. Despite this, the coefficient may not have been sufficient to address differences in need experienced by smaller schools.

The evaluation also found some regional differences in whether schools felt they received enough devices. According to the evaluation survey, 74% of schools overall reported receiving the necessary number of devices to facilitate learning, with over 90% indicating that these devices were targeted towards students who needed them most (OECD unpublished, 2024[1]). However, while 86% of schools in Pazardzhik reported receiving the required number of devices, only half of schools in Razgrad reported this. This may relate to the fact that 86% of schools in Razgrad are small and again suggests that there may have been room to further adjust the coefficient to ensure that small schools had access to adequate provision to cover their students with identified need.

> **Box 6.1. Digital devices students relied on for learning during the pandemic**
>
> The survey for this evaluation also asked what types of devices were used for studying for the most part during the pandemic. Overall, almost half of students used their own laptops, **23%** used school-provided devices, **19%** used mobile phones, and **9%** used shared family devices. Students in urban areas used personal laptops more than students in rural areas (a 9-percentage point difference), who relied slightly more on school-provided devices. Students who spoke Bulgarian at home were significantly more likely to use their own laptops, desktops, or tablets, exhibiting a 24-percentage point difference compared to those who spoke other languages at home. Those who spoke languages other than Bulgarian at home were more likely to use devices shared with family members (3-percentage point difference), school-lent devices (9-percentage point difference), or mobile phone (11-percentage point difference) compared to their peers who spoke Bulgarian at home. However, only a very slightly higher proportion of these students (1-percentage point difference) reported not having access to a digital device at all.
>
> Source: OECD unpublished (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results.

2.1.6. Device sharing was foreseen but not implemented.

The project allowed for devices to be temporarily redistributed between schools if needed, but this provision had not yet been used at the time of the evaluation. A small number of interviewees suggested that principals were reluctant to part with devices allocated to their schools. A larger proportion of interviewees suggested that the device supply was sufficient, leaving no gaps to fill, even in the event of a sudden return to distance learning. Introducing the idea that schools could share resources and building this into contractual arrangements with schools was a positive move in risk management, contributing to the preparedness of the education sector for potential disruptions. While mechanisms for sharing devices could be useful in future crisis conditions of different types (e.g. an influx of students in a particular area or localised health epidemics), they may require more development and better support and incentives.

Increases in training for digital skills

2.2. The project increased access to basic digital <u>training</u> for teachers, students, and parents – but may not have reached the most disadvantaged parents

The evaluation finds that the project largely achieved its indicators for the provision of training, with only relatively small shortfalls for some measures, particularly for parents. Some participants also suggested that the training reached only those parents that were already engaged with schools or educational mediators.

2.2.1. The project largely reached its targets to provide training to students, parents and educational mediators and teachers with some small shortfalls

As illustrated in Table 6.2, the project exceeded its targets for student training, but fell short of reaching the targets for teacher training. In terms of training for parents and educational mediators, the project reached 78% of its target number of participants.

Table 6.2. Training received under the project

	Targets	Results
Training first-grade students and students with identified difficulties to work in an electronic environment	130 000	138 574
Training pedagogical specialists to improve their skills, including teaching/conducting remote activities in an electronic environment	18 500	11 642
Training of educational mediators and parents to acquire skills to work in an electronic environment (including educational platforms, search for e-content, etc.,)	45 000	35 059
Number of participants supported in combating or countering the effects of the COVID-19 pandemic[11]	322 718	371 314
Number of participants acquiring skills, including distance learning skills[12]	210 000	307 537
Number of participants qualified upon leaving operations supported by actions to combat the consequences of the COVID-19 pandemic[13]	13 200	13 107
Net enrolment rate in education of supported participants	90%	99 %

Note: The targets are taken from the agreement between the Executive Agency and the Ministry of Education and Science, and the results information is obtained from the Executive Agency "Programme Education".
Source: Executive Agency "Programme Education" (2023[2]), Agreement: "Equal access to school education in times of crisis", after 2023 amendment.

2.2.2. Some stakeholders reported that only parents who were already engaged with the school participated in the training

Some school leaders and teachers noted that the training sessions mainly attracted already engaged parents, raising concerns about the programme's inclusivity and reach. Whilst the idea was that training parents who were educational mediators would allow mediators to return to their communities and further support other parents, there is no monitoring data to verify that this took place. In focus groups, some teachers also spoke of the difficulties that educational mediators faced during the pandemic period, not having adequate protective equipment, and finding that even when they went to each dwelling in their communities, some parents refused to talk with them.

Whilst, the most disruptive period of the pandemic had finished by the time of the project's implementation, research participants suggested there may still have been a gap in reaching less-involved parents, who may be the ones most in need of support. In focus groups, teachers suggested that if parents are already uninvolved in supporting their children's education, they were unlikely to come to a training session at the

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[11] *Number of participants supported in combating or countering the effects of the COVID-19 pandemic* refers to the number of students, pedagogical specialists, educational mediators, and parents who have completed training to acquire skills for distance learning in an electronic environment, training to teach/conduct classes remotely in an electronic environment or training to work in electronic environment (including educational platforms, electronic content search, etc.). After the 2023 amendment, the indicator also included, the number of students supported to improve social-emotional learning skills, children in kindergartens supported to deal with the consequences of crises; pre-school children supported for smooth transition to school education; students who received additional training in Bulgarian as a foreign language and pedagogical specialists trained to teach, and the number of parents supported in integrating their children into the education system.

[12] *Number of participants acquiring skills, including distance learning skills* includes the children and school students who have been trained under the procedure and have acquired social skills – for adaptation in the new environment, to create friendships, teamwork and for conflict solving (through additional training in Bulgarian language, including for students from Ukraine and other foreign educational systems), have increased their social-emotional learning skills through the support provided for action in the event of force majeure and situations arising in conditions of crises, as well as those who have acquired the skills for inclusion in distance learning.

[13] *Number of participants qualified upon leaving operations supported by actions to combat the consequences of the COVID-19 pandemic* refers to the number of pedagogical specialists trained to improve their skills for distance teaching in an electronic environment (after the 2023 amendment).

school or online. It is difficult to verify the profile of parents taking part in training in the absence of monitoring information on participants' previous involvement in children's education. However, limited participation from a broader parent demographic may have undermined the training's overall effectiveness, as disengaged parents, especially in rural areas and areas with high ethnic minority populations, likely missed out. This also aligns with the principals' views about the training's limited impact on parents' skills in these communities (see Figure 6.2). As discussed in the sections below, supporting training with more extensive and on-going outreach measures in the future will be important to ensure equitable access to training and skills.

Parental skills and involvement in distance education

2.3. The project did not fully meet its objective to encourage the more active <u>involvement of parents</u> in distance learning

The evaluation finds that the project activities did not notably increase motivation for parental involvement. This was partly because the project was implemented at a time when remote learning was becoming less prevalent and partly because the training for parents was a one-off measure that did not reach the parents who were most disengaged from the school. As mentioned earlier, the training was very basic and as such may not have had a substantive effect of parental skills or motivation.

2.3.1. Only half of principals and teachers felt the <u>training for parents</u> increased parents' involvement in distance learning and less than half felt it increased parents' digital skills

Most principals (82%) and teachers (80%) reported that the training improved equal access to digital education. However, they were less positive about its impact on parental involvement, with only a little over half of principals (52%) and teachers (57%) reporting increased parental engagement in students' distance education (OECD unpublished, 2024[1]). While 76% of principals believed that the training strengthened teachers' basic computer skills, only 44% felt it similarly benefitted parents, despite the acknowledged need for improving parental skills (see Figure 6.2).

In addition, 27% of students reported that their parents struggled to help them with technical issues during the pandemic. This challenge was more pronounced among rural students, 40% of which indicated that their parents were unable to help compared to their urban counterparts (25%) (see Figure 6.2). Moreover, students who did not speak Bulgarian at home were more affected, reporting 20-percentage points less parental support for technical issues compared to their peers that spoke Bulgarian at home (OECD unpublished, 2024[1]).

Figure 6.2. Many parents faced difficulties supporting their children during remote learning, but the training helped those parents it reached

Share of students who reported that their parents helped them with technical or learning issues, and that their parents did not know how to help them with technical issues

Share of principals reporting that the training strengthened teachers' basic computer skills and that it contributed to increased parental involvement in students' education
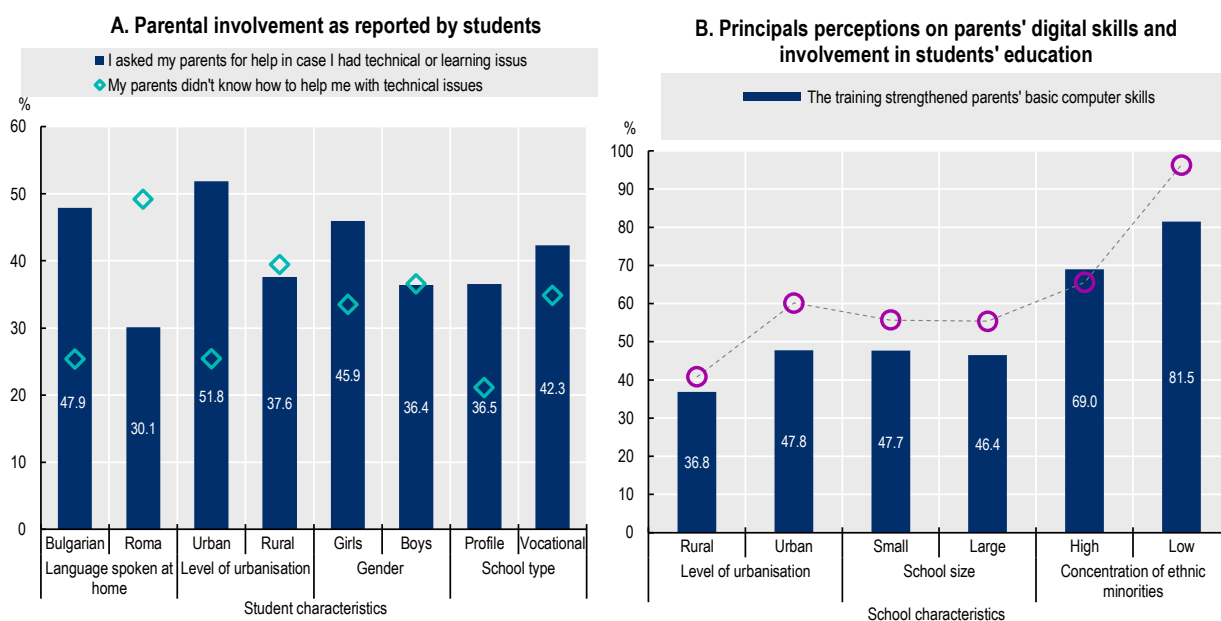
Note: "Low" concentration refers to schools where less than 10% of students have a mother tongue different from the official language of instruction, while "high" concentration refers to schools where more than 70% of students have a mother tongue. "Small" schools enrol fewer than 300 students, while "large" schools have 500 or more students. "Rural" schools are schools located in small towns or rural areas with fewer than 15 000 people, while urban schools are in areas with more than 100 000 population. Please note that school data is based on relatively small number of observations (104), as only schools who have received training as part of the project responded to this part of the survey.
Source: OECD unpublished (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results

These findings about the effectiveness of the training may again be related to the reduction in distance learning during the project period, as well as to the training's focus on very basic digital skills. However, international evidence also suggests a decrease in parental involvement in general in Bulgaria during the project period. In 2018, 33% of students' principals in Bulgaria reported at least 50% of students' parents being involved in discussing their child's progress with a teacher on their own initiative, which decreased to 26% in 2022. This figure is slightly below the OECD average of 29% but above peer countries like Hungary at 16%, Czechia at 21%, and Poland at 23% (OECD, 2023[4]). In 2022, 68% of students in Bulgaria reported that their parents ask them what they did in school that day at least once or twice a week. This figure is the lowest in the EU-27 and below the OECD average 77% (OECD, 2023[4]). Future projects may therefore need to consider providing additional and more extensive support for parental engagement.

2.3.2. Additional support to engage parents may have supported greater effectiveness

Effective outreach to all parents, particularly those from marginalised communities, was a key challenge during the project. The Roma community is very diverse, with varying levels of trust in public institutions, education, and language barriers, all of which can affect parental engagement (Eurocities, 2023[5]; European Commission, n.d.[6]). Successful outreach measures often include personalised home visits by

educational mediators, culturally sensitive communication, and the involvement of trusted community leaders. In this project, educational mediators played a crucial role in connecting schools with hard-to-reach parents. However, some research participants reported that the training was still not always able to reach families who were already less engaged with school.

Existing studies suggest that several factors made the task of educational mediators more difficult during the pandemic. For example, the lack of protective equipment, access to certain neighbourhoods and settlements, and structured guidance for mediators hindered their ability to reach families already disengaged from the school system (Global Metrics, n.d.[7]). About 42% of educational mediators also reported that their pay was too low given the high-pressure nature of their work (Global Metrics, n.d.[7]). In some countries, there are suggestions that the role of educational mediators is strengthened so that they become mentors and tutors in their communities and provide more personalised support to parents and students on specific issues (UNICEF Regional Office for Europe and Central Asia, 2024[8]). Several planned and current projects are supporting the work of educational mediators in Bulgaria generally. However, more targeted support to help educational mediators promote involvement in distance and digital learning may have helped schools that struggled to effectively engage some parents, especially where trust was low or logistical barriers – such as transportation and language – were significant.

Additional training opportunities

2.4. The project increased access to other forms of <u>training</u>, relevant to crisis situations

The evaluation finds that activities that were programmed after the 2023 amendment also largely met their objectives. These activities provided training to nearly 26 000 students, although they fell short of the initial 37 700 target. The training addressed critical crisis response areas, such as socio-emotional learning, teaching for those who do not speak Bulgarian as a first language and preparing for possible school attacks (see Table 6.3).

2.4.1. The training opportunities offered after the project's 2023 amendment largely reached their target populations and met their objectives

The table below provides the target and results for the additional training offered after the project was amended, showing that the project reached almost 70% of its target for additional distance learning. There is limited evidence about the effectiveness of the additional training activities as monitoring and compliance checks did not compile information about effectiveness. However, a small number of interviewees indicated that the project's efforts to support socio-emotional learning, alongside the Support for Success initiative, were positive, but that the pedagogy used to teach non-Bulgarian speaking students could have been more engaging, interactive, and intercultural. The Ministry of Education also funded a survey on the training for preparation for school emergencies, the findings of which are outlined in Section 7 on impact.

Table 6.3. Additional training for students

	Target (no of participants)	Results (no of participants)
Number of children and students receiving additional training including distance learning in electronic environment	19 903	15 932
Number of students receiving additional distance learning in electronic environment	37 718	25 822
Number of children and students from Ukraine who have received support to their integration/reintegration into the Bulgarian educational system	0	262

Note: The targets are taken from the REACT EU project agreement between the Executive Agency and the Ministry of Education and Science.
Source: Executive Agency "Programme Education" (2023[2]), Agreement: "Equal access to school education in times of crisis".

References

EAPE (2023), *Agreement: Equal access to school education in times of crisis (after 2023 amendment)*. [2]

Eurocities (2023), *Breaking barriers to Roma children's education and inclusion*, https://eurocities.eu/latest/breaking-barriers-to-roma-childrens-education-and-inclusion/ (accessed on 17 November 2024). [5]

European Commission (n.d.), *Roma equality, inclusion and participation in the EU*, https://commission.europa.eu/strategy-and-policy/policies/justice-and-fundamental-rights/combatting-discrimination/roma-eu/roma-equality-inclusion-and-participation-eu_en (accessed on 17 November 2024). [6]

Global Metrics (n.d.), *Impacts of the COVID19 pandemic on preschool and school education - a perspective of the educational mediators*, https://www.unicef.org/bulgaria/media/8941/file (accessed on 4 November 2024). [7]

Ministry of Education and Science (2021), *Project No BG05M2OP001-5.001-0001 "Equal access to school education in times of crisis"*, https://react.mon.bg/ (accessed on 2 January 2025). [3]

OECD (2023), *PISA 2022 Results (Volume II): Learning During - and From - Disruption*, https://doi.org/10.1787/a97db61c-en. [4]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [1]

UNICEF Regional Office for Europe and Central Asia (2024), *Breaking Barriers: An analytical report on Roma children and women in Kosovo, Montengro, North Macedonia and Serbia*, UNICEF, Geneva. [8]

7 Key findings: Impact (EQ3)

Key messages: Impact (improving teaching and learning)

- Almost all surveyed principals (about 90%) reported feeling more prepared for future crises, expressing confidence in their ability to transition to remote learning in any future school closures. However, schools may not be ready to respond to changing distance and digital learning platforms and practices that may require more developed skills.

- Principals, teachers, and students reported that the training enabled teachers to better use online platforms. Over 8 in 10 principals also reported that the training improved collaboration between teachers. However, 1 in 4 teachers reported that the training was 'too basic' and about a third of principals and teachers felt it did little to improve teaching and learning. Whilst the project specifically targeted basic digital skills, this focus limited its ability to create more widespread and sustained impact by improving teaching and learning.

- Student training focused on the technical skills needed to get students online, and more than 7 in 10 principals agreed that it strengthened student's basic computer skills. However, Bulgarian students' confidence in using digital platforms remained below the OECD average. Further building on existing projects such as "Education for Tomorrow" to target more advanced digital skills may have supported students to confidently use digital platforms for more advanced tasks rather than simply being able to access them.

- The project's ability to create impact was hindered by an overall weak digital ecosystem in Bulgaria that lacked some of the enabling conditions necessary for effective distance education. For example, more guidance on pedagogy and assessment could have provided a clearer vision about what effective and engaging distance learning involves and how to support teacher innovation.

- The dropout rate declined during the project period by 4.6%. However, this trend may reflect pre-existing patterns rather than being directly tied to project activities.

- The extended training activities after the 2023 programme amendment improved stakeholder confidence in handling crisis situations.

The project aimed to "create the conditions for improving the digital skills of teachers for more effective teaching and learning in digital environments and promote the use of innovative teaching and learning methods." The previous section considered the project's effectiveness at meeting its objectives and established that it helped secure more equal access to digital devices and training (see Section 6). This section goes beyond this to examine what available evidence implies about the overall impact of the project's activities. It addresses the final column of the reconstructed theory of change in Section 2, looking first at whether the project prepared the system for future crisis, then at whether it strengthened Bulgaria's overall digital ecosystem, most notably digital teaching and learning, and finally at whether it improved student skills, equity, inclusion and outcomes.

It addresses Evaluation Question 3:

To what extent did **the activities support improvements to teaching and learning in Bulgaria during the pandemic and recovery period**? In particular, to what extent **did they strengthen the digital skills of teachers and students** and the use of more effective and innovative digital teaching and learning methods?

The section also reflects on what may underly evaluation findings, including the extent to which the activities were supported by some of the "enabling factors" for a digital education environment (a question which is further developed in the coherence section).

Impact on preparing the system for future crises

3.1. The project ensured equal access to distance learning if education is disrupted in the near future – but did not help schools respond to rapidly evolving distance and digital learning contexts

The evaluation finds that the project had a positive impact on how prepared schools felt to respond to future crises. However, this may be limited to the short and medium term, as future disruptions could require different and more developed skills, which the training did not cover. This issue is also explored in the section on sustainability (see Section 10).

3.1.1. Almost all surveyed schools felt better prepared to respond to future crises

Almost all principals reported feeling more prepared for future crises, expressing confidence in their ability to transition to remote learning in the event of a future school closure (OECD unpublished, 2024[1]). Whilst this confidence may be expected, given their experience with online learning during the COVID-19 pandemic, most research participants felt their readiness extended beyond simply building on experience. They attributed it to being equipped with devices, skills, and training materials for future transitions to online learning. Several interviewees and focus group participants cited instances where schools smoothly shifted to remote learning during local flu outbreaks or flooding, attributing this readiness to the resources and training provided by the project. Indeed, PISA 2022, found that only 16% of students in Bulgaria were in schools where the principal reported feeing unprepared or only minimally prepared to provide remote instruction in the event of an extended school closure, similar to the OECD average at 17% (OECD, 2023[2]). The project's provision of devices and basic digital skills helped remove access barriers to continued education in future educational disruptions.

3.1.2. Digital and distance learning evolve quickly, potentially requiring updated skills and devices – this was not fully accounted for

However, rapid technological advancements means that digital and distance learning can evolve quickly, requiring regular updates to devices and skills to maintain effective participation. During the early pandemic period, some schools reported transitions from email to Zoom and then to Microsoft Teams, which illustrates the pace of change. While the project provided the devices and basic digital skills necessary to access current platforms, it may not adequately equip teachers, students, and parents for future developments or to engage with more interactive and active forms of online learning. The project prepared the Bulgarian education system to transition to online learning in the short and medium term, but this was limited in scope and duration. This issue is explored further in the sections on teaching and learning below, and in Section 10 on sustainability.

Impact on the digital ecosystem and on teaching and learning

3.2. The project supported the use of online platforms but did not significantly improve teaching and learning

The evaluation finds that project activities ensured that educational stakeholders had the basic skills to manage online platforms and video conferencing software. This secured basic access to the digital learning environment, which was a significant achievement in the context of a global pandemic. Beyond this, the project had limited effect on teaching and learning.

3.2.1. The training supported teachers to use video conferencing platforms

Overall, three quarters of surveyed principals agreed that the training helped teachers deliver engaging digital education. However, differences emerged across districts. For example, in Montana, only 53% of principals reported positive outcomes, whereas in Varna, this figure was substantially higher at 94% (OECD unpublished, 2024[1]). The survey data cannot be used to explain these regional differences, but they could reflect disparities in digital infrastructure, teacher support, or prior experience with technology, that make it easier for teachers in Varna to apply the training effectively (IME, 2023[3]).

In focus groups, teachers, especially older ones, were also positive about the training's effectiveness in helping them to transition to remote learning:

> *Suddenly I had to use devices… The transition was horrific for me at first, but now I enjoy it, not just Teams but having access to devices and the Cloud. All of it was too much for me before. My generation is not technically literate. We are the most vulnerable generation – we started with chalk then whiteboards then interactive screens and now AI. I expect at some point to become an astronaut. I never expected this to happen to me at the end of my career. – Older teacher*

The majority of interviewees and focus group participants highlighted that the project facilitated smoother transitions between platforms (e.g. from Zoom to Teams) and streamlined online learning administration, enabling teachers to manage tasks such as grouping students and sharing links more efficiently. Such digital tools had not been widely used by many teachers previously, either in or out of school, highlighting the need to establish a basic shared understanding of their functionalities.

3.2.2. The training had some additional benefits, including supporting collaboration between teachers

The training also brought some additional benefits beyond its stated objectives, with 82% of principals and 81% of teachers reporting that it improved collaboration between teachers (OECD unpublished, 2024[1]). Again, many interviewees noted that the teacher-led nature of the training fostered stronger connections and encouraged informal reflection on how remote learning impacted pedagogy. Whilst this did not lead to widespread innovation, it was valuable in the Bulgarian context. In Bulgaria, just over half of schools (54%) have a specific programme to support teachers in using digital devices, which is almost identical the OECD average of 55% (OECD, 2023[2]). However, fewer schools provide scheduled time for teachers to collaborate, evaluate or develop instructional materials and approaches that employ digital devices (45%), compared to the OECD (58%). Although not an explicit goal of the project, fostering collaboration around digital pedagogy is one ingredient in further developing communities of learning – such communities can be key aspects in building effective and sustainable digital ecosystems. The project may have benefited from them being intentionally built into the design of the procedure.

3.2.3. The training was too rudimentary to address anything other than very basic skills

The training lasted four hours for students and six hours for pedagogical staff, and usually took place in groups of five to six participants. Notably, the training did not claim to address every aspect of digital education and aimed simply to support access to platforms and resources and basic functionalities such as the use of databases and basic software. Pedagogical specialists eligible for the training included those who had not participated in distance learning training in the past two years, those facing difficulties in conducting remote lessons, and those who expressed a need for further training (EAPE, 2021[4]). However, nearly a quarter of principals felt the training was too short, and only 28% of principals and teachers disagreed that it was too basic. Principals in primary and lower secondary schools were more likely to report that the training was insufficient in length compared to those in upper secondary schools, with an 11-percentage point difference. This finding is difficult to interpret from the survey data but may be due to it being more challenging to support younger students to use online platforms, and to offer age-appropriate, engaging instructions and content.

The issue with the rudimentary nature of the training was not related to the effectiveness of the training in meeting its stated goals, but rather a disconnect between the kind of training that was funded and the overall objective of fostering innovation in digital teaching and learning. While the training did contribute to a smoother online experience – an important step in removing barriers to innovative pedagogy – it fell short of addressing the full range of conditions necessary for effective teaching and learning in online environments.

3.2.4. A third of principals and teachers felt the training did little to improve teaching and learning.

Over a third of both principals and teachers believed the training had minimal impact on enhancing teaching and learning (OECD unpublished, 2024[1]). This perception varied by region, with 28% of education staff in Sofia city reporting minimal impact, compared to 48% in Pazardzhik. This sentiment was also more prevalent in urban schools, where a higher proportion of teachers felt the training did little to improve teaching and learning, showing a 5-percentage point gap compared to rural areas. Principals of smaller schools were 9-percentage points more likely than those in larger schools to feel the training had little effect. Principals in schools with a more than 70% concentration of ethnic minorities were also more likely to feel that the training did not improve teaching and learning (63%), than those in schools with a lower concentration of ethnic minorities (52%). These disparities suggest the training could have been better tailored to regional, school size, and demographic needs.

3.2.5. There are mixed reports on the extent of teachers' effective and innovative use of technology during the pandemic

Almost three-quarters of students reported that their teachers used technology in new and innovative ways during the pandemic. However, this perception varied among sub-groups: lower secondary students were more likely to report innovative use than upper secondary students, with a 6-percentage point difference (OECD unpublished, 2024[1]). Urban students and boys were also very slightly less likely to report such innovative use than rural students and girls, with 2- and 1-percentage point differences, respectively. Furthermore, nearly twice as many students who spoke Bulgarian at home reported limited use of technology in new and innovative ways by teachers (20%) compared to Roma (11%) and Turkish students (9%) (OECD unpublished, 2024[1]). The shift to online learning required teachers to adopt new ways to deliver lessons, often when managing social distancing challenges themselves.

However, international evidence suggests that the novelty of teaching online did not always translate to effective digital pedagogy (Thorn and Vincent-Lancrin, 2021[5]). More than half (57%) of students in the evaluation survey also felt that lessons remained similar to traditional classroom settings, often still reliant

on textbooks, suggesting that while technology was used, it didn't significantly transform teaching practices (OECD unpublished, 2024[1]). In focus groups, too, students spoke of both distance and subsequent digital learning being unengaging:

> *It felt as if the teachers were monologuing, and the process was monotonous. Some things are boring at school as well, but the interaction was missing online. And now? Using digital technology doesn't make the classroom more interesting. In our school, we are like a community. The teachers help us even with private matters but still nothing positive can happen in your life if you don't pass the exam. That doesn't change. - Student*

In addition, about 45% of students reported that teachers needed to receive more training to improve their digital skills, even after the project's activities (OECD unpublished, 2024[1]). This sentiment was more prevalent among urban students (7-percentage point difference), those who spoke Bulgarian at home (23-percentage point difference), and boys compared to girls (2-percentage point difference).

This aligns with data from large-scale international surveys. In PISA 2022, 99% of students were in schools where principals believed teachers had the skills to integrate digital devices, and about 73% reported having enough time to prepare for digital lessons (OECD, 2023[2]). However, students still faced challenges (see Figure 7.1). For example, 44% of Bulgarian students reported weekly difficulties understanding assignments and 35% struggled to find assistance with schoolwork – both above OECD averages of 34% and 24%, respectively (OECD, 2023[2]). Addressing these disparities and ensuring that technology enhances, rather than merely replicates, traditional teaching methods is crucial for closing gaps in educational outcomes.

Figure 7.1. While principals in Bulgarian schools reported high preparedness for remote instruction compared to the OECD countries on average, students still encountered problems
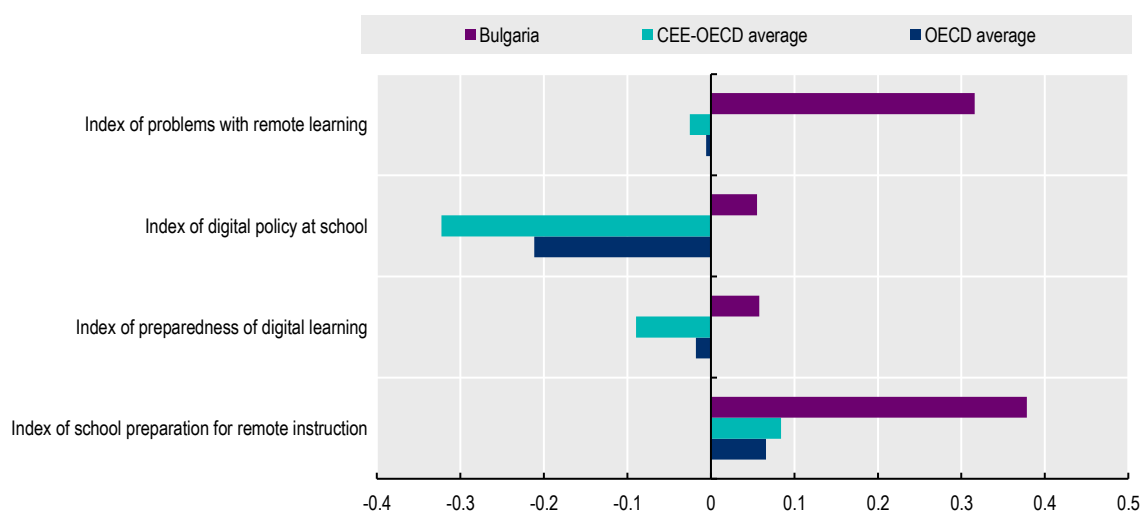
Note: CEE-OECD average includes Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Slovenia, Slovakia. For the index of digital policy at school, data for Czechia, Estonia, Hungary, Latvia, and Slovakia is not available.
Source: OECD (2023[2]), *PISA 2022 Results (Volume II): Learning During - and From – Disruption*, https://doi.org/10.1787/a97db61c-en.

3.2.6. Ensuring effective and equitable digitalisation comes from a system-wide approach and ensuring a supportive policy environment

It is appropriate that projects should be bounded within defined objectives and limited resources. It is not realistic to expect one project to address the entire digital ecosystem in Bulgaria. However, because this will influence the project's impact, it is important to examine whether the project was designed in way that

considered the maturity of Bulgaria's digital ecosystem and to look at how the level of maturity might have affected project implementation and outcomes. A recent OECD report identified eight key elements for successful digitalisation (OECD, 2023[6]):

Strategic vision

Adapting pedagogical approaches, curricula, and assessment

Governance, guidance, and regulation for digital education

Funding and procurement for digital education

Infrastructure and innovation for digital education

Capacity building for digital education

Human resource policies for digital education

Effective monitoring and evaluation

The pivot to online learning during the COVID-19 pandemic posed additional challenges to the ambition to digitalise education systems, internationally. Even where these eight elements had been adequately addressed in the past, they did not always fully align with the demands of distance learning, a relatively new practice for many systems. For example, in relation to elements 1, 2 and 3 above, although Bulgaria has included remote learning in its digitalisation strategy before the pandemic through the 2014-2020 Strategy for ICT in education and science, the strategy did not yet focus on adapting pedagogical approaches, curricula, and assessment methods to suit digital learning environments. While there is some technical and methodological guidance available for using digital tools in schools, resources for creating online content and learning materials were limited. This lack of resources could lead to inconsistent integration of digital technology in teaching across different educational institutions (DILEARN, 2023[7]).

As implied above (see Section 5), infrastructure challenges, such as inconsistent internet connectivity and electricity cuts, continued to affect educational access, with this issue being especially acute for vulnerable students and those living in rural and mountainous areas. Whilst access to hardware has dramatically improved in recent years in Bulgaria, there has, in common with many other countries, been less progress in innovative or transformative uses of digital technology (OECD, 2023[6]). Despite support for innovative schools and the work of some dedicated individual teachers, school leaders and projects, there is still a need for more attention to how technology can be used effectively to support learning and improve educational outcomes, especially for distance learning.

For capacity building and human resource policies (elements 6 and 7 above), more tailored support for teachers and parents could have been developed given that familiarity with digital and distance instruction and devices was low among teachers (European Commission, 2021[8]). In addition, the lack of effective monitoring and evaluation in many countries during this pandemic period was notable. Given that the REACT-EU project was implemented after the most acute phase of the COVID-19 crisis, it had an opportunity to address this gap but did not fully do so.

Whilst the project made important moves in addressing infrastructure and procurement and building basic capacity for digital learning in Bulgaria, there are valuable opportunities for future learning regarding successful digitalisation. For instance, as explained above, pedagogical approaches, assessment and curricula were not fully adapted to online digital learning, which will have hindered teacher's ability to deliver effective online teaching and learning. Developing more comprehensive guidelines for remote learning could have helped the project align around a clearer strategic vision about what effective and engaging online teaching involves and how to support teacher innovation in this direction. This is especially important in a context where most teachers are open towards developing new ideas for teaching and learning (86%) but less than half (44%) report letting students using ICT for projects or classwork (OECD, 2019[9]). The project's ability to create impact was hindered by an overall weak digital ecosystem in Bulgaria that lacked some of the enabling conditions necessary for effective distance education.

Impact on students' skills

3.3. The <u>student training</u> addressed the technical aspects of getting students online – but had limited wider impact

The evaluation finds that the training effectively helped students, particularly younger ones, access and navigate digital platforms. However, its emphasis was more on basic access than on improving learning outcomes. While this focus was understandable given the limited top-up funding and the crisis-driven nature of the project, equal access does not necessarily translate to equal opportunities for learning and the improvement of learning outcomes. As a result, this limited the broader impact of the training in supporting learning.

> *3.3.1. For students, the training was targeted to and useful for the youngest students who were just commencing their use of video conferencing platforms*

Participants in the research suggested that the training was most useful for younger students. According to 82% of principals, the training strengthened students' basic computer skills, especially in regions outside the capital, where principals found it more necessary compared to those in the capital of Sofia (OECD unpublished, 2024[1]). The evaluation survey revealed that 63% among students who participated in the training felt that their basic computer skills improved. Whilst the ability to access video conferencing platforms may not transform the nature of teaching and learning, it can be important to ensuring that lessons or homework using online platforms are not disrupted by students having technical difficulties. The training supported this by helping students navigate digital platforms for online learning.

Data from PISA 2022 illustrates the importance of this: students in Bulgaria who reported daily or nearly-daily access to material on a learning management system or school learning platform scored 28 points higher than their peers, even after accounting for students' and schools' socio-economic profiles (OECD, 2023[2]). The training, even if basic, is therefore likely to have had some benefit in supporting students to access learning material. Whilst students did not emphasis this in focus groups, this may relate to them recalling events that happened some time ago and the fact that the ability to access to these platforms has now become routine for them.

> *3.3.2. However, some students continued to experience difficulties, and confidence in using digital platforms remained below the OECD average, even after the training*

Even after receiving training, though, about 14% of students reported continuing to experience difficulties using digital devices for their schoolwork (OECD unpublished, 2024[1]). Students who spoke a language other than Bulgarian at home reported more difficulties post-training compared to their peers who spoke Bulgarian at home (see Figure 7.2). Whilst these difficulties may also have related to connectivity or other challenges, almost 15% of students disagreed that the training had strengthened their basic computer skills. This sentiment was very slightly more common among urban students, who were 2-percentage points more likely than rural students to feel that the training did not improve their skills (OECD unpublished, 2024[1]).

Figure 7.2. Students who do not speak Bulgarian at home faced greater challenges with using digital devices both before and after training, compared to their peers

Students' responses in relation to guidance and training they received during the COVID-19 pandemic, by mother tongue
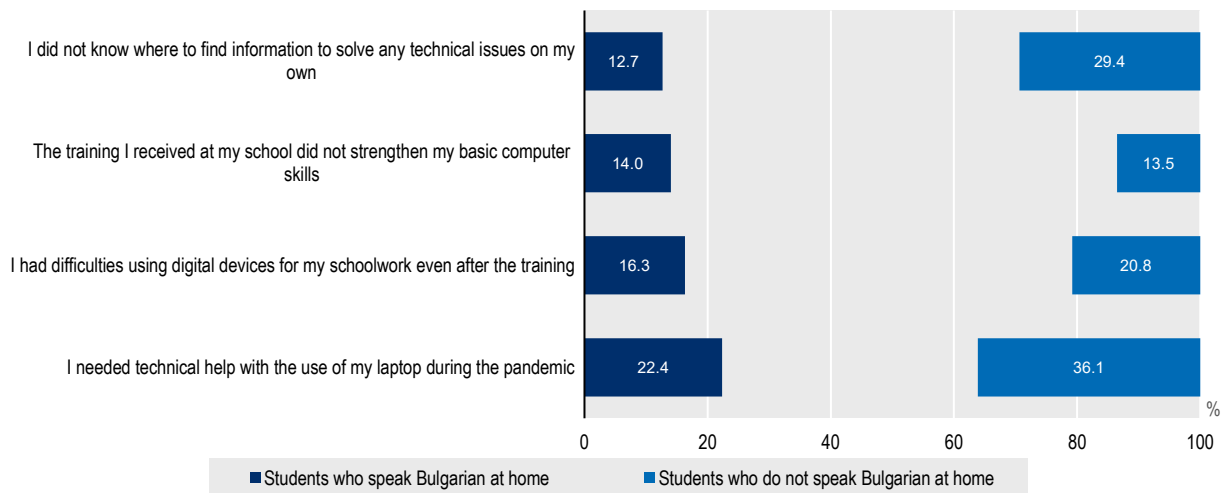
Note: Indicators are ranked in ascending order by percentage point differences between Bulgarian-speaking students and ethnic minorities. "Ethnic minority students" include students speaking Roma, Turkish and other than Bulgarian language at home.
Source: OECD (2024[1]), OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results.

This is consistent with international data. In PISA 2022, 32% of students in Bulgaria reported being not at all or not very confident using a learning-management system or school learning platform if their school building closes again in the future (OECD average: 26%) (OECD, 2023[2]). Almost 30% reported low confidence in using a video communication programme, and 34% said they would struggle to find learning resources online on their own (OECD average: 23%). Confidence gaps were particularly stark among disadvantaged and rural students, who reported significantly lower self-directed learning skills compared to advantaged and urban students (0.4 and 0.3 difference, compared to OECD averages of 0.3 and 0.1, respectively) (OECD, 2023[2]).

Although the training appeared to have some positive outcomes in helping students access learning platforms, it may not have been extensive enough to reach all children who needed support. In addition, as explained above, successful online learning requires more than just basic digital skills.

Impact on completion rates and outcomes

3.4. The dropout rate declined during the project period – but there is little evidence to suggest this was related to the project activities

The evaluation notes that the dropout rate declined during the project period but did not find evidence that the project activities had a causal relation with this outcome. The project was implemented at a time when in-person learning was becoming the norm so its activities, whilst important for risk management, did not end up being essential to continued learning. The decline in dropout rates reflects more long-standing trends in this direction.

3.4.1. Evidence shows a decline in the drop-out rate, which is a continuation of previous trends

The project was also conceived to counteract the risk of dropping out in an online environment. The project period did see a decline in early school leavers (see Figure 7.3). However, other initiatives were also in place to tackle participation and completion rates. Bulgaria has been actively working since 2018 through the *Mechanism for Joint Work of Institutions for Enrolling and Preventing Dropout of Children and Students from the Educational System*, referred to as the *Interinstitutional Mechanism.* This mechanism brings together schools, local authorities, social services, and other institutions to identify students at risk of dropping out and provide targeted interventions, such as home visits, personalised educational support, and financial assistance. It includes the funding of educational mediators, particularly in marginalised communities like the Roma population, in an attempt to strengthen inclusion by bridging gaps between schools and families. The provision of devices and digital resources through the project complemented ongoing national initiatives and while this supported equal access to distance learning, it also worked alongside broader, well-established efforts that address both educational and socio-economic barriers to school completion.

Figure 7.3. Although the share of early school leavers in Bulgaria has decreased overall, regional disparities remain

Early leavers from education and training by NUTS2 regions (2019-2023)
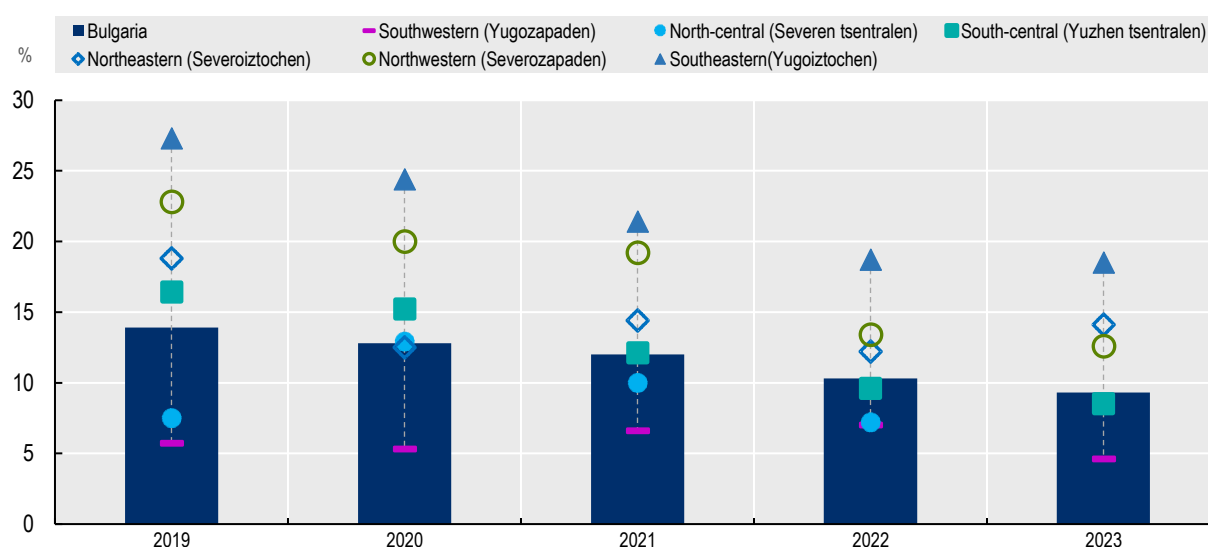
Note: Data for North central - *Severen tsentralen* is not available for 2023.
Source: Eurostat (2024[10]), *Early leavers from education and training*, https://doi.org/10.2908/EDAT_LFSE_16

3.4.2. Increased confidence using online platforms is associated with better outcomes, but broader student outcomes remained low and uneven throughout the project period

Whilst the primary goal of the project was to enable the continuation of education during current and future school closures, a more distal goal was "to ensure the creation of equal conditions for all students for the development of digital literacy and quality education in all subjects and at all educational stages" (EAPE, 2021[4]). Given the scale of the challenge, a targeted intervention focused on digital devices and skills provision could not be expected to address persistently low and uneven student outcomes in Bulgaria. Yet it would hope to have some positive influence on student learning.

PISA 2022 showed that, internationally, confidence in using learning management systems and video communication tools was positively associated with student academic performance, despite an overall decline in scores across most participating countries (OECD, 2023[2]). In Bulgaria, students who felt confident using a learning-management system or school learning platform scored 24 points higher in mathematics, even after accounting for socio-economic background —close to the OECD average of 30 points. Similarly, Bulgarian students who were comfortable using a video communication programme scored 57 points higher in maths than their peers; after accounting for socio-economic factors, this difference remained significant at 28 score points (OECD, 2023[2]).

The research cannot directly measure the project's direct impact on student outcomes, whether in terms of improvements or the prevention of further declines among participants. Student outcomes are influenced by a range of factors, beyond the provision of digital devices and skills training. The study's design and sample allow the identification of patterns and associations but not causal relationships, and the research team did not have access to performance data for participating students. Nonetheless, PISA 2022 highlighted that student outcomes remained low and uneven in Bulgaria throughout the project period – although it cannot be discounted that greater familiarity with online platforms may support student learning in both distance and digital environments.

Impact of additional project activities after the 2023 programme amendment

3.5. According to available evidence, the extended training activities improved the confidence of key stakeholders to respond to crisis situations

The evaluation finds that the extended training activities were effective in helping schools feel prepared to respond to emergency situations and in addressing some of the disparate challenges resulting from the COVID-19 pandemic, such as the need for enhanced socio-emotional skills.

3.5.1. National and monitoring data found that the extended training activities supported confidence in reacting to crisis situations

A 2023 non-representative survey conducted by the Ministry of Education and Science with 223 principals, found that 59% of principals felt highly confident in their ability to react well to crisis situations, while 43% were confident in students ability to respond (Ministry of Education and Science, 2023[11]). The survey also included 3 396 teachers, of whom 37% reported a high degree of confidence that students were prepared to react to such situations in the future. Among the 27 698 students who took the survey, 41% expressed high confidence in their ability to react in the future, and 48% felt that training on responding to emergencies related to school terrorism or school violence had a place in school life. These are self-reports and fortunately have not been tested in real life school emergencies (Ministry of Education and Science, 2023[11]). The survey also highlighted challenges faced by schools in smaller settlements, particularly in finding experts to conduct the training sessions, and that there were much fewer trainings focused on socio-emotional learning than on school violence and terrorism. The report concludes that future projects should provide greater support for socio-emotional learning training.

References

DILEARN (2023), *Unlocking the Digital Learning Landscape: Insights from Bulgarian Teachers*, https://dilearn.eu/unlocking-the-digital-learning-landscape-insights-from-bulgarian-teachers/ (accessed on 4 November 2024). [7]

EAPE (2021), *Guidelines for the implementation of the project activities BG05M2OP001-5.001-0001 "Equal access to school education in times of crisis"*, https://ruo-sofia-grad.com/wp-content/uploads/2021/05/%D0%A3%D0%BA%D0%B0%D0%B7%D0%B0%D0%BD%D0%B8%D1%8F-%D0%B7%D0%B0-%D1%80%D0%B0%D0%B1%D0%BE%D1%82%D0%B0-%D0%BF%D0%BE-%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82-REACT-EU-29.041.pdf (accessed on 15 November 2024). [4]

European Commission (2021), *Education and Training Monitor 2020*, https://op.europa.eu/webpub/eac/education-and-training-monitor-2020/countries/bulgaria.html (accessed on 4 November 2024). [8]

Eurostat (2024), *Early leavers from education and training by sex and NUTS 2 regions*, https://doi.org/10.2908/EDAT_LFSE_16. [10]

IME (2023), *Regional Profiles: Indicators of Development*, https://www.regionalprofiles.bg/en/#map (accessed on 15 November 2024). [3]

Ministry of Education and Science (2023), *Results from a survey under Project No BG05M2OP001-5.010-0001 "Equal access to school education in times of crisis" of trainings for socio-emotional support of students*. [11]

OECD (2023), *OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem*, OECD Publishing, Paris, https://doi.org/10.1787/c74f03de-en. [6]

OECD (2023), *PISA 2022 Results (Volume II): Learning During - and From - Disruption*, https://doi.org/10.1787/a97db61c-en. [2]

OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/1d0bc92a-en. [9]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [1]

Thorn, W. and S. Vincent-Lancrin (2021), *Schooling During a Pandemic: The Experience and Outcomes of Schoolchildren During the First Round of COVID-19 Lockdowns*, OECD Publishing, Paris, https://doi.org/10.1787/1c78681e-en. [5]

8 Key findings: Efficiency (EQ4)

Key messages: Efficiency

- More than 70% of principals reported confidence in the fairness and transparency of the device procurement process, considering it efficient. Nearly 90% agreed that accessing necessary information was straightforward, and almost all indicated they had adequate support, with clear and effective lines of communication. Available evidence suggests the project was efficiently managed.

- While there were costs, including the purchase of technical equipment for students and educators, as well as training on digital skills, these seem to have been outweighed by the benefits — especially when considering the potential social cost of failing to provide equal access to devices and essential digital skills.

- Many participants commented on the administrative burden involved, particularly of compliance checks and some suggested that monitoring data could be better used to improve decision-making. It will be important to reduce the administrative burden and identify further efficiencies, particularly of compliance checks.

This section explores the extent to which implementation was co-ordinated in a timely and cost-effective manner with adequate monitoring mechanisms. It also looks at whether stakeholders felt that procedures for participation and lines of communication were clear and that the project represented value for money.

It discusses Evaluation Question 4:

> To what extent was the **procurement, distribution and implementation** of the project effectively governed to be **equitable, transparent, and efficient?**

It looks first at stakeholder perceptions of efficiency, before considering whether the benefits of the project outweighed the costs. Finally, it considers whether the administration and monitoring of the project were efficient and effective.

Assessing project efficiency

4.1. Available evidence suggests the project was efficiently managed

Given positive reports from stakeholders and in the absence of evidence to the contrary, the evaluation finds that the project was managed through appropriate and transparent governance mechanisms and represented reasonable value for money. Key stakeholders were positive about the governance of the project and about their interactions with those managing the project, although there were some concerns about the administrative burden of compliance checks.

4.1.1. Stakeholders had positive views about how efficiently and transparently the project was governed and reported that lines of communication were clear and helpful.

Schools applied a clear set of criteria to identify students most in need of devices, focusing on those at risk of exclusion or with significant barriers to learning. Priority was given to students without access to devices at home, those experiencing challenging home environments, and those at risk of disengaging from education (EAPE, 2021[1]). Research participants reported that these targeted efforts were supported by fair and transparent procurement processes that were verified by the Audit authority. Almost three-quarters of principals reported confidence in the fairness of device purchasing, while 65% felt that the distribution of devices among schools in their district was fair. Only 2% disagreed with this view, whilst the remaining respondents neither agreed nor disagreed (OECD unpublished, 2024[2]). Most principals reported that their school received the number of devices it needed (74%) and that devices were delivered on time (83%). Only 9% of principals felt that the project was not easy to implement in their school.

Centralised procurement enabled devices to be ordered in bulk for discounted prices – this high volume of laptops may otherwise have been difficult to secure at a time when global supply chains were disrupted by both the pandemic and the later war in Ukraine. Laptops were fitted with tracking systems to prevent theft and an information system was created to compile data, including the serial number of each device, who it was lent to, and for how long. No incidences of theft were reported and whilst the security measures may have contributed to this, it remains an open question as to whether such extensive measures were required.

Stakeholders reported no delays in planned deliveries or problems with the administration of the project and spoke very highly of the Executive Agency staff, and those who managed the project at the regional and national levels, in providing support to understand the requirements and address any problems that were experienced. Schools also found the support from Bulgaria's REDs very helpful. Most principals (87%) agreed that the necessary information for project implementation was straightforward, and 92% felt they received the support they needed from their RED throughout the process (OECD unpublished, 2024[2]). This suggests that the project featured effective inter-institutional communication and resource management across different education levels, which is a positive in a context where public sector initiatives have sometimes worked in silos (Guthrie et al., 2022[3]). The rapid development of the programme in the COVID-19 context and the 2023 adjustment also required close co-operation between the European Commission, the Ministry of Education and Science and the Managing Authority, and research participants reported successful coordination that contributed to the project's efficiency.

4.1.2. The benefits of the project seem to have outweighed the costs

The project did involve substantial cost, having a total budget of BGR 101.6 million. Schools received funding based on participation: 20 BGN for each student, 26 BGN for each teacher, and 10 BGN for each parent or educational mediator training session, contributing to paying staff who led the training. These amounts were aligned with the training durations – four hours for students, six hours for teachers, and two hours for parents or mediators. While the funding for parent training was proportionate to its shorter duration, the relatively low amount may have discouraged schools from prioritising this group. Parents can be harder to reach and engage than teachers and students and the limited return on this effort likely contributed to the project missing its target for parent training sessions.

There could also have been further efficiencies in how the project activities addressed particular needs. For example, funding could have been more targeted to schools that had greater challenges involving parents in digital learning and training could have been directed to developing more advanced digital skills.

However, at a broader level, the Bulgarian authorities would have been remiss not to take targeted measures to ensure that all students had access to equivalent devices and skills, given uncertainty about the duration of distance education that would be required. Ensuring equitable access to devices for

distance learning holds considerable societal value, especially in a country like Bulgaria, which faces persistent challenges in ensuring strong and equitable student outcomes, high completion rates and broad participation, even outside of crisis times (see the evaluation context section). In the event, these devices did not play a large role in supporting continued education because in-person education became the norm during the project period. However, this could not have been known with certainty when the project was conceived, and devices continued to be used after the project for digital education.

In many respects, the project's activities functioned like an insurance policy. While it is difficult to quantify the immediate return on investment for such initiatives, their worth becomes evident when considering the potential social costs of failing to provide equal access to devices and essential digital skills. The societal costs of neglecting these needs would have outweighed the project's expenses, detailed below.

The project's amendment to include training for students affected by the crisis in Ukraine also demonstrated substantial societal value by contributing to integration efforts of families arriving from Ukraine, even though again the provision was not always taken up.

Table 8.1. Budget allocation and expenditure across project activities

Activity	Sub-activity	Funds allocated	Spending
Activity 1: Purchase of technical resources for pedagogical specialists and students to ensure the educational process in times of crises		71 233 248.50 BGN	71 233 248.50 BGN
	Laptops for students	46 779 259.15 BGN	46 779 259.15 BGN
	Tablets for students	2 429 272.86 BGN	2 429 272.86 BGN
	Laptops for teachers	20 103 153.66 BGN	20 103 153.66 BGN
	Universal cabinet for charging up to thirty laptops and tablets	1 921 562.83 BGN	1 921 562.83 BGN
Activity 2: Training for students, including from vulnerable groups to acquire skills for distance learning in an electronic environment		2 800 000.00 BGN	2 765 560.00 BGN
Activity 3: Training pedagogical specialists to improve their skills, including teaching/conducting remote activities in an electronic environment, as well as teaching Bulgarian as a foreign language		419 100.00 BGN	416 352.00 BGN
Activity 4: Training of educational mediators and parents to acquire skills to work in an electronic environment (including educational platforms, search for e-content, etc.)		450 000.00 BGN	348 490.00 BGN
Activity 5: Support for additional synchronous training, including remotely in an electronic environment and development and approbation of methodology/tools/models for socio-psychological/emotional support		8 427 460.00 BGN	6 758 555.75 BGN
Activity 6: Support for children in pre-school education to overcome crises		11 975 198.77 BGN	7 681 866.85 BGN
Indirect costs		6 337 395.21 BGN	5 921 230.91 BGN
Total		101 642 402.48 BGN	95 125 304.01 BGN

Note: See Annex B for details on budget allocation and spending, broken down by specific cost categories.
Source: Executive Agency "Programme Education" (2023[4]), Agreement: Equal access to school education in times of crisis, after the 2023 amendment

The total amount allocated for project activities after the 2023 amendment was BGN 101.6 million. Following verification of the final payment claim, eligible expenses totalled BGN 95.1 million, leaving an unspent balance of BGN 6.5 million. This balance cannot be reallocated within the programme and, at the time of writing in December 2024, remains under the OPSESG ten-digit code. It is expected to be withdrawn by the National Fund (NF) by the end of 2024.

4.1.3. Many interviewees commented on the administrative burden involved, particularly of compliance checks

In interviews with the evaluation team, stakeholders spoke of the administrative burden of compliance checks. They suggested they were required to provide as many as 30 pages of documentation to justify

the spending and receive certificates and funding for one small group of five-six students to undergo four hours training. As this often involved scanning paper documents to upload them to the project's electronic platform, this could represent up to four hours of administration time, not counting the additional time for this documentation to be checked and verified by the Managing Authority.

While all REDs confirmed they had access to the necessary information to implement the project at the district level, 24% reported that compliance checks were time-consuming, and 11% noted an excessive administrative load at the district level (OECD unpublished, 2024[2]).

Whilst electronic platforms, are designed to streamline processes, and most stakeholder found them easy to use, some reported frustration about the time taken to familiarise themselves with the requirements of the platform for each project. This is also in a context where around 80% of both principals and teachers report that administration tasks detract from instructional priorities (OECD unpublished, 2024[2]). Future projects should carefully consider how efficiencies could be identified in this area to reduce the administrative burden involved in managing the project.

4.1.4. Monitoring data could be better used to improve decision-making and future programming

Some research participants suggested that whilst the monitoring information collected was carefully verified, sometimes by site visits, it was mostly compliance-driven, with less attention to more meaningful metrics, such as regional distribution, training outcomes, and overall programme effectiveness. Monitoring data were summarised by schools, but this was not compiled and communicated beyond number of devices and training sessions provided. Generally, monitoring data could be more systematically used to support compiling, analysis, and reporting to drive improvement (see Box 8.1). Interviewees also mentioned that inconsistent data collection methods over time have led to a lack of standardisation across projects, making comparisons difficult and limiting the system's ability to support data-driven decisions.

Box 8.1. Estonia's Education Information System (EHIS): Effective use of monitoring data to improve decision-making in education

Estonia's EHIS integrates data from over 20 state-run systems, including population and taxation registers, to support evidence-based policymaking in education. It collects and compiles comprehensive data on student performance, teacher qualifications, and resource allocation, which is used to inform educational policies and decision-making.

Key features of EHIS:

- *Data Exchange and Collaboration:* EHIS relies on collaborative data exchange between ministries, where informal coordination often precedes formal agreements. A clear legal framework governs data access, outlining its intended use.
- *Research Access:* Researchers can access data via the public platform Educational Eye or request detailed datasets from the Ministry of Education and Research (MER), contingent upon ethical approval and a defined research plan.
- *Policy Development:* EHIS data informs crucial educational decisions, such as funding allocations to municipalities, budget planning, and identifying teacher shortages. The Analysis Department of MER processes this data, ensuring compliance with legal standards and responding to changes in educational policy.

By effectively analysing data, EHIS enables the government to identify regions needing additional support, directing investments in teacher training and resources. Regular stakeholder consultations help refine educational programs based on collected data, enhancing overall educational outcomes.

Source: OECD (2020[5]), *Case Study: The Estonian Education Information System (EHIS),* https://doi.org/10.1787/298d6678-en

References

EAPE (2023), *Agreement: Equal access to school education in times of crisis (after 2023 amendment)*. [4]

EAPE (2021), *Guidelines for the implementation of the project activities BG05M2OP001-5.001-0001 "Equal access to school education in times of crisis"*, https://ruo-sofia-grad.com/wp-content/uploads/2021/05/%D0%A3%D0%BA%D0%B0%D0%B7%D0%B0%D0%BD%D0%B8%D1%8F-%D0%B7%D0%B0-%D1%80%D0%B0%D0%B1%D0%BE%D1%82%D0%B0-%D0%BF%D0%BE-%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82-REACT-EU-29.041.pdf (accessed on 15 November 2024). [1]

Guthrie, C. et al. (2022), *OECD Reviews of Evaluation and Assessment in Education: Bulgaria*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://doi.org/10.1787/57f2fb43-en. [3]

OECD (2020), "Case Study: The Estonian Education Information System (EHIS)", in *Strengthening the Governance of Skills Systems: Lessons from Six OECD Countries*, OECD Publishing, Paris, https://doi.org/10.1787/298d6678-en. [5]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [2]

9 Key findings: Coherence (EQ5)

Key messages: Coherence

- Stakeholders across groups reported positive perceptions of the project's coordination and coherence. However, alignment between the project's objectives and its activities could have been strengthened. Greater emphasis on the necessary conditions for achieving these goals, (e.g. capacity for digital teaching and learning) may have helped the project more effectively advance Bulgaria's digitalisation and equity strategies.
- Over half of the REDs indicated that the project did not duplicate existing initiatives (with the rest indicating that they did not know), and the project aligned with the objectives of relevant national and European strategy documents.
- Some research participants suggested that coordination and exchange between related initiatives could be strengthened. For example, more regular meetings, learning events and dedicated communication channels could facilitate experience-sharing across projects. More intentional alignment on reporting may also have further benefited coordination efforts.
- Activities introduced after the 2023 programme amendment were consistent with the rest of the project and with broader digital education strategies.

The COVID-19 pandemic required rapid and coordinated responses across sectors. The priority was responding to the crisis, but this section also considers the extent to which the activities contributed to Bulgarian and European education and skills strategies, including for digital and distance education and equity in education. How well did the activities work together and to what extent were they embedded in wider efforts to support equal access to education? Did the EU intervention enable Bulgaria to advance national and European priorities in these areas?

This section addresses Evaluation Question 5:

> To what extent were the **activities part of a strategic, coordinated, and coherent approach** to the integration of digital technologies in education in Bulgaria, **and coherent with EU objectives**? To what extent did stakeholders perceive a shared vision and effective coordination, complementarity, coherence, and dialogue between key actors and activities, without duplication, inconsistency, or replication of errors?

The section covers first the project's internal coherence and then its external coherence with other strategies and initiatives.

Internal and external coherence

5.1. The project was coherent with existing digital education strategies – but could have done more to move the needle on digital skills

The evaluation finds that the activities were cohesive, coordinated and aligned to national and European education and skills strategies. This is supported by stakeholder views and analysis of national and European strategy documents. Whilst the project featured a good level of internal and external coherence, some steps could have been taken to strengthen the relationship between the project's objectives and actions. For example, the design of the training activities as isolated initiatives meant that they were not able to substantively advance Bulgaria's skill strategies.

5.2. Internal coherence

5.2.1. The alignment between the project's objectives and activities could have been improved, with greater attention given to the enabling conditions necessary to fully achieve those objectives

Whilst the primary aim of the project was to prepare the educational system for future crisis, the project also contained a set of implicit more ambitious goals, including promoting more effective and innovative teaching and learning and increasing parental involvement. However, as outlined in Section 7, the training provided was too basic to achieve a meaningful impact in these areas. It was not realistic to expect that small-scale, one-off training sessions for small groups could deliver on such broad objectives. The training for teachers targeted basic generic digital competence when the long-term overall objectives to improve teaching and learning implied that the project aimed to create professional digital teaching competence (e.g. the ability to integrate technology into teaching and learning effectively) (OECD, 2023[1]). There was a disconnect between these more implicit and ambitious goals and the choice of one-time activities, which lacked the depth and continuity needed to create lasting change. This illustrates the importance of developing a robust theory of change before project implementation to ensure a careful match between project objectives, intended impact and choice of activities.

5.3. External coherence

5.3.1. The project aligned with national and European strategies and initiatives for digitalisation, equity in education and the integration of vulnerable communities, including Roma

The project was well-aligned with several national and European strategy documents (see Table 2.1). For example, Bulgaria's Recovery and Resilience Plan (RRP) includes EUR 319 million for digital skills. The REACT-EU project complemented the goals of the RRP by focusing on similar objectives of improving digital education infrastructure and skills (European Commission, 2024[2]). Whilst aligned, the extent to which the REACT-EU project was able to advance strategies on skills was limited, given that it targeted only the most basic of digital skills.

The REACT-EU project was also explicitly designed to build upon and complement the ongoing project, "Education for Tomorrow", funded by the European Structural and Investment Funds. The two projects supported similar activities and used similar technical processes but with a clear division across budgets to avoid duplication. Funding of already implemented activities and purchased equipment was prohibited and beneficiaries were required to provide a declaration that they had not received double funding. The distinct roles of each project meant that the REACT-EU project was able to achieve a level of device

provision and training over and above the extent of the "Education for Tomorrow" activities, which would not have been possible without the top-up funds.

The National Strategy for Equality, Inclusion, and participation of Roma (2021-2030) has the operational objective to create the conditions for quality and inclusive education and educational integration for children and students, including vulnerable groups and Roma. A key aspect of this strategy is fostering parental involvement and supporting effective interaction between educational institutions and families to increase the importance placed on education within communities. This was again aligned with the objectives of the REACT-EU project.

5.3.2. Stakeholders from different groups had positive perceptions of the extent to which activities featured effective coordination, complementarity, coherence, and dialogue

In interviews and focus groups, stakeholders reported no inconsistencies between the project and broader national strategies and perceived them as complementary and coordinated. According to the evaluation survey data, more than half of RED representatives (63%) disagreed that the project duplicated other similar initiatives, and research partnerships indicated that they saw the project as both distinct and well-integrated with ongoing efforts (OECD unpublished, 2024[3]). Furthermore, 88% of REDs agreed that the project was based on a clear vision for the development of digital education in Bulgaria. These findings suggest the project's success in ensuring coherence between its activities and broader national strategies for digital education, as well as effective communication and alignment between the bodies involved in implementation at different levels (e.g. national, regional, and school levels).

5.3.3. Exchange and learning between related initiatives could be strengthened

While overlapping or non-alignment between initiatives was not an issue, some evidence did emerge that a lack of coordination and exchange across different projects potentially limited the project's impact. The "Education for Tomorrow" activities, which were part of a larger programme of European funding, provided useful mechanisms for the REACT-EU project. For instance, stakeholders used electronic IDs created by "Education for Tomorrow" to access the devices provided by the REACT-EU project. However, despite clear differentiation of responsibilities, some respondents suggested that the various teams involved in managing the initiatives worked in silos, hindering a more system-wide approach or the identification of common lessons. This may also be related to the project's design and implementation during various stages of the COVID-19 pandemic.

Whilst there are some institutionalised mechanisms to support co-ordination in the Bulgarian system more widely, these are limited to specific purposes. Beyond this, co-ordination currently depends on the engagement of individuals rather than being structurally supported. This means that there are few incentives to engage or maintain coordination and exchange, outside individuals' immediate spheres of interest. This is an area that could be strengthened for future initiatives. For instance, more regular meetings, learning events and specific communication channels could enable more consistent experience-sharing across projects. Greater alignment of reporting would also support more cohesion and coordination.

References

European Commission (2024), *Bulgaria's recovery and resilience plan*, https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/bulgarias-recovery-and-resilience-plan_en (accessed on 10 October 2024). [2]

OECD (2023), *OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem*, OECD Publishing, Paris, https://doi.org/10.1787/c74f03de-en. [1]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [3]

10 Key findings: Sustainability and EU added-value (EQ6)

Key messages: Sustainability, EU added-value

- Nearly all surveyed schools (90%) reported feeling better equipped to respond to future disruptions in in-person learning, and research participants suggested that the provision of devices and training improved the system's preparedness for future crises. The ability to move devices between schools was an important sustainability measure.

- However, many schools also indicated a lack of funding to replace devices once they reach the end of their lifespan. Mechanisms to ensure the sustainability of the provided resources, training and skills could have been strengthened. For example, embedding the training in ongoing professional learning programmes for teachers may have helped ensure ongoing access and regularly updated curricula.

- The project demonstrated EU added value by providing a crisis response at a scale that would not have been possible without additional REACT-EU funding.

The project was designed to respond to the COVID-19 pandemic as well as to enable Bulgaria to provide equal access to digital and distance education in face of any future crises. This section addresses the question, first of whether the project enabled Bulgaria to build sustainable and long-term improvements to digital capacity, infrastructure, teaching, and equity and second, whether it would have been possible without the EU intervention.

Establishing the extent to which activities have created sustainable change is not always straight-forward; it is not possible to predict the future, nor to entirely isolate the effect of a single activity in a complex education system. However, sustained change is more likely when stakeholders feel ownership over activities, when changes in norms and values can be observed, when leaders show clear commitment, and when mechanisms have been created to support the change to continue.

This section addresses therefore addresses Evaluation Question 6:

> To what extent did the provision of **digital hardware and training support sustainable improvements to digital and distance education and enhance the Bulgarian education system's capacity to respond to future crises?**

It looks first at the provision of devices before moving on to consider other sustainability measures and the overall EU added value of the project.

Sustainability and EU value added in the provision of devices and training

6.1. The provision of devices and training helped prepare the system for future crises – for as long as the life of the devices.

The evaluation finds that the project strengthened system resilience for future crises. The devices and training better equipped educational schools and supported their readiness for crisis – though only for as long as the devices remain functional, and the skills are not outdated. Even if temporary, these improvements in digital infrastructure and capacity were a significant crisis response measure that would not have been possible without the EU intervention. Beyond this, there were few sustainability mechanisms included in the project design and the project did not lead to longer-term changes in teaching and learning.

6.1.1. The ability to move devices between schools was an important sustainability measure

In interviews and focus groups, participants highlighted that devices were well integrated into schools and actively used for digital learning, although monitoring data about their specific use was not available. Participants also emphasised that even though it was not trialled, the flexibility to move devices between schools was a strategy to maximise their utility, enabling them to be redeployed during future crisis to reach more students in need. This has limitations; if devices are already in regular use for teaching and learning in one school, relocating them to another would be disruptive. However, on a procedural level, the experience of providing devices, along with the procurement and contractual frameworks that facilitated their mobility, may represent a valuable model for future initiatives. This could support the rapid distribution and redistribution of devices in the future, enhancing the system's adaptability and constituting another sustainability measure.

6.1.2. Many schools anticipated not having the funding to replace devices at the end of their life

Whilst almost all principals reported being better prepared to respond to future educational disruption, only about a third of principals reported that their school had sufficient funds to upgrade or replace the provided devices when they reached the end of their life. Moreover, 24% of principals reported that a shortage or inadequacy of computers[14] for instructional use was somewhat of an issue, while 9% said it was a major problem (OECD unpublished, 2024[1]). Many interviewees expressed concerns about potential gaps in device availability in the future, with the possibility of a lack of functioning devices impacting teaching and learning as the provided devices, currently being used in the classroom, become obsolete. This issue was unevenly distributed: schools with fewer than 10% ethnic minority students were more than twice as likely to report having funding for upgrading outdated devices compared to schools with over 70% concentration of ethnic minority students (78% vs. 32%) (OECD unpublished, 2024[1]).

Whilst schools are currently well-equipped with digital devices, they experience uncertainty about how this access will be sustained in the long-term. Addressing the digital divide is about more than just access to devices – it also involves ensuring maintenance and the ability to replace malfunctioning or slow devices. Once students and teachers become accustomed to digital tools and online practices, inconsistent or unreliable access can significantly impact student performance and hinder the continuity of digital and distance learning (Gonzales, McCrory Calarco and Lynch, 2018[2]).

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[14] "Inadequacy of computers" refers to a situation where the number, quality, or functionality of computers available for instructional use is insufficient to meet the educational needs of students, hindering effective learning and teaching.

6.1.3. The project lacked broader mechanisms to sustain the provided training and skills

The evaluation did not find evidence that the project included significant mechanisms to ensure the long-term sustainability of the training or the renewal of hardware when it reached the end of its life. Although the training enabled staff to use digital platforms such as Teams, including strategies to sustain or further develop these skills over time may have helped translate them into improved teaching and learning processes. While the training achieved its short-term goals, its long-term impact was limited.

Additionally, despite the generally positive reception of the initiative, the evaluation found little evidence of ongoing and systemic ownership or commitment to expanding equal access to digital and distance education beyond the scope of project. The evaluation team met individual teachers and institutional heads who were committed to further developing their schools' digital ecosystem and heard about how the project's activities built on "Education for Tomorrow" and prepared the ground for Programme Education's focus on digitalisation. However, the exact mechanisms by which this added up to support for sustainable development of the digital ecosystem over time were less clear.

In hindsight, the project could have benefited from a stronger focus on long-term transformation in teaching and learning, with built-in sustainability measures such as capacity-building structures and strategies to scale impact. As just one example, creating a network of trained 'remote learning champions'—teachers equipped to lead more developed digital skills development specifically for distance learning—could have helped ensure that digital competencies continue to grow across the education system. These champions could, in turn, train other educators, fostering a culture of continuous learning and digital integration. Moreover, embedding the training in ongoing professional development programs may have made it easier to sustain and expand efforts to build skills. These are among the key lessons for future initiatives.

The lack of sustainability measures suggests that, perhaps due to the crisis circumstances, the project could have had a stronger system-wide perspective or long-term vision. Even in times of crisis, substantial thought is needed into how programming fits within a system-wide and long-term strategy – not just in terms of a broad fit with objectives but also in terms of a clearer plan for how the project will lead to long-term benefits.

Similar issues also arose in the experience of other countries. For example, Portugal launched the *Escola Digital* initiative, which provided technological kits to students and teachers during the pandemic. The programme both distributed laptops and tablets and offered long-term solutions for device sustainability through leasing options and maintenance programmes (Portugal Digital, 2024[3]). It also integrated many initiatives to support the development of innovative digital pedagogy over the long-term. Examples include inviting schools to collaborate in digital projects, awarding prizes for digital education projects, holding conferences and other events on topics like Digital Vocational Education and Training, coordinating digital resources, and producing manuals on inclusion and personalisation in virtual learning. There may have been opportunities to build these sorts of initiatives into the REACT-EU project, aligning with what was provided by the "Education for Tomorrow" project, and creating more ongoing attention and ownership related to innovative digital pedagogy across the system.

6.1.4. The project provided a critical crisis response that would not have been possible without additional REACT-EU funding

Despite limited sustainability measures, the project's scope – providing devices and training to almost all schools in Bulgaria and prioritising the most disadvantaged students – represented a significant achievement. This level of digital provision would have been difficult to achieve without the REACT-EU top-up funding, confirming the EU added-value in addressing substantial educational needs. The project offered a vital opportunity to address persistent gaps in equal access to both devices and basic digital skills and ensure that school closures in the short and medium term would not further disrupt education or exacerbate educational disparities. While the evolving COVID-19 context reduced the relevance of some

activities over time, the project remained an essential safeguard and showcased the EU's capacity to support and mobilise coordinated responses to such challenges, in a way that would not have been possible without the supplemental REACT-EU funding.

References

Gonzales, A., J. McCrory Calarco and T. Lynch (2018), "Technology Problems and Student Achievement Gaps: A Validation and Extension of the Technology Maintenance Construct", *Communication Research*, Vol. 47/5, pp. 750-770, https://doi.org/10.1177/0093650218796366. [2]

OECD unpublished (2024), *OECD Support for the Evaluation Plan of Bulgaria's Programme "Education" 2021-2027: Survey results*. [1]

Portugal Digital (2024), *Accelerating Portugal through the digital empowerment of people, digital transformation of companes and digitsation of the State*, https://portugaldigital.gov.pt/en/ (accessed on 10 October 2024). [3]

11 Conclusion: Promising practice, lessons, and recommendations for improvement

This final section provides a summary of the evaluation findings, considers the project's theory of change, and outlines promising practices, lessons and recommendations for future initiatives aimed at addressing digital inequity and crisis preparedness in education in Bulgaria. The project was implemented in a rapidly changing pandemic context, and while it successfully achieved its primary goals, there are important lessons to support future programming efforts.

Summary of findings

The project had several layers of objectives. First, it sought to ensure equal access to devices, improve the digital skills of teachers, students, parents, and educational mediators and foster greater parental involvement in distance education. This was intended to support continued education during the COVID-19 pandemic and increase students' participation in distance learning. Second, it focused on preparing Bulgaria's schools for a smooth transition to distance learning and enhancing the system's readiness for future crises. As part of this, the project also aimed to strengthen the digital ecosystem, improving both infrastructure and digital teaching and learning. The ultimate more distal intended impact was to support quality, equity, and inclusion in digital and distance education in Bulgaria, including preventing drop-out and improving participation and completion rates.

The project successfully contributed to equal access to digital devices, met most of its targets and received a strongly positive response from key stakeholders. Multiple data sources confirm a significant rise in device availability and a closure of gaps in access to devices during the project period. Changing pandemic circumstances during project implementation meant that the increased access to digital devices did not play a large role in supporting continued learning during the COVID-19 pandemic. However, in addition to strengthening equal access to devices, the project was able to introduce several measures, such as device sharing between schools, that could be useful in future crisis situations. It also addressed key needs and priorities in the system, specifically around disparities in access to devices and skills to support digital learning.

The project expanded access to basic digital training for teachers, students, parents, and educational mediators reaching most of its training targets with some small shortfalls, particularly in delivering training to parents. The training also had some unplanned benefits such as supporting teacher collaboration. However, it did not target the more advanced digital skills necessary for effective digital teaching and learning. A lack of digital skills was also not the only or the most important barrier to effective parental support for children's remote learning - broader measures to support parental involvement in distance education would also have been needed to prepare for any wide-spread return to distance learning (which, as it happened, did not take place during the project period). For example, it may have been useful to build

on the resources already provided to educational mediators in Bulgaria to support them in reaching out to more parents and offering more targeted support for parental involvement in distance and digital learning.

The dropout rate declined by 4.6% during the project period. While the project might have strengthened some of the practices that contributed to declining drop-out, such as the role of mediators, it is unlikely that it had a decisive impact, and the decline in dropout rate may have reflected pre-existing patterns. Whilst participation rates increased, student outcomes remained low and uneven. It would not be realistic to expect one limited top-up project to fundamentally change a long-established pattern in uneven outcomes and the project's attention to equal access to digital devices was commendable. However, the project is a good illustration that equal access to digital devices does not necessarily translate to equal opportunities for learning and additional measures are needed to support deeper transformation in the Bulgarian education system.

Additional areas of training, such as teaching students with Bulgarian as a second language and addressing socio-emotional learning matched key needs in the system. Stakeholders viewed these programme adjustments as relevant to the evolving crisis, a perspective supported by national and international data. However, internet accessibility and electricity cuts in the local community, especially for small and rural schools, were also significant barriers to continued education, and these needs were beyond the scope of the project.

The total budget of the project was close to EUR 52 million. Available evidence suggests the project was efficiently managed and the benefits of the project outweighed the costs, particularly considering the potential social costs of failing to provide equal access to devices and essential digital skills during the COVID-19 pandemic or in future crises. It will be important to reduce the administrative burden on schools and principals of future projects and identify further efficiencies, particularly in streamlining compliance checks. Monitoring data could also be better used to improve decision-making for future programming.

The project was well aligned with national and European digitalisation and equity strategies but the alignment between the project's objectives and its activities could have been strengthened, with greater attention to identifying and addressing the enabling conditions required to promote parental involvement, improve the conditions of distance learning, and introduce innovative learning and teaching practices in electronic environments.

The provision of devices and training improved the system's preparedness for crises in the short and medium-term; nearly all surveyed schools reported feeling better equipped to respond to future disruptions in in-person learning. However, many schools indicated a lack of funding to replace devices once they reach the end of their lifespan, there were few plans to update acquired skills, and mechanisms to ensure the sustainability of project activities could have been strengthened. Despite this, the project demonstrated considerable EU added value by providing a large-scale response to COVID-19, centred on ensuring equity, which would not have been possible without additional REACT-EU funding.

The project's theory of change: were the enabling conditions sufficient to support the envisioned changes?

The project was developed rapidly to respond to a complex and multifaceted crisis. Although an explicit theory of change was not elaborated, the project was informed by underlying assumptions about how change could occur. The primary assumption of the project – that providing equal access to equivalent devices could support access to distance learning – was well-founded. However, the more implicit assumptions that increasing digital skills would enable effective digital teaching and learning and increase motivation and involvement from parents were not realised. This was likely due to limited specific mechanisms within the project to translate basic digital skills into either parental involvement or effective teaching and learning. This break in the causal chain also meant that the ultimate more distal goal to

mitigate dropout and increase equity in the system did not follow. Whilst it was reasonable to expect that addressing such barriers would improve teaching and learning outcomes, the theory of change did not fully account for the broader enabling conditions needed to achieve these goals.

Given the project's scope as a small supplementary initiative, it could not reasonably address every challenge. However, more attention to what effective digital and distance learning looks like and how curricula, pedagogy and assessment might need to be adapted accordingly would have helped the project to instigate innovative teaching and learning methods. A more detailed analysis of what was within and outside the scope of the project may have allowed for more precise targeting of resources, leading to greater impact.

The pandemic period also saw rapid advancements in international understanding of the multi-layered nature of the digital divide. Access to digital devices was critical but deeper issues regarding the uneven distribution of competencies, supportive learning conditions, and effective online teaching and learning also became clearer. In hindsight, it is easy to suggest the project should have focused on more advanced digital skills, but at the time remote learning was relatively new to many education systems and it was not always clear what would best support effective online learning. The fact that swift action was taken to address equity concerns was, in itself, a significant achievement. In addition, the project featured many promising practices, as detailed in the next section.

Promising practices

The project demonstrated several promising practices that could be built upon in future initiatives:

Increased access to digital devices: Nearly all schools reported that their increased access to digital device meant they felt better equipped to handle future crises. This is a significant achievement, especially in a context where access to devices was uneven prior to the pandemic, helping to reduce disparities and provide access to online learning if education was disrupted again in the future.

Putting equity issues at the centre of digitalisation: The project made efforts to prioritise equity by focusing on providing resources and support to disadvantaged students. This highlighted Bulgaria's commitment to creating a more equitable and inclusive education system.

Support for basic digital skills: Although the training initiatives were limited in scope, they addressed an important need by aiming to strengthen digital skills in the country. Improving digital literacy is essential for both student and teachers to engage effectively with online learning.

Mobilising educational mediators and providing training: The project involved the use of educational mediators, who played a critical role in bridging communication gaps between schools and marginalised communities. Providing these mediators with training helped equip them to support vulnerable students and families.

Crises preparedness, risk management and flexibility: The project represented an important crises response measure to manage the risk of disruptions to online learning in the short and medium term. The project demonstrated adaptability by extending its activities to address crisis-related needs, such as socio-emotional learning and support for non-native Bulgarian speakers. This flexibility was important to the system's ability to respond to emerging challenges during and after the COVID-19 crisis.

Moving towards greater teacher collaboration and a culture of resource-sharing between schools: Although this aspect was not fully developed, the training promoted greater collaboration among teachers whist the ability to move devices between schools encouraged a culture of sharing resources. These sorts of measures could enhance collective capacity and innovation in addressing educational challenges in the future.

A good level of communication and transparency between different levels of the education system: The project highlighted that there are some structural strengths in the Bulgarian system that supported crisis management. For example, the level of coordination and communication between national, regional, and local levels was positive, even if horizontal communication between different initiatives at the ministry level could have been strengthened.

Lessons and Recommendations

The project also results in several lessons and recommendations. Whilst not all these actions would have been possible in an emergency context, given the limited nature of the funding, they remain important to inform education policy-making more generally in Bulgaria.

1. **Ensuring basic access is only the first step towards equity**: One key lesson from the project is that while providing devices to students and teachers is an important step towards achieving digital equity, it is not sufficient on its own. The project successfully increased access and ensured that students had necessary devices to engage in distance learning. However equal access to digital devices does not automatically remove the impact of disadvantage on learning and translate into equal opportunities for learning. Socio-economic disparities, regional differences, and existing inequalities in the education system mean that simply providing devices does not guarantee that students will benefit equally. For instance, in the Bulgarian context, some students may still face challenges such as poor internet connectivity, ineffective digital teaching and learning, or a lack of support for their specific academic challenges when engaged in distance and digital learning.

   Recommendation 1.1: *Future projects could integrate measures to promote equitable learning outcomes, not just equitable access to digital devices.* This could include supporting teachers to provide more customised and personalised support to students in distance and digital learning, offering targeted academic assistance for those at risk of falling behind and developing peer to peer learning opportunities to help ensure that all students can benefit equitably from digital and distance education.

2. **Basic digital competencies are not enough**: The project provided basic digital skills training for teachers, parents, students, and education mediators, and met most of its targets and results indicators, with some shortfalls for parental training and additional training activities. The project's achievements were considerable given the crisis context. However, the training was too basic to lead to significant changes in teaching methods, despite innovative digital teaching and learning being built into the project's objectives. Teachers need more than just technical skills to deliver effective digital learning; they require a deeper understanding of digital pedagogy, tied to their specific subjects. While the training fostered some collaboration among teachers, it was not extensive enough to bring about sustained improvements in teaching and learning.

   Recommendation 2.1*: Future projects could go beyond basic digital skills and one-off training and give attention to more advanced competencies, pedagogical approaches, and ongoing skills development to support more effective digitalisation.* Projects could aim to integrate the development of skills for digital and distance learning in Bulgaria's larger educational framework, helping teachers and students develop the practical skills needed to work with technology across the curriculum. This work could benefit from a clearer strategic vision for effective and engaging digital and distance teaching and guidance to support teacher innovation.

   Embedding support for digital skills into existing ongoing professional learning opportunities for teachers rather than offering one-off training courses could help ensure sustained and up-to-date capacity-building for educators. More support could be offered to the creation of teacher networks

and promoting collaboration to advance digital skills development. Tailoring training to regional contexts, school sizes, and demographic needs could further enhance its relevance and impact.

3. **Digital skills are not the biggest barriers preventing parental involvement in children's digital education**: Broader measures are also needed to support parental engagement in digital learning and address underlying issues that move beyond isolated ad hoc training.

> **Recommendation 3.1**: *Future projects could take a more comprehensive approach to enhancing parental engagement in digital and distance learning by expanding the role and support provided by educational mediators for distance learning*. This could involve increasing the numbers of educational mediators and providing resources specifically designed to engage parents in remote learning, including tailored instructional materials and tools to enhance parent's level of familiarity with the curriculum. Further building partnership approaches, community learning, trust and the capacity of both parents and staff for working together could also enhance the effectiveness of these efforts.

4. **A systems approach is crucial even in times of crises**: The project demonstrated the importance of adapting a systemic approach, even during health crisis such as the COVID-19 pandemic. The immediate provision of devices and basic training across Bulgaria's schools was a necessary and commendable system-wide response (and ideally would have been provided earlier in the pandemic). However, the long-term sustainability of these interventions could have been better addressed in order to strengthen the strategic system-level value of the project. Many schools reported a lack of funding to replace devices, which could mean the benefits of the project will be relatively short-lived. Various teams involved in managing the initiatives sometimes worked in silos, hindering a more system-wide approach or the identification of lessons to be shared.

> **Recommendation 4.1:** *Future projects, even in times of crisis, could benefit from taking a more systems-based approach to digital education, one that not only addresses immediate needs but also builds long-term sustainability*. This could include earlier needs assessments to identify and address access gaps more swiftly in future crises. Additionally, projects could establish more robust ongoing technical support systems, along with proactive replacement plans for ageing devices to ensure continued access to technology, particularly in underserved rural and mountainous areas.

> Stronger collaboration and communication across teams could be supported by establishing formal mechanisms for coordination, such as cross-team working groups or regular joint review sessions for digital education projects. These could help facilitate a system-wide approach to promote the sharing of insights and help identify lessons that can be disseminated more broadly.

5. **Monitoring as a learning tool, not just a compliance exercise**: Monitoring and evaluation were primarily compliance-focused, tracking metrics such as the number of devices distributed and people trained, but collecting, compiling, and communicating limited data beyond this. The compliance checks imposed a significant administrative burden on participants, yet the collected data had minimal value for broader analysis or strategic adjustments. Strengthening monitoring and evaluation methods could have led to both efficiency gains and improved outcomes for digital learning initiatives.

> **Recommendation 5.1**: *In future projects, monitoring could more clearly focus on learning and improvement, helping stakeholders identify ongoing needs and draw lessons to better support learning for all.* A more robust approach to monitoring could have involved creating a theory of change, during the project's design phase, which would have clarified the expected outcomes and guided targeted data collection.

> For example, tracking how often and in what ways devices were actually used could have provided meaningful insights into digital learning practices and offered valuable guidance for future policy development. Additionally, gathering more information on the skills covered in the training and

participants' responses could have helped ensure that the training addressed advanced skills and not just basic access to online platforms, and identified further training needs. A brief pre and post training survey could have assessed changes in areas such as self-efficacy and knowledge of digital pedagogy.

Figure 11.1. Lessons and Recommendations

Ensuring basic access is only the first step towards equity	**Recommendation 1**: Future projects could integrate measures to promote equitable learning outcomes, not just equitable access to digital devices.
Basic digital competences are not enough	**Recommendation 2**: Future projects could go beyond basic digital skills and one-off training to give attention to more advanced competencies, pedagogical approaches and ongoing skills development to support more effective digitalisation.
Digital skills are not the biggest barriers preventing parental involvement	**Recommendation 3**: Future projects could take a more comprehensive approach to enhancing parental engagement in digital and distance learning by expanding the role and support provided by educational mediators.
A systems approach is crucial even in times of crisis	**Recommendation 4**: Future projects, even in times of crisis, could benefit from taking a more systems-based approach to digital education, one that not only addresses immediate needs but also builds long-term sustainability.
Monitoring as a learning tool, not just a compliance exercise	**Recommendation 5**: In future projects, monitoring could more clearly focus on learning and improvement, helping stakeholders identify ongoing needs and draw lessons to better support learning for all.

References

Ministry of Education and Science (n.d.), *Education for Tomorrow*, https://oud.mon.bg/ (accessed on 20 December 2024). [1]

Evaluation questions, judgement criteria and illustrative indicators for evaluation of the "Equal Access to Digital Education in Times of Crisis" project

Table A 0.1. Evaluation questions, judgment criteria and illustrative indicators for evaluation of "Equal Access to Digital Education in Times of Crisis" project

EQ1: To what extent was / is it a key need and priority to a) strengthen equal access to digital devices and b) offer training on basic digital skills to teachers, parents, students, and educational mediators during the relevant time period?	
Description/rationale	This question asks whether the activities were well-conceived and relevant to the needs and challenges students, teachers, schools, and parents were facing during the COVID-19 crisis and recovery period, especially those from vulnerable and marginalised groups such as Roma communities. The question considers to what extent, prior to the activities, there was uneven provision across different groups in a) access to devices and b) access to the skills and training needed to access and facilitate digital and distance education. The activities were designed and implemented in a time of unprecedented health crisis and uncertainty. Protocols regarding social distancing requirements and school closures changed regularly, reflecting the evolving sanitary context. This impacted stakeholders' needs, views and priorities concerning distance and digital learning. Therefore, the evaluation also considers the extent to which the procedure was built on "Education for Tomorrow" procedure (Ministry of Education and Science, n.d.[1]), the extent to which changes to the programming were appropriate and adapted to new needs and priorities, and whether other choices could have better met stakeholder needs. Main evaluation criteria: Relevance **Methods and sources of information**: International, national, and monitoring data, comparisons with benchmarking countries, documentary analysis	
Judgement criteria 1	Reliable evidence showing relevant needs and priorities of stakeholders of all genders, especially those from disadvantaged or marginalised groups such as Roma communities	Yes
Illustrative indicator 1.1	Data showing a need for digital hardware and training and gaps in access by gender, ethnicity, socio-economic status, or geographical location	Yes
Illustrative indicator 1.2	Positive views of stakeholders from different groups regarding the extent to which activities were addressed to their needs and priorities and did not leave other pressing needs unmet.	Partly
Illustrative indicator 1.3	Positive views of stakeholders from different groups regarding the extent to which changes made to the programme of activities were appropriate and adapted to their evolving needs and priorities, supported by monitoring or national data showing a need for updated activities.	Yes
EQ2: To what extent did the activities achieve their objective to **improve equal access to distance and digital learning,** including for marginalised communities such as Roma, and across different socio-economic and gender groups and geographical locations? To what extent did the activities encourage **more active involvement in education of parents** from different groups? To what extend did training activities introduced after the amendment of the original Operational Programme achieve their objectives.?	
Description/rationale	The main objective of the activities was to secure equal access to distance and digital education - to prevent interruption of education in conditions of crises. This question looks at whether the activities improved equality in access to this type of education and supported parental involvement for different groups, with a focus on Roma and other marginalised communities and on gender equality. The evaluation will provide an assessment of the progress achieved in the implementation of the measures and corresponding indicators programmed before and after the 2021 amendment. **Main evaluation criteria**: Effectiveness **Methods and sources of information**: Documentary analysis, interviews, case studies, focus groups, survey data, international, national, and monitoring data, international comparisons with benchmarking countries.	
Judgement criteria 2	The activities had positive effects in promoting equal access to distance and digital learning and parent involvement in school education in times of crisis according to both key stakeholders and available data, showing	Partly

	increased access to digital resources and training and skills. Equality was strengthened for marginalised and vulnerable groups including Roma communities and across genders and geographical locations. Indicators were met for the updated programmes after the 2021 amendment	
Illustrative indicator 2.1	Numbers of stakeholders from different target groups reached (*programme monitoring indicators*).	Yes
Illustrative indicator 2.2	Positive views of stakeholders from different groups regarding equal access to technical equipment and digital and distance learning, supported by reliable data showing increases in access to devices and training.	Yes
Illustrative indicator 2.3	Positive views of stakeholders from different groups regarding to what extent parents had the tools (e.g. training, access to digital platforms and other relevant methods) they needed to be actively involved in distance and digital learning over the pandemic and recovery period, especially those from vulnerable groups and Roma communities.	No
EQ3: To what extent did the activities support improvements to teaching and learning in Bulgaria during the pandemic and recovery period? In particular, to what extent did they strengthen the digital skills of teachers and students and the use of more effective and innovative digital teaching and learning methods?		
Description/rationale	This question moves beyond access to consider the impact of the activities on teaching and learning in Bulgaria during this period. It seeks to understand whether and why the activities affected education positively. To do so, the evaluation explores the factors and circumstances that influenced the response of key actors. For example, using an analytical framework derived from a recent OECD report, the evaluation considers the extent to which the activities were supported by some of the "enabling factors" for a mature digital education environment. The analysis considers any differences in student outcomes or perceived impact for different groups, why any differential impacts occurred and whether they were appropriate (e.g. differences by stakeholder group, gender, geographical location, for vulnerable or marginalised groups, such as Roma communities). **Main evaluation criteria**: Effectiveness; impact. **Methods and sources of information**: Documentary analysis, interviews, surveys, focus groups, case studies, national and monitoring data, international comparisons with benchmarking countries.	
Judgement criteria 3	The activities had positive effects on teaching and learning in Bulgaria during this period, as evidenced by data on effective use of digital tools and the responses of key stakeholders	Partly
Illustrative indicator 3.1	Positive views of stakeholders from different groups regarding improvements in the digital skills of teachers over the pandemic and recovery period.	Yes
Illustrative indicator 3.2	Positive views of stakeholders from different groups regarding digital technologies being effectively integrated into teaching and learning processes, curricula, and assessment during the pandemic and recovery period.	Partly
Illustrative indicator 3.3	Existence of OECD "enabling factors" for a mature digital education environment and supporting data.	Partly
EQ4: To what extent was the procurement, distribution and implementation of digital hardware and training provision effectively governed to **be equitable, transparent, and efficient**?		
Description/rationale	This question seeks to establish the extent to which the governance of the "equal access to school education in times of crisis" activities were compliant with relevant regulations and funding requirements. However, the focus moves beyond this to explore the extent to which key stakeholders viewed the process as equitable, transparent, and efficient, as well as what might have hindered such perceptions. For example, the evaluation explores the extent to which stakeholders felt that procedures for participation and lines of communication were clear and risks were identified and mitigated. It considers the extent to which implementation was co-ordinated in a timely and cost-effective manner with adequate monitoring mechanisms and was adapted to reflect any lessons learned during different stages of implementation. **Main evaluation criteria**: Efficiency **Methods and sources of information**: Documentary analysis, interviews, surveys, national and monitoring data, international comparisons with benchmarking countries.	
Judgment criteria 4	The procurement, distribution and implementation of the activities were effectively governed, equitable, transparent, and efficient, as evidenced by monitoring data and documentation and the view of key stakeholders. Equity may involve distributing more resources to marginalised groups such as Roma communities or to address gender or other imbalances.	Yes
Illustrative indicator 4.1	Adequate and appropriate governance and institutional mechanisms existed or were created to manage and monitor the procurement and distribution of resources	Yes
Illustrative indicator 4.2	Positive views of stakeholders from different groups on the extent to which the procurement and distribution of digital hardware and training was efficient, transparent, and equitable.	Yes
EQ5: To what extent were the activities part of a strategic, coordinated, and coherent approach to the integration of digital technologies in education in Bulgaria, and coherent with EU objectives?		
Description/rationale	The COVID-19 pandemic required rapid and coordinated responses across sectors. The priority was responding to the crisis, but the evaluation also considers the extent to which the activities contributed to Bulgarian and European education and skills strategies, including for digital and distance education and equality in education. How well did the activities work together and to what extent were they embedded in wider efforts to support equal access to education? Did the EU intervention enable Bulgaria to advance national and European priorities in these areas? To what extent did stakeholders perceive a shared vision and effective coordination,	

	complementarity, coherence, and dialogue between key actors and activities, without duplication, inconsistency, or replication of errors? **Main evaluation criteria**: Coherence **Methods and sources of information**: Documentary analysis, interviews, surveys, national and monitoring data, international comparisons with benchmarking countries.	
Judgement criteria 5	The activities were cohesive and coordinated and aligned to national and European education and skills strategies. This is supported by stakeholder views and analysis of national and European strategy documents.	Yes
Illustrative indicator 5.1	Fit with national and European strategies and associated action plans for digitalisation and equity in education	Yes
Illustrative indicator 5.2	Positive perceptions of stakeholders from different groups regarding the extent to which activities featured effective coordination, complementarity, coherence, and dialogue.	Yes
EQ6: To what extent did the provision of digital hardware and training support sustainable improvements to digital and distance education and enhance the Bulgarian education system's capacity to respond to future crises?		
Description/rationale	The activities were designed to respond to the COVID-19 pandemic as well as to enable Bulgaria to provide equal access to digital and distance education in face of any future crises. To what extent did the EU intervention enable Bulgaria to build long-term improvements to digital capacity, infrastructure and teaching that would not otherwise have been possible? Establishing the extent to which activities have created sustainable change is not always straight-forward; it is not possible to predict the future, nor to entirely isolate the effect of a single activity in a complex education system. However, sustained change is more likely when stakeholders feel ownership over activities, when changes in norms and values can be observed, when leaders show clear commitment, and when mechanisms have been created to support the change to continue. The evaluation therefore considers the extent to which these factors can be observed around the activities. **Main evaluation criteria**: Sustainability; EU added value, impact. **Methods and sources of information**: Documentary analysis, interviews, surveys, national and monitoring data, international comparisons with benchmarking countries.	
Judgement criteria 6	The activities played a role in influencing changes that will be sustained in equal access to digital and distance education, including for disadvantaged and marginalised groups such as Roma communities, and across genders and geographical locations, that will be useful in future crises. Mechanisms exist to support continued impact of activities and most stakeholders agree that positive changes are sustainable.	Partly
Illustrative indicator 6.1	Positive views of stakeholders from different groups on the extent to which the activities have led to sustainable positive changes (e.g. in basic digital skills of teachers, students, or parents, in infrastructure or in organisational strategies to respond to crisis events etc).	Partly
Illustrative indicator 6.2	Existence of mechanisms to support continued long-term impact of the provided digital resources and training.	No
Illustrative indicator 6.3	The extent to which stakeholders feel ownership and commitment around any continuing improvements in equal access to digital and distance education related to the project.	Partly

Budget allocation, expenditure, and associated costs breakdown

Table A 0.1. Budget allocation across activities by specific costs

Budget row	Description of the specific cost	Grants/FI					Total Grants/ FI		Co-financing		Value/ Amount
		EU		NF							
1.1	Training costs for pedagogical specialists	100%	358 200.00	0%	0.00	100%	358 200.00	0%	0.00	358 200.00
2.1	Student tuition costs, incl. from vulnerable groups to acquire skills for distance learning in an electronic environment	100%	2 800 000.00	0%	0.00	100%	2 800 000.00	0%	0.00	2 800 000.00
2.2	Costs of additional synchronous learning, including remotely in an electronic environment	100%	8 315 810.00	0%	0.00	100%	8 315 810.00	0%	0.00	8 315 810.00
3.1	Training costs for educational mediators and parents to acquire skills to work in an electronic environment	100%	450 000.00	0%	0.00	100%	450 000.00	0%	0.00	450 000.00
4.1	Expenses for general and/or additional support for personal development of children in pre-school education, incl. children from Ukraine and other foreign education systems	100%	6 859 214.77	0%	0.00	100%	6 859 214.77	0%	0.00	6 859 214.77
4.2	Expenses for additional training in Bulgarian language for children from vulnerable groups in the pre-school education system	100%	4 875 984.00	0%	0.00	100%	4 875 984.00	0%	0.00	4 875 984.00
5.1	Costs for preparation of methodology/tools for implementation	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00

Budget row	Description	EU %	EU value	NF %	NF value	Total %	Total value	Co-fin %	Co-fin value	Value/Amount
	of trainings for socio-emotional support in crises									
5.2	Cost of developing a simulation for the implementation of trainings for socio-emotional support	100%	81 200.00	0%	0.00	100%	81 200.00	0%	0.00	81 200.00
5.3	Costs for the preparation of methodology/tools for teaching Bulgarian as a foreign language in a Bulgarian-speaking environment to students who have joined from educational systems abroad	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00
5.4	Costs for the development of a video textbook – tutorial in Bulgarian as a foreign language	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00
6.1	Cost of collaborating with parents of children from kindergartens	100%	240 000.00	0%	0.00	100%	240 000.00	0%	0.00	240 000.00
7.1	Cost of purchasing technical means for pedagogical specialists and students (laptops, tablets, and universal charging cabinets)	100%	71 233 248.50	0%	0.00	100%	71 233 248.50	0%	0.00	71 233 248.50
9.1	Indirect costs	100%	6 337 395.21	0%	0.00	100%	6 337 395.21	0%	0.00	6 337 395.21

Source: Financial information is provided by the Executive Agency "Programme Education"

Table A 0.2. Expenditure across activities by specific cost categories

Budget row	Description of the specific cost	Grants/FI				Total Grants/ FI		Co-financing		Value/ Amount
		EU		NF						
1.1	Training costs for pedagogical specialists	100%	355 452.00	0%	0.00	100%	355 452.00	0%	0.00	355 452.00
2.1	Student tuition costs, incl. from vulnerable groups to acquire skills for distance learning in an electronic environment	100%	2 765 560.00	0%	0.00	100%	2 765 560.00	0%	0.00	2 765 560.00
2.2	Costs of additional synchronous learning, including remotely in an electronic environment	100%	6 646 905.75	0%	0.00	100%	6 646 905.75	0%	0.00	6 646 905.75
3.1	Training costs for educational mediators	100%	348 490.00	0%	0.00	100%	348 490.00	0%	0.00	348 490.00

	and parents to acquire skills to work in an electronic environment								
4.1	Expenses for general and/or additional support for personal development of children in pre-school education, incl. children from Ukraine and other foreign education systems	100%	5 624 634.85	0%	0.00	100%	5 624 634.85	0%	0.00	5 624 634.85
4.2	Expenses for additional training in Bulgarian language for children from vulnerable groups in the pre-school education system	100%	1 914 624.00	0%	0.00	100%	1 914 624.00	0%	0.00	1 914 624.00
5.1	Costs for preparation of methodology/tools for implementation of trainings for socio-emotional support in crises	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00
5.2	Cost of developing a simulation for the implementation of trainings for socio-emotional support	100%	81 200.00	0%	0.00	100%	81 200.00	0%	0.00	81 200.00
5.3	Costs for the preparation of methodology/tools for teaching Bulgarian as a foreign language in a Bulgarian-speaking environment to students who have joined from educational systems abroad	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00
5.4	Costs for the development of a video textbook – tutorial in Bulgarian as a foreign language	100%	30 450.00	0%	0.00	100%	30 450.00	0%	0.00	30 450.00
6.1	Cost of collaborating with parents of children from kindergartens	100%	142 608.00	0%	0.00	100%	142 608.00	0%	0.00	142 608.00
7.1	Cost of purchasing technical means for pedagogical specialists and students (laptops, tablets, and universal charging cabinets)	100%	71 233 248.50	0%	0.00	100%	71 233 248.50	0%	0.00	71 233 248.50
9.1	Indirect costs	100%	5 921 230.91	0%	0.00	100%	5 921 230.91	0%	0.00	5 921 230.91

Source: Financial information is provided by the Executive Agency "Programme Education"