North Macedonia Country Brief
Connectivity in Education

A Crisis of Learning in Education…

In North Macedonia, there exists a crisis of learning in education. This is exemplified by out-of-school rates in the country, as well as those not achieving minimum proficiency. While 265,633 children and adolescents are enrolled in primary and secondary schools, **11,528**[1] **between the age of 6 and 17 are out-of-school**. Additionally, approximately **59.5% of children and young people do not achieve minimum proficiency** in foundational skills needed for further learning and skills development.[2,3]

… becomes acute.

When the COVID-19 pandemic disrupted in-person learning in North Macedonia starting in March 2020, the importance of devices and connectivity for the education system was placed in stark relief — as were the inequitable access to such crucial tools.

Increasing Importance of ICTs for Education

All strategies for continuing education during COVID-19 depended on ICTs as a medium for delivery. But **unequal preexisting infrastructure** in households and schools is also a major driver of the longer-term crisis of learning. Access to **connectivity** and **devices** is a **crucial enabler** of the learning process, particularly in:

1. allowing a more effective administration of education systems, and
2. developing digital skills to prepare students for the future workforce

What's been done?

COVID-19: Strategies for Distance Learning

E-Classroom and EduIno Initiatives

TV Broadcasted Lessons

Professional development community of 22,700 educators[4]

100,000 users can access at any given time

Government Strategies Addressing Challenges

In 2018, the government of North Macedonia launched the **Comprehensive Education Strategy for 2018-25** and an associated **Action Plan for 2020-2025**. The main priorities of the strategy include: I) developing student-centered instruction; II) measuring learning in terms of outcomes, rather than focusing solely on knowledge acquisition; and III) introducing a national assessment.[5]

In 2020, North Macedonia adopted the Concept for Development of a Distance Education System in Primary and Secondary Schools, which is modelled after the European Commission's Action Plan for Digital Education (2021-2027) and aims to foster a more resilient and future-proof education system.[6]

In 2019, the government adopted the **National Operational Broadband Plan for 2019-2029 (NOBP)**. One goal of the strategy is to ensure that all public institutions (schools, universities, research centres and other educational institutions, healthcare facilities, ministries, courts, local self-governments and other state authorities and bodies) have symmetrical Internet access with a speed of at least 1Gbps by 2029.[7]

The Ministry of Education and Science developed and implemented an **Education Management Information System (EMIS)** in 2010. However, central databases for school inspection and student examination results are **not integrated** with EMIS, and **data are not comparable across the sector**, as the State Statistical Office and EMIS use different definitions for key indicators like school drop-out.[8]

Many solutions involve digital technology.

This, in turn, requires both **connectivity** and **devices**.

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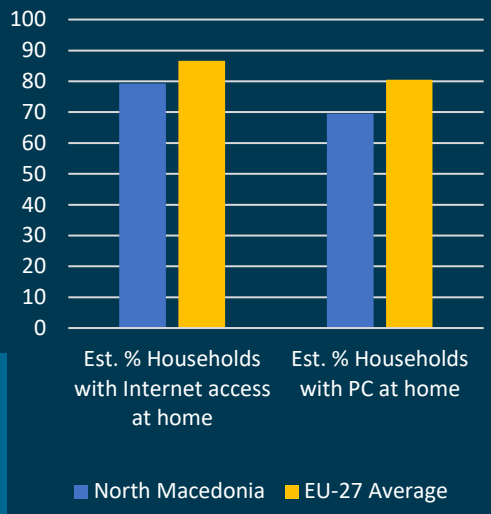
What Gaps Remain?

Connectivity and Devices at Home[9]

175,050
North Macedonia's households are not in possession of a PC

118,804
North Macedonia's households do not have access to the Internet

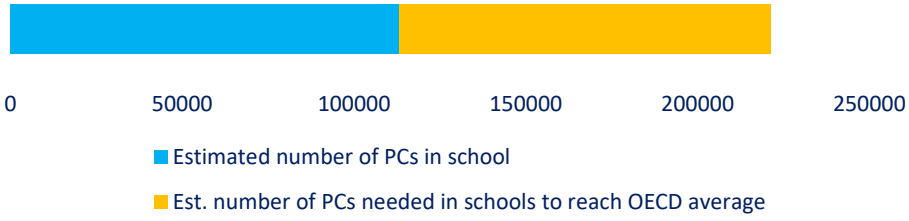
Contextualizing the Gaps



Exacerbating pre-existing inequalities:
The persistent lack of PCs in households is particularly significant when lockdowns triggered by COVID-19 facilitated the transition of economic activity to the digital sphere and transferred both educational and work activities to the household.

Connectivity and Devices at School

Computers per Student in School[10]



108,157
computers are needed in North Macedonia to reach the OECD average of 0.83 PCs per student.

Despite North Macedonia's PC-to-student ratio of 0.43, the updating of equipment which is now obsolete proves a major financial challenge.[11]

Mapping School Connectivity

Assessing the level and quality of broadband in schools, and proactively addressing infrastructure gaps, is increasingly important as students return to the classroom. This will ensure that connectivity is leveraged to deliver educational content and to manage the education system in an efficient manner, and that digital skills development is thoroughly included in curricula

Filling the Device Gap in Schools

Low-Range Estimate[12]

$7.96 million
to reach the OECD average of 0.83 PCs per student.

High-Range Estimate[13]

$91.9 million
to reach the OECD average of 0.83 PCs per student.

To bridge learning gaps, devices are only as important as the connection that supports them and the access to high quality content and learning they enable. Investment in school and household connectivity as well as content development and robust digital education is vital and must be considered alongside device provision.

Device Provision to Vulnerable Learners

In August 2020, the Roma Education Fund (REF) provided hundreds of tablets with free Internet access to Roma students enrolled in primary, secondary and tertiary education levels in North Macedonia to support students with distance learning. The implementing partners were the Roma Democratic Development Association (SONCE), which distributed a total of **222 tablets with free Internet** in municipalities across the country, and the citizens' association Romaversitas Skopje, which awarded **210 tablets** to Roma secondary school students along with **10 GB of free Internet**.[14]

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Looking Ahead

North Macedonia has a successful history of leveraging innovative financing mechanisms and multistakeholder partnerships toward achieving appropriate levels of devices and connectivity in education. Two key examples are outlined below.

WiFi Kiosks Project

This project enabled free broadband for educational and administrative purposes through Wi-Fi kiosks, which supplied Internet access to 115 schools that faced fixed-line connectivity issues in the 2013-14 school year. A 2014 World Bank assessment identified that the governmental intervention had a positive effect on local rural development and had gone beyond the results initially foreseen.[15]

Computer for Every Student

In 2007, the government announced an international tender for purchasing 100,000 computers within the framework of "The Computer for Every Student" project. For that purpose, more than 20 million EUR were projected for the 2007 and 2008 Budgets—one of the **largest projects relating to ICTs in education in the country**, though nearly 60 million EUR were spent.[16]

ITU and UNICEF are committed to helping the Government of North Macedonia and other stakeholders achieve national objectives. School connectivity is widely recognized as a means to a more efficient administration of educational systems, a building block in supporting innovative ways to distribute education content and increase access, and — most importantly — a fundamental prerequisite to endow pupils with the digital skills necessary to thrive in the job market. The achievement of appropriate device and connectivity levels, both at school and in the home, thus remain priorities of both the ITU Office for Europe and UNICEF Regional Office for Europe and Central Asia. Both offices cherish the opportunity to engage with partners and provide support through **technical assistance**, **capacity building** and **research**, as well as **knowledge exchange**.

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Endnotes

[1] This is an approximation based on MICS 2018-2019 data and the Makstat Database, provided by the Ministry of Education and Science of North Macedonia. https://mics-surveys-prod.s3.amazonaws.com/MICS6/Europe and Central Asia/North Macedonia%2C Republic of/2018-2019/Survey findings/North Macedonia and North Macedonia Roma Settlements MICS 2018-19 SFR_English.pdf (mics-surveys-prod.s3.amazonaws.com); http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat
[2] Data from UNESCO UIS Database. http://data.uis.unesco.org
[3] UNICEF calculation of the number of students in primary, lower and upper secondary not achieving minimum proficiency in math; Data for Montenegro is calculated using the latest figures available from UIS and PISA.
[4] See: https://www.unicef.org/media/79701/file/ECARO-COVID19-SitRep-21-April-2020.pdf
[5] See: http://mon.gov.mk/en/
[6] See: https://eacea.ec.europa.eu/national-policies/eurydice/content/ongoing-reforms-and-policy-developments-42_en
[7] See: https://mioa.gov.mk/sites/default/files/pbl_files/documents/reports/north_macedonia_national_operational_broadband_plan_final_en.pdf
[8] See: https://www.oecd-ilibrary.org/docserver/9b99696c-en.pdf?expires=1606760219&id=id&accname=guest&checksum=CD1B54F5745838006C39B0D09F7B9FAC
[9] ITU WTID, 2019.
[10] PISA 2018 Results (Volume V); OECD 2020 (Figure V.5.4 School computers per student, school characteristics and reading performance)
[11] See: https://www.oecd-ilibrary.org/docserver/9b99696c-en.pdf?expires=1606760219&id=id&accname=guest&checksum=CD1B54F5745838006C39B0D09F7B9FAC
[12] This estimate is calculated using the cheapest smartphone available in the region, at $73.60 per device. Price estimate is taken from A4AI price data, averaging the cost of the cheapest smartphones available in Georgia, Turkey and Ukraine. Although Smartphones are used as a proxy for the cheapest way to access online educational content and represent a baseline cost, they are not ideal for sustained learning nor comparable to PCs for educational purposes.
[13] This estimate is calculated using using a price of $850 per computer and monitor, which is a UNICEF price estimation of a high-end computer and monitor more suitable for learning. It thus represents the most expensive end of the spectrum.
[14] See: https://www.facebook.com/RomaEducationFund/posts/allinthistogether-in-north-macedoniaref-emergencyfund-covid19roma-education-fund/1965943496874308/; See: http://sonce.org.mk/roma-education-fund-provides-457-tablets-and-free-Internet -for-roma-students/; See: http://sonce.org.mk/roma-education-fund-provides-457-tablets-and-free-Internet -for-roma-students/; See: https://www.romaeducationfund.org/roma-education-funds-emergency-response-fund-for-north-macedonia-provided-457-ta blets-with-free-Internet -access-to-roma-students-to-manage-remote-learning-amidst-covid-19-crisis/
[15] See: https://www.worldbank.org/en/news/feature/2014/07/23/fresh-air-free-internet-in-rural-macedonia
[16] See: https://www.oecd-ilibrary.org/docserver/9b99696c-en.pdf?expires=1606760219&id=id&accname=guest&checksum=CD1B54F5745838006C39B0D09F7B9FAC