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# ► Teaching and the teaching profession in a digital world – Bosnia and Herzegovina

Background paper



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## Background paper

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## Abbreviations

<b>BiH</b>	Bosnia and Herzegovina
<b>BMZ</b>	Bundesministerium für wirtschaftliche Zusammenarbeit (Federal Ministry of Economic Cooperation and Development)
<b>CCC</b>	Common Core Curriculum
<b>CS</b>	Canton Sarajevo
<b>CPD</b>	continuing professional development
<b>DigComp</b>	European Digital Competence Framework
<b>EDA</b>	Eidgenössisches Departement für auswärtige Angelegenheiten (Swiss Development and Cooperation Agency)
<b>EMIS</b>	Education Management Information System
<b>FBiH</b>	Federation of Bosnia and Herzegovina
<b>GDP</b>	gross domestic product
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>ICT</b>	information and communication technology
<b>ILO</b>	International Labour Organization
<b>IT</b>	information technology
<b>ISCED</b>	International Standard Classification of Education
<b>MoCA</b>	Ministry of Civil Affairs of Bosnia and Herzegovina
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OSCE</b>	Organization for Security and Co-operation in Europe
<b>PISA</b>	Programme for International Student Assessment
<b>RS</b>	Republika Srpska
<b>TC</b>	Tuzla Canton
<b>(T)VET</b>	(technical) vocational education and training
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNICEF</b>	United Nations Children's Fund
<b>USAID</b>	United States Agency for International Development
<b>ZDC</b>	Zenica-doboj Canton

## ► 1. Key findings

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Education development initiatives in Bosnia and Herzegovina are highly fragmented. State-level authorities work on providing the framework for quality enablers, such as the common core curriculum (CCC) and occupational standards. Republika Srpska coordinates activities within a centralized system, while within the Federation of Bosnia and Herzegovina, 10 autonomous cantons define their own pathways. Both entities are facing limited human resources to implement ambitious reforms, both within competent ministries and pedagogical institutes and among teachers themselves. In-service teacher training and curricula need updating to reflect 21st century demands. The pedagogical institutes, for example, do not have systems in place or the capacity to steer development and provision of tailored in-service training or to monitor progress in relation to teachers' skills and competences.

Digitalization in education can help advance teaching and learning, if implemented with the support of teachers and their representatives as well as other education workers. In Bosnia and Herzegovina, the levers of development are evidenced through the implementation of the common core curriculum, which places emphasis on digital skills and peer exchange of good practices, availability of digital technologies and their use in teaching and learning. Governments across jurisdictions in Bosnia and Herzegovina are planning strategies to improve coverage and access to digital devices in schools. However, additional efforts and resources are needed to ensure internet connectivity and build the capacities of pedagogical institutes and teachers as change agents. Successful digitalization will allow better monitoring of student learning and outcomes as well as institutional decision-making through data collection and analysis.

A key factor of a country's readiness for digitalization in education is availability of digital infrastructure, including availability of computers and access to the internet. In Bosnia and Herzegovina, one computer on average is available for 13 students in primary schools – 1:21 in the Federation of Bosnia and Herzegovina and 1:7.3 in Republika Srpska (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a; Republika Srpska Institute of Statistics, 2021a). Local-level disparities in available information and communication technology (ICT) infrastructure are highly pronounced. Furthermore, only one fourth of teachers employed in primary and secondary schools have a school computer at their disposal (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a, 2021b; Republika Srpska Institute of Statistics, 2021a, 2021b).

The country-wide lockdown during the coronavirus disease 2019 (COVID-19) pandemic and the shift to distance learning and virtual classrooms increasingly required teachers to make do with the infrastructure and devices available in their households. Recent studies



indicate that the distance teaching and learning provided during school shutdowns resulted in considerable stress for teachers, students and parents (UNESCO, 2020; proMENTE and Step by Step, n.d.b). For many teachers, accommodating and using digital technologies well exceeded standard working hours. The return to in-class teaching at the beginning of the school year 2021/2022 in many ways marked a return to the usual way of teaching and learning and saw a shift away from the use of digital technologies among teachers.

The response to the COVID-19 pandemic placed insufficient attention on education and the potential long-term impact of school closures on youth. Some good practices were nonetheless observed in Republika Srpska, where a web platform and various strategies, such as an e-journal, were developed and teachers were provided with some digital content to facilitate teaching and learning. The response in the Federation of Bosnia and Herzegovina was less harmonized and often depended on the support of the international community. (Technical) Vocational education and training (TVET) was, and continues to be, particularly impacted by institutional shutdowns, which left students with little options to gain practical skills and competences through work-based learning.

## ▶ 2. Introduction

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In the past decade, the economy in Bosnia and Herzegovina recorded gradual and stable growth, with an average increase in real gross domestic product (GDP) at a rate of 2.5 per cent per annum. The COVID-19 pandemic-related slump of 8 per cent has been annulled as real GDP expanded by 11.6 per cent in the second quarter of 2021. This expansion was boosted by activities in several industries, including trade, transportation and manufacturing (metal and wood processing).<sup>1</sup> The economic growth has positively impacted the labour market, especially in downsizing the total unemployment, from 28 per cent in 2012 to 16.9 per cent in 2020. However, unemployment affects youth in Bosnia and Herzegovina at a rate three times more than in the European Union.<sup>2</sup> While there has been a pronounced downward trend in youth unemployment in recent years in Bosnia and Herzegovina, this remains more than double the general unemployment rate of the country (about 34 per cent in 2019).

Secondary data point at a substantial mismatch between the labour supply and demand, which affects particularly the transition from school-to-work. There are various dimensions to this disconnect, both quantitative and qualitative (Serdarevic and Simic, 2017). Quantitatively, the number of graduates in a specific area exceeds the number of vacancies in the same sector. Qualitatively, some graduates from (T)VET and general education lack the hard and soft skills, industry knowledge and practical experience necessary to effectively assimilate into the labour market. Boosting digital skills, including those of teachers, is often seen as one of the key instruments in improving employability and the school-to-work transition of students.

The goals of digitalization in education can support more than employability and school-to-work transitions. Looking outside of Europe, a recent study by the International Labour Organization (ILO) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on digitalization in teaching and education in Eastern Africa revealed that rapidly embracing technology as a solution to education challenges such as teacher shortages, decent work deficits and funding shortfalls overlooks long-term, sustainable investments needed to generate a teaching workforce qualified to best take advantage of the investments in digital technologies. It also highlighted the importance of social dialogue in addressing longstanding and emerging challenges in the education sector (ILO, 2021).

Building from these insights, this study examines current practices, challenges and opportunities in relation to the use and integration of digital technologies in Bosnia and Herzegovina at the primary, secondary and (T)VET education levels. The analysis specifically

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1 Data and information available on the Agency for Statistics of Bosnia and Herzegovina [web-site](#).

2 Data and information available on the Agency for Statistics of Bosnia and Herzegovina [website](#).

focuses on Republika Srpska and three jurisdictions in the Federation of Bosnia and Herzegovina – Sarajevo, Tuzla and Zenica-Doboj. It captures the impact of digital technologies on teachers and other education personnel. The findings of the study are based on an analysis of relevant policies, research reports and news media as well as interviews with key education stakeholders.

The study first provides a brief overview of the educational sector in Bosnia and Herzegovina, with a special focus on the current status of digitalization in education, including availability of digital infrastructure and the status of teachers' ICT skills. The study then provides an overview of the state of social dialogue in the different entities. This is followed by a discussion of the impact and responses to the COVID-19 pandemic in education, and the strategic plans at the national, entity and cantonal levels in relation to digitalization in education. The study concludes with recommendations for enhancing the use of digital technology in education.

## ▶ 3. Methodology

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According to the Constitution of Bosnia and Herzegovina, the education sector in Bosnia and Herzegovina is under full and direct jurisdiction of the entity of Republika Srpska, ten cantons in the Federation of Bosnia and Herzegovina and the Brcko District of Bosnia and Herzegovina. In this system, the Federal Ministry of Education and Science and the Ministry of Civil Affairs of Bosnia and Herzegovina (MoCA) hold coordinating roles, while the Ministry of Education and Culture of the Republika Srpska has full competency over the education. The Brcko District of Bosnia and Herzegovina has a separate department for education. The analysis in this study covers Republika Srpska and three jurisdictions in the Federation of Bosnia and Herzegovina – Sarajevo, Tuzla and Zenica-Doboj. As highlighted in table 1, the selected cantons account for 58.8 per cent of the total student population and 55.7 per cent of employed teachers. Data in relation to availability of digital infrastructure is publically available for the selected cantons. As shown in table 1, the computer coverage ratio for teachers and students deviates only slightly from the average in the Federation of Bosnia and Herzegovina.

A mixed-method approach to the data collection – official statistical releases, relevant recent reports and analyses and semi-structured interviews with key informants – was utilised in the development of the study. The study is grounded in an analysis of existing statistics and data related to digitalization in teaching and learning, including teacher capacity in the use of ICT; training and development for teachers in the use of ICT; provision of ICT in schools and households; use of ICT during the COVID-19 pandemic; and development and provision of digital resources. It also included an analysis of research and organizational documents from government ministries and agencies, teachers' and employers' organizations, non-governmental organizations and international organizations.

In each respective administrative unit, the key stakeholders – respective ministries, pedagogical institutes, teachers' unions, private sector representatives, civil society organizations and international organizations – were interviewed using a pre-determined list of questions that explored the context and perceptions of the current and future uses of digital technology in teaching and learning. The findings and recommendations of the study are based on a triangulation of secondary data and interviews with education sector stakeholders.

**Table 1. Number of students and teachers, including computer coverage, in sampled jurisdictions of the Federation of Bosnia and Herzegovina.**

	Students	Teachers	Coverage (computers)	
			Students	Teachers
<b>Federation BiH</b>	<b>183,490</b>	<b>14,773</b>	<b>4,5%</b>	<b>23,4%</b>
Canton Sarajevo	37,374	2,500	5,9%	45,5%
Tuzla Canton	37,536	3,031	3,4%	19,5%
Zenica-Doboj Canton	32,924	2,702	3,6%	18,3%
<b>Total sample (average)</b>	<b>107,834</b>	<b>8,233</b>	<b>4,3%</b>	<b>27,8%</b>
<i>in % of Federation BiH (total, av.)</i>	<i>58,8%</i>	<i>55,7%</i>		

**Source:** Prepared by author, based on official statistics (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a, 2021b).

The study design and the methodological approach used imposed several limitations for more expanded conclusions and recommendations. Particularly, there was no reliable data on

- ▶ teachers' skills and capacities concerning the use of digital technologies. Teachers' skills are not assessed, which makes it difficult to build a baseline on the skills gap as well as to identify particular needs in terms of enhancing capacities;
- ▶ maintenance and replacement of digital tools and equipment in schools. The official statistics provide only aggregate data on the number of devices available to students and employed staff in schools;
- ▶ partnerships established between (T)VET schools and employers. This made it difficult, for example, to assess the magnitude of the impact of the COVID-19 pandemic on work-based learning.

## ▶ 4. Brief overview of the educational sector

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### 4.1. Primary and secondary education

The complexity of the education system in Bosnia and Herzegovina stems from the political and administrative set-up in the country. The competence over education is defined by the Constitution of Bosnia and Herzegovina, as well as the constitutions of the entities, the cantons of the Federation of Bosnia and Herzegovina and the Brcko District of Bosnia and Herzegovina. Consequently, primary and secondary education are governed by eleven ministries and the government department in the Brcko District.

The MoCA liaises on behalf of the state at the international level and is responsible for defining basic principles of in-country coordination and harmonization of entity-level planning documents via the Conference of Ministries of Education. The Agency for Preschool, Primary and Secondary Education of Bosnia and Herzegovina (APOSO), an independent administrative organization that reports to the Council of Ministers of Bosnia and Herzegovina, is responsible for establishing evaluation standards, a CCC and criteria for quality assurance.

According to the Constitution of the Federation of Bosnia and Herzegovina, the Federation undertakes to ensure the application of the highest level of internationally recognized rights and freedoms, including in education.<sup>3</sup> In the Federation of Bosnia and Herzegovina, the Federal Ministry of Education and Science is responsible for coordination in the areas of preschool, elementary school, secondary school and higher education.<sup>4</sup> Education policy, including decisions concerning the regulation and provision of education, is the exclusive competence of cantons.<sup>5</sup> The cantonal level of government also allocates finances for the implementation of educational policies. Pedagogical institutes are the operational arm of competent ministries. They provide professional support to school management and teachers (training, monitoring and counselling), adopt the curriculum and monitor its implementation and conduct in-service professional development of teachers. Eight pedagogical institutes operate in seven cantons, with some cantons sharing an institute, the Central Bosnia canton lacking one and the Herzegovina Neretva canton established two separate bodies. As a consequence, there is variation and unevenness across jurisdictions, as well as disparities in both education funding and the population size of cantons (World Bank, 2019). These factors create inequitable conditions at the local (school) level.

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<sup>3</sup> European Commission for Democracy through Law, [Constitution of the Federation of Bosnia and Herzegovina](#), 2000.

<sup>4</sup> Government of the Federation of Bosnia and Herzegovina, [Zakon o Federalnim ministarstvima i drugim tijelima Federalne uprave](#).

<sup>5</sup> European Commission for Democracy through Law, [Constitution of the Federation of Bosnia and Herzegovina](#), 2000.

In Republika Srpska, the Ministry of Education and Culture has jurisdiction in its respective entity. This is the same case with the Department of Education in the Brcko District. Both have respective pedagogical institutes providing support and in-service teacher training. In 2020, the education sector in Republika Srpska had 125,162 enrolled students and 12,092 employed teachers (Republika Srpska Institute of Statistics, 2021a, 2021b).

The Framework Law on Primary and Secondary Education in Bosnia and Herzegovina ("Official Gazette", number 18/03) establishes that primary education is compulsory for all children reaching the age of six years and lasts without interruption for a period of eight years, at minimum. In both the Federation of Bosnia and Herzegovina and Republika Srpska primary education lasts for nine years and is compulsory and free to all children. Secondary education is also free and is provided by general and vocational schools.

As of the beginning of the school year 2020/2021, Bosnia and Herzegovina had 1,785 primary schools (ISCED 1 and 2) and 315 secondary schools (ISCED 3), with an enrolment of 274,034 and 112,796 students, respectively (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a; Republika Srpska Institute of Statistics, 2021a). Schools operate in accordance with the CCC and enrol children with special needs; however, there are also separate schools applying a special curriculum. Secondary education is available to everyone and enrolment depends on the students' achievements in primary school, personal interests and abilities. Students choose to either attend general schools (high school, art school or religious school), which last four years, or vocational schools (technical, economic, medical and other professional schools), which last three or four years. Four year schooling programmes grant graduates the possibility of enrolling in university.

In Bosnia and Herzegovina, female students account for 64 per cent of total students enrolled in gymnasiums, 54 per cent in technical vocational schools and only 20 percent in vocational schools (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a, 2021b; Republika Srpska Institute of Statistics, 2021a, 2021b). There is a belief that vocational schools educate students for typically male occupations (to enter male-dominated industries).

## 4.2. Quality of education

The quality of education is not assessed and monitored in a systematic way, although improvement of education quality is recognized across many strategic documents in Bosnia and Herzegovina. Currently, there are only two Sustainable Development Goal (SDG) 4<sup>6</sup> indicators measured and published in the statistical bulletin (Agency for Statistics of Bosnia and Herzegovina, 2021b). The first indicator is ICT skills (as measured in 2019) – that is, young people and adults possessing the skills of (a) copying or moving documents and folders (44.6 per cent) and (b) preparing electronic presentations (11 per cent). In terms

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<sup>6</sup> SDG 4 calls on all countries to ensure inclusive and equitable quality education and promote life-long learning opportunities for all.

of the latter, the European Union 27 held an average of 56 per cent. The second indicator is official flows for scholarships, which amounted to US 4.06 million in 2018. The United States Agency for International Development (USAID) (2017, 2018a) noted that in practice the traditional approach to teaching and perceptions of quality, which emphasize structural rather than process and outcome dimensions, prevail in the education system in Bosnia and Herzegovina. They further conclude that the understanding of quality, as held by some actors within the education system, might not fully align with international definitions of quality.

With the aim of improving teaching and learning, from 2012-2018, the Agency for Pre-Primary, Primary and Secondary Education, in cooperation with representatives of pedagogical institutes, ministries of education, primary and secondary school teachers, academia and international and development organizations and agencies, developed the CCC Framework to define learning outcomes from pre-school to the end of secondary education. The CCC places greater emphasis on student-centred, competence-based learning and 21st century skills, many of which are captured in the European Reference Framework. Within the Framework, eight curriculum areas are defined, including on Technics and Information Technology which aims to prepare students to apply technical, technological and ICT knowledge in everyday life (Naletilić, 2019). The CCC was officially adopted in 2018.

Despite its adoption, several impediments were noted by education sector stakeholders with the CCC's implementation. These include pre-service training not being oriented to equip teachers with the skills to deliver an inclusive, student-centred approach to teaching and learning; an established curriculum, annual teaching plans and monitoring exercises that place priority on content delivery over achievement of learning objectives; professional development opportunities for teachers that are not monitored, governed or recognized by respective pedagogical institutes; and teaching materials and textbooks that are often outdated and that rarely encourage critical thinking or development of life skills (key informant interview, 2021).

Improving learning outcomes is important for increasing human capital and social development. The World Bank (2020) ranks Bosnia and Herzegovina 81st on the Human Capital Index 2020 (among 173 countries), which is below the European average. The results indicate that the expected years of schooling for a child that begins education at the age of 4 is 11.7 years by the age of 18, which is equivalent to 7.8 years of "what children actually learn". According to a World Bank (2019) efficiency assessment, learning outcomes in Bosnia and Herzegovina are below the European Union average, there is a notable skills mismatch between the education system and labour market and there is general public dissatisfaction with the quality of education. These challenges have been attributed to fragmented responsibilities for education; inefficient and inequitable financing that leaves little room for investments in quality; inappropriate design of structures meant to support or improve



teacher performance; and a lack of mechanisms to monitor the quality of education inputs, outputs or outcomes to inform decision-making.

According to the 2018 Programme for International Student Assessment (PISA) survey of 15-year-old students that assessed the extent to which they have acquired the key knowledge and skills essential for full participation in society, Bosnia and Herzegovina ranked 62 out of 79 countries. The country ranked lower than countries in the region – Croatia (29), Serbia (45) and Montenegro (52). As highlighted in table 2, students in Bosnia and Herzegovina performed lower than the Organisation for Economic Co-operation and Development (OECD) average in reading, mathematics and science (OECD, 2019).

**Table 2. PISA 2018 Assessment outcomes, Bosnia and Herzegovina as compared to OECD average.**

Field	BiH	OECD average	BiH	OECD average
	Level 2 and above		Top performers	
Proficiency in reading	46%	77%	Negligible percentage	9%
Mathematics	42%	76%	1%	11%
Science	43%	78%	Negligible percentage	7%

Source: PISA 2018.

According to the 2018 PISA report, the socio-economic status of students appears to be a strong predictor of performance in mathematics and science, with an 8 per cent variation in mathematics performance and 7 per cent variation in science performance from the OECD average. Staffing and material shortages, as reported by school principals, were identified as relevant for 8 per cent of students enrolled in disadvantaged schools and 4 per cent of students enrolled in advantaged schools. There appears to be no statistical difference in teacher qualifications between disadvantaged and advantaged schools, with school principals reporting that 93 per cent of teachers in disadvantaged schools and 95 per cent of teachers in advantaged schools are fully certified. Girls and boys perform similarly in both science and mathematics (OECD, 2019).

### 4.3. Students

Bosnia and Herzegovina has been facing notable depopulation over the past decades. This was caused by suffering in the war, which also triggered the first wave of emigrants, economic emigrants in the period that followed (WFD, 2020) and a recent negative population growth (negative since 2009).

As captured in table 3, which compares student enrolments in 2010 and 2019, the demographic decline has impacted student enrolments. The net decrease in the number of students in primary and secondary schools is just over 18 per cent and 25 per cent, respectively. At the same time, the number of teaching staff remained almost at the same level. Except in a few cases for small schools in remote areas, the reduced number of students did not result in the closure or merger of classes and schools (World Bank, 2019). Student-teacher ratios in Bosnia and Herzegovina are below the OECD average. In 2019, the OECD student-teacher ratio average was 15:1 in primary and 13:1 in lower secondary (OECD, 2021).

**Table 3. Total enrolment and number of teachers in primary and secondary, including student-teacher ratio, 2010 and 2019.**

<b>Primary education</b>	<b>Enrolment</b>	<b>Teachers</b>	<b>Students per teacher ratio</b>
2010	335,403	24,536	13.7
2019	274,034	24,361	11.2
<i>Difference (in %)</i>	<i>(18,3%)</i>	<i>(0,7%)</i>	
<b>Secondary education</b>	<b>Enrolment</b>	<b>Teachers</b>	<b>Students per teacher ratio</b>
2010	151,680	12,144	12.5
2019	112,796	12,716	8.9
<i>Difference (in %)</i>	<i>(25,6%)</i>	<i>(+4,7%)</i>	

**Source:** Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a, 2021b; Republika Srpska Institute of Statistics, 2021a, 2021b.

In 2020-2021, 28,549 students were enrolled in primary school, and 30,473 completed primary education (6.7 per cent more than the number of students enrolled). Girls make up 48.7 per cent of enrolled students (table 4).

**Table 4. Number of students enrolled in primary school, 2020/2021.**

Primary education school year 2020/2021					
Total students	268,132	Total enrolled in first year	28,549	Total completed	30,473
<i>Female (absolute)</i>	130,556	<i>female</i>	13,999	<i>female</i>	14,904
<i>(in % of total)</i>	48,7%		49,0%		48,9%

Source: Agency for Statistics of Bosnia and Herzegovina, 2021a.

The vast majority of students are enrolled in public schools, nonetheless, there is a trend of increasing participation in private schools, from 1.2 per cent to 1.6 per cent from 2010 to 2018 (table 5). There is no single register of private primary schools in Bosnia and Herzegovina and school-related data is available only in aggregate figures.

**Table 5. Enrolment in private primary schools, 2010-18.**

Enrolment in private primary schools	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>(% of total primary)</i>	1,2158	1,5213	1,2135	1,3185	1,5116	1,6098	1,5938	1,7079	1,6075

Source: UNESCO Institute for Statistics, September 2020.

Slightly more pronounced interest for private schools is evident in secondary schools. About 2.5 per cent of students in Bosnia and Herzegovina are enrolled in a private secondary school, an increase of 61 per cent as compared to 2010 (table 6).

**Table 6. Enrolment in private secondary schools, 2010-19.**

Enrolment in private secondary schools	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>(% of total secondary)</i>	1,526	1,457	1,727	1,894	1,893	2,005	2,371	2,593	2,748	2,458

Source: CEIC Data, 2020.

The National Youth Survey (USAID, 2018b) explored the views of 3,002 students across the country on a number of topics, including the quality of education. In accordance with the study, 59 per cent of students are fully satisfied and 34 per cent are to some extent satisfied with their teachers' approach towards them; 50 per cent believe teachers have sufficient pedagogical skills; 43 per cent fully support and 47 per cent to some extent support the statement that teachers are monitoring students' progress; and only 25 per cent believe that the knowledge and skills acquired in formal education are in line with labour market needs. Better employment opportunities are the primary reason for many youth considering moving abroad.

#### 4.4. Teachers

Over 37,000 teachers are employed in the primary and secondary education sector, with the majority being women – 73.4 per cent in primary and 62.2 per cent in secondary. Primary teachers are in a somewhat more favourable position given that almost two-thirds are hired on a permanent, full-time basis. In secondary education, just over half of the employed teachers are engaged on a permanent basis (table 7). The teaching profession is relatively attractive in terms of salaries, as compared other professions.

**Table 7. Engaged teachers (FTE and PTE), 2020/2021.**

School year 2020/2021	Full-time employment (FTE)					Part-time employment (PTE)			
	Total	Perm.	in %	Temp.	in %	Perm.	in %	Temp.	in %
<b>Primary education</b>									
Teachers	24,548	15,260	62.2%	2,228	9.1%	3,904	15.9%	3,156	12.9%
Female (absolute)	18,018	12,010	66.7%	1,808	10.0%	2,130	11.8%	2,070	11.5%
(in %)	73.4%	78.7%		81.1%		54.6%		65.6%	
<b>Secondary Education</b>									
Teachers	12,735	7,052	55.4%	1,249	9.8%	2,000	15.7%	2,434	19.1%
Female (absolute)	7,921	4,338	54.8%	791	10.0%	1,208	15.3%	1,584	20.0%
(in %)	62.2%	61.5%		63.3%		60.4%		65.1%	

**Source:** Republika Srpska Institute for Statistics, 2021a, 2021b; Federation of Bosnia and Herzegovina Institute for Statistics, 2021a, 2021b.

Teachers are evaluated by school directors annually, with monitoring falling under the authority of entity-level and cantonal ministries of education. Pedagogical institutes assess teachers' work through a bi-annual class visit or by alternate means, depending on capacity and regulation (by-laws). Pedagogical institutes also organize in-service training for teachers.

#### Box 1. Recognition of innovative teachers and educators

The teaching profession does not effectively recognize teacher performance. There is no standardized performance evaluation in place and there is a lack of mechanisms to support and reward good performance. Pursuant to respective labour laws, breach of responsibilities may be determined via poor attendance, neglect of professional duties or through a teacher receiving a non-satisfactory score (from the bi-annual evaluation) twice in a row. Exceptional performance is not remunerated.

An annual award, as organized by CEI Step by Step, is one among only a few initiatives aiming to symbolically recognize teachers' excellence. The award recognizes innovative educators, teachers and professional associates in preschool, primary and secondary education.

**Source:** proMENTE and Step by Step, n.d.a.

## ► 5. Digitalization in education

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### 5.1. Country-wide access to digital infrastructure and technology

According to the Agency for Statistics of Bosnia and Herzegovina (2019), the share of the population (household level) with internet access in 2019 was 72 per cent, with an annual increase of about 4 per cent. Households in 'other areas' are slightly behind (68.3 per cent) as compared to households in urban areas (76.9 per cent). The trend indicates that the differences may diminish in the near future.<sup>7</sup> As expected, households with children under the age of 16 recorded the highest participation (83 per cent).

In relation to the use of computers, Bosnia and Herzegovina lags behind OECD member states<sup>8</sup> (70 per cent to 95 per cent in 2019), with only 62.2 per cent of the population using a computer (63.7 per cent of males and 60.9 per cent of females). The proportion of active users aged 16-24, however, was 95.2 per cent. Furthermore, 77.2 per cent of the working age population (ages 25 to 54) uses computers (Agency for Statistics of Bosnia and Herzegovina, 2019).

The disaggregated data concerning use of digital technologies in Bosnia and Herzegovina indicates population clusters based on the level of education. The population that can be considered very active include students (99.3 per cent), highly educated persons (95.3 per cent) and the active workforce (84 per cent). Those with a secondary level of education are less active (67.1 per cent), while those with lower levels of education are least active (35 per cent). The inactive labour force and pensioners (34.7 per cent) show the least usage (Agency for Statistics of Bosnia and Herzegovina, 2019).

### 5.2. Access to digital infrastructure and technology in schools

In Bosnia and Herzegovina, on average, one computer is available for 13 students in primary school, with the coverage ratio being about 7.7 per cent. These devices are mainly dedicated to classes for informatics. The low level of computers available to students is particularly pronounced in the Federation of Bosnia and Herzegovina, where one computer on average is available per 21 students. The class average in the Federation of Bosnia and Herzegovina is 18.5 students. In Republika Srpska, the availability of computers for students is much higher, with one computer per 7.3 students or more than 2 computers per class, which on average is 17.4 students (table 8).

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<sup>7</sup> In 2017, internet access in households in other areas was 61.7 per cent, while in households in urban areas it was 71.6 per cent.

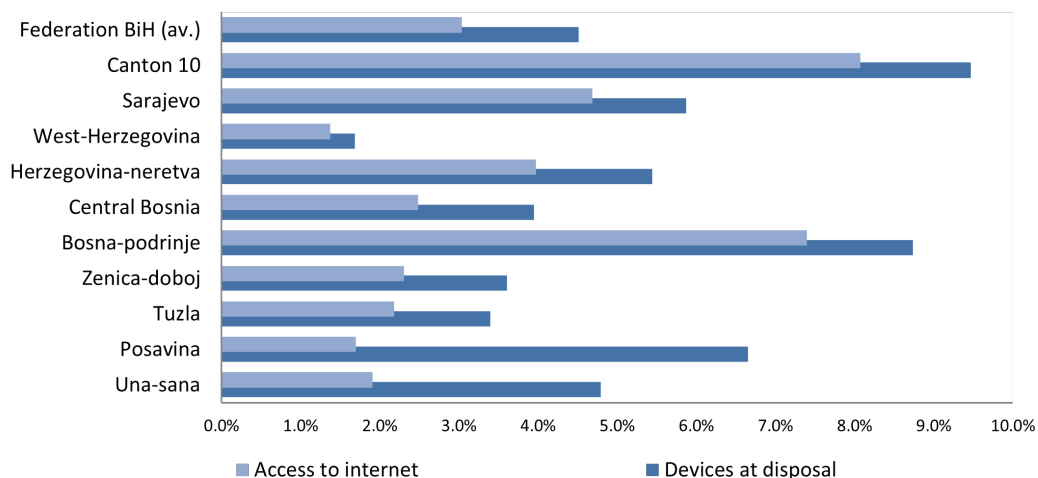
<sup>8</sup> For OECD statistical data, see [ICT Access and Usage by Households and Individuals](#).

**Table 8. Student access to computers and internet in schools, 2019/2020.**

School year	Primary level		Secondary level	
	RS	FBiH	RS	FBiH
2019/2020				
Students coverage ratio - computers	13.7%	4.8%	10.7%	8.6%
Students coverage ration - internet access	8.0%	3.7%	9.1%	7.0%

**Source:** Republika Srpska Institute for Statistics, 2021a, 2021b; Federation of Bosnia and Herzegovina Institute for Statistics, 2021a, 2021b.

Statistics on available computers and internet access for teachers and students in Republika Srpska are summarized, as such it is not possible to analyse differences at the local level. In the Federation of Bosnia and Herzegovina, there is statistical evidence on the number of available computers by cantons (figure 1), which ranges from one computer per 11 students (Canton 10) to one computer per 71 students (West Herzegovina Canton). This speaks to the earlier analysis in this study, which drew attention to funding inequities across cantons.

**Figure 1. Student access to computers and internet (coverage ratio) in the Federation Bosnia and Herzegovina, 2019.**

**Source:** Federation of Bosnia and Herzegovina Institute for Statistics, 2021b.

The availability of computers for school employees<sup>9</sup> is equal in both entities, with the availability of computers in secondary schools in the Federation of Bosnia and Herzegovina being significantly higher (coverage 30.4 per cent) than in primary schools (coverage 14.5 per cent). On average, every 12 employees in primary schools in the Federation of Bosnia and Herzegovina have access to the internet (table 9).

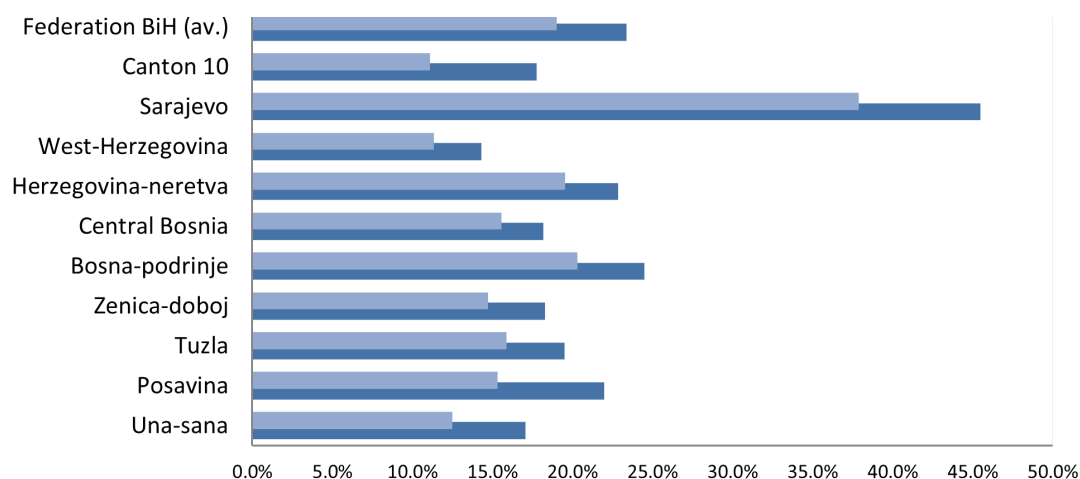
<sup>9</sup> The official statistics in both entities disclose the data on total computers available and computers at disposal to students and employees. Employees, however, include school principals, deputy principals, teachers and legal, finance/analyst, pedagogy, maintenance and cleaning staff.

Table 9. Employee access to computers and internet in schools, 2019/2020.				
School year	Primary level		Secondary level	
	RS	FBiH	RS	FBiH
2019/2020				
Students per teacher ratio (BiH av. 11.2; EU 9.0 - 19.2)	10.8	12.4	9.4	8.9
Employee coverage ratio - computers	26.8%	14.5%	34.4%	30.4%
Employee coverage ratio - internet access	19.9%	8.5%	30.8%	28.1%

**Source:** Republika Srpska Institute for Statistics, 2021a, 2021b; Federation of Bosnia and Herzegovina Institute for Statistics, 2021a, 2021b.

Significant inequality in the availability of computers for school employees is visible only in the Sarajevo Canton, where twice as many computers per employee are available as compared to the average in the Federation of Bosnia and Herzegovina (figure 2).

**Figure 2. Employee access to computers and internet (coverage ratio) in the Federation of Bosnia and Herzegovina, 2019**



**Source:** Federation of Bosnia and Herzegovina Institute for Statistics, 2021a, 2021b.

Given the disparity between the rate of computer usage among the highly educated population (95.3 per cent) and available computers to school employees (mean value 26.5 per cent), it appears that at least three-fourths of employed teachers used their own computers for distance and online teaching and learning. This suggests that competent ministries of education relied on teachers using their own digital devices and internet. This conclusion aligns with the findings of recent research conducted by proMENTE and Step by Step (n.d.b), where 59 per cent of surveyed teachers indicated using their own devices. The average workload for preparing and delivering online teaching was 8.21 hours daily.

Based on an analysis of the current ICT infrastructure in educational institutions in Bosnia and Herzegovina, as carried out by UNICEF, UNESCO, ILO and UN Volunteers (2021,



unpublished), several recommendations in relation to making meaningful and effective use of technology in education were put forward

- ▶ establishing permanent internet connections in all educational institutions, at all levels of education;
- ▶ adopting a systemic approach at the administrative level in the equipping of educational institutions with digital equipment;
- ▶ considering a range of technological devices and equipment for teaching and learning, while keeping in mind student abilities and appropriateness of specific technologies for the level of education;
- ▶ investing in the acquisition of quality and relevant software, particularly for those in vocational institutions; and,
- ▶ ensuring better use of information systems for education management.

### 5.3. Pre-service and in-service teacher training

Pre-service education of teachers is provided by universities across different faculties. Faculties of pedagogy prepare general class teachers (those teaching in grades one to five) and teachers of technical education and culture of living. Faculties of philosophy prepare teachers for upper grades in primary and secondary levels of education. Faculties of mathematics, natural sciences music, arts, sports and theology also have pedagogy-related study programmes for future teachers. Enrolment in faculties requires future teachers to have completed four years of secondary level education. Some faculties introduce enrolment exams.

Teachers acquire the title for a particular subject, based on the programme they attended (minimum four years equivalent to 240 European Credit Transfer and Accumulation System (ECTS) credits or equivalent to a Master's degree), which was specifically designed for a relevant disciplinary field. Programme candidates that graduated from other faculties may be approved to teach following successful completion of pedagogic-psychological and didactic-methodological group of subjects.

The induction of teachers involves a six to 12 month paid internship (depending on the specific regulation in each jurisdiction). Newly employed teachers are immediately entitled to teach, assuming they have a mentor engaged to supervise their work during the internship. By the end of their internship, novice teachers are obliged to pass a professional exam, which involves holding ten classes in the mentor's presence.

Professional development of teachers is organized by pedagogical institutes and is financed by cantonal and entity governments and the Government of Brcko District. Elements of evaluation of professional development of teachers include participation in professional development established by the Ministry of Education; participation in professional development conducted by professional institutions and associations; and professional

development through adoption of guidance from modern professional literature and journals. Professional training is organized on a regular or occasional basis. Only teachers who regularly attend in-service training programmes can advance to the titles of mentors and advisors.

Continuing professional development (CPD), as provided by pedagogical institutes, is at a low level and has been highly affected by budget cuts over the past decade (USAID, 2017, 2018a). According to the European Training Foundation (2020), the provision of CPD is mandatory, however, specific requirements for digital skills and competences are vague across jurisdictions. As such, opportunities concerning digital skills and competences are often implemented by schools or individual teachers. Nonetheless, there are several positive examples. In 2018, in Central Bosnia Canton, 250 secondary teachers (out of 1,000) in 24 schools attended registered courses for developing digital skills and competences. In 2019, the pedagogical institute in Tuzla Canton provided numerous courses to enhance digital skills and competences. In Republika Srpska, there is a designated advisor on digital skills and competences at the pedagogical institute, with annual group training being provided to all ICT teachers.

The Agency for Preschool, Primary and Secondary Education developed a Model for Improving the System of Continuing Professional Development of Educators, Teachers and Professional Associates in Bosnia and Herzegovina (2014). The model provides directions for improving professional development toward enhanced professionalism and competence. Through the Erasmus + programme, Bosnia and Herzegovina supported the establishment of an eTwinning portal, which allows teachers to exchange teaching materials and good practices as well as to collaborate and communicate with educators across Europe.

According to the World Bank (2019), the current structures in place do not support improved teacher performance. The World Bank suggests that this is largely an issue of distribution of education financing, whereby a significant proportion is designated towards labour costs, which limits available funding for other areas of education, including teacher training and development. They note, for example, that pedagogical institutes have limited capacity and that there is a large reliance on donor-funded programmes to deliver in-service training. They also recommend greater integration of ICT in teachers' work. The European Commission (2020) also underlines the need for comprehensive teacher training focused on developing students' key competences and a systematic approach for implementing the CCC to complement ongoing outcome-based curricular changes.

## ▶ 6. Status of social dialogue

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The Constitution of Bosnia and Herzegovina entitles entities to regulate collective bargaining within their respective labour legislation, which is transposed into relevant regulatory frameworks that establish the right to citizens to freely organize trade unions and employers' organizations. As such, entity level governments, within their respective labour laws, established councils that respect the tripartite principle, which involves the government and workers' and employers' organizations – Economic and Social Council of Republic of Srpska, Economic and Social Council of the Federation of Bosnia and Herzegovina and the Economic and Social Council of Brcko District of Bosnia and Herzegovina.

### 6.1. Educational planning and processes in Republika Srpska

In Republika Srpska, secondary education is regulated by the Law on Secondary Education (Official Gazette RS, no. 41/18). As regulated by Article 144, schools are given the autonomous right, through an Advisory Council, to engage in education planning and to provide education in line with local labour market needs. A tripartite council at the entity level (Article 47), which is made up of entrepreneurs, unions and the Ministry of Education, assumes a counselling role. The council includes the Chamber of Commerce, Association of Employers, the Public Employment Institute, the Chamber of Crafts and Entrepreneurs, the Ministry of Education and the Syndicate of Education, Science and Culture (Republika Srpska Law of Economic and Social Council, Gazette of the Republic of Srpska, no.110/08).

The Council provides opinions on drafts and proposals of laws and other regulations relevant to the economic and social status and position of employees and employers. Competence in the field of collective labour relations refers to submitting opinions to the Ministry of Labour, War Veterans and Disabled Persons' Protection regarding the extension of the general or branch collective agreement for employees who are not members of a representative employees' association. In the field of individual employment, the Council submits proposals for decisions on minimum wage levels, the value of death and illness benefits and the amount of additional income from employment.

### 6.2. Educational planning and processes in the Federation of Bosnia and Herzegovina

Dialogue between social partners is regulated through the Memorandum of the Economic-Social Council on the Territory of the Federation of Bosnia and Herzegovina (Official Gazette of Federation of Bosnia and Herzegovina, number 47/02, 42/03 and 08/08), established as a separate regulation arising from the Labour Law (Official Gazette of the Federation of Bosnia and Herzegovina, No. 26/16 and 89/18). The primary role of the Council is to support

economic and social policy, affirm and protect economic and social rights (that is, interests of employees and employers), develop a system of collective bargaining and negotiate and apply collective agreements. The mandate of the Economic-Social Council on entity and cantonal levels is to oversee wage policies, collective agreements, employment and social policies and privatization, among other things. The key areas of focus are labour, business and social policy. Education is not one of priorities of the Council.

Social dialogue in the canton of Sarajevo is regulated by the Law on Vocational and Educational Training (Official Gazette of Canton Sarajevo, number 23/17, 30/19). The Law establishes a Tripartite Council (Article 8) with representation from employers, syndicate (competent) and the government, who are to meet at minimum twice a year. The Law also establishes the option for Counselling Boards (Article 71), which are left to the discretion of school management. The Boards should consist of five members representing the school, the local community, the labour market and the Economic-Social Council (as constituted by an employers' association, a syndicate alliance and the cantonal government).

The Zenica-doboj Law on Secondary Education (Official Gazette of Zenica-doboj Canton, number 09/17) regulates social dialogue through a tripartite council (Article 23) tasked to assess the needs for and demands of the labour market, to strengthen cooperation between schools and to strengthen training on the cantonal level. The tripartite council includes representation from the Chamber of Commerce, the Cantonal Syndicate of Secondary and Higher-level Education, Science and Culture and the Ministry of Education. Articles 60 and 61, respectively, establish practice-oriented training under the expert supervision of secondary schools as well as training in schools during holidays, based on separate contracts that schools establish with employers (legal entities, institutions, crafts). Article 152 establishes the council on a voluntary basis, with the aim of engaging representatives of the local labour market to support the process of planning, curriculum development and training for particular occupations.

Social dialogue at the local level in both entities is considered beneficial as it embraces key partners for strategic planning and introduces education as a cross-cutting issue in economic development. It also ensures engagement of local authorities, development agencies and public employment services. Strong public-private dialogue at the local level can build strategies for necessary reforms in education. Councils in schools fulfil their role in establishing communication on a bi-annual basis, especially concerning labour market needs and expectations. However, the majority of partnerships between schools and employers are established through bi-lateral communication and there is no obvious role of councils in this process.

### 6.3. Unionization and representation in the education sector

The unionization rate of primary and secondary teachers in both entities is significant. The Syndicate of Education, Science and Culture of Republika Srpska is a voluntary organization, established to protect rights and advocate for better material conditions and social status and dignity of workers in the fields of education, science and culture. According to the President of Republika Srpska's Syndicate of Education, Science and Culture, their membership base includes approximately 14,500 teachers (close to 100 per cent of those employed) from pre-school, primary and secondary levels of education. The syndicate embraces 365 local organizations. It exercises protective measures, provides legal advice concerning rights of teachers, participates in the drafting of educational laws and by-laws and provides material assistance on special occasions to its members.

There is a special collective agreement for employees in primary and secondary education and dormitories (Official Gazzete RS, No. 21/2015 and 92/2020) in Republika Srpska, as well as separate agreements on the cantonal level in the Federation of Bosnia and Herzegovina. These agreements entitle teachers to elementary employment and CPD, and also determine the process of negotiation for salaries and bonuses as well as the procedures for organizing strikes.

Teachers are well represented in governance processes, having representatives in councils from school to entity levels. This representation, however, is largely symbolic as in majority of cases teachers have one member representing their views and interests, compared to several representatives of competent ministries, pedagogical institutes and the private sector. As a result, educational policies are primarily developed by ministries of education, with the implementation modality developed by respective pedagogical institutes. The private sector is consulted with the aim of addressing labour market inefficiency (that is, combatting a skills mismatch) (key informant interview, 2021).

## ▶ 7. Medium-term impact and responses to COVID-19

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### 7.1. Impact of COVID-19 in education

According to a UNICEF and UNESCO (2020) rapid analysis of the impact of COVID-19 on education in Bosnia and Herzegovina

- ▶ all education authorities introduced e-learning and distance learning modalities in primary and secondary education;
- ▶ 1,695 or 0.6 per cent of students enrolled in primary schools and 393 or 0.3 per cent of students enrolled in secondary schools interrupted their attendance;
- ▶ 35 per cent of students faced difficulties with access, including due to lack of devices, access to the internet and lack of appropriate space for learning;
- ▶ 523 or 1.4 per cent of teachers in primary and secondary schools (74.6 per cent of them in Central Bosnia Canton) did not have access to ICT devices and the internet, with some teachers providing instruction via telephone.

Education authorities mobilized resources from telecom companies, international donors and the private sector to secure devices and internet to children without access. In Republika Srpska, for example, through the one-child one-computer initiative (“DOSITEJ” Project), education authorities also provided access to ICT equipment. Some education authorities also utilized television instruction, in addition to online learning (UNICEF and UNESCO, 2020). Box 2 highlights some examples of web platforms used to continue learning during school closures.

#### Box 2. Distance learning during COVID-19 in Bosnia and Herzegovina

During school closures, education authorities and schools used various web platforms to continue learning, including [e-Nastava](#) in Republika Srpska; [e-Škola](#) in Herzegovina-Neretva Canton; and [skole.sum](#) in West-Herzegovina Canton, Posavina Canton and Canton 10. Communication applications such as Viber were also frequently used by individual schools.

Professional development for teachers during school closures was organized in six units – the Brcko District, Sarajevo Canton, Tuzla Canton, Una-Sana Canton, West Herzegovina Canton and Herzegovina-Neretva Canton – to support the transition to online classrooms. The Ministry of Education in Canton Sarajevo estimated that 4,400 teachers (approximately 80 per cent) were reached with webinars.

**Source:** UNICEF and UNESCO, 2020.

According to a study with more than 10,000 parents and students conducted by proMENTE and Step by Step (n.d.b.), more than 80 per cent of respondents believe that teachers bore the greatest burden in implementing online teaching and learning. Over 70 per cent of respondents indicated that teachers provided feedback on student learning and progress, 54.2 per cent that teachers encouraged students to work and 50 per cent that the students acquired knowledge and skills through online classes. Internet connectivity and access to adequate devices available to students were also presented by some as a significant burden. The study concluded that communication between teachers and students is more associated to the overall satisfaction of students and parents than the means of delivery (platforms, applications, duration of classes).

Among the teachers that responded to the survey (N = 1,228), 70.6 per cent indicated that they would not like online classes to continue following the pandemic. The majority of the teachers surveyed believed that they must be constantly available to students and parents (71.4 per cent). Some reported that online teaching resulted in stress both for them and their households. Close to one-third reported a feeling of professional burnout (32 per cent). Teachers found it particularly difficult to directly communicate with students (65.9 per cent); manage documentation of preparatory work and reports on classes conducted (60.1 per cent); and explain material to all students (52.4 per cent). Insufficient skills to use ICT was not seen as a major impediment by approximately half of the respondents (49.9 per cent).

## 7.2. Impact of COVID-19 on apprenticeship for (T)VET students

The data is lacking on the extent to which the COVID-19 pandemic impacted students in technical and vocational schools. In Republika Srpska, in the 2020/2021 school year, apprenticeships in legal entities were organized for approximately 2,800 secondary technical and vocational students (as well as 300 paid internships). Many schools reported that students were not able to undertake their work-based learning. One school reported that as much as 50 per cent of students were not able to engage in practical experience. The institutional closures in response to the pandemic particularly impacted medical students (Vujatovic, 2021).

In 2020, ILO, UNESCO and the World Bank (2020) conducted a joint survey on the impact of the COVID-19 pandemic on (T)VET and skills development, including in Bosnia and Herzegovina, where data and information were obtained from ministries of education in Tuzla Canton and Zenica-doboj Canton as well as two (T)VET providers from the Canton of Sarajevo. The ministries of education indicated that work-based learning and apprenticeships were cancelled and/or postponed, with one school noting that students will end the school year having only completed 60 per cent of the curriculum. One of the key challenges identified to the provision of (T)VET from a distance was lack of ICT equipment and limited internet access among students. All respondents indicated that teachers and instructors received permanent support from school system administrators as well as through webinars to



prepare and conduct online classes. Enhancing teachers' capacities for online teaching and learning, ensuring provision of ICT to students without access to online learning, equipping schools with ICT tools, establishing a legal basis in regulatory frameworks for online teaching and learning and developing strategies for online teaching and learning in emergency situations were some of the key recommendations identified.

### **7.3. Digitalization initiatives and responses to COVID-19 in education**

#### ***Public sector initiatives***

In response to the COVID-19 pandemic, Republika Srpska's Ministry of Education and Culture and pedagogical institute launched an e-learning platform – *e-Nastava* – for teachers and students in primary and secondary schools. The monitoring protocol introduced obligatory weekly reports on distance learning, to be submitted by school principals. The platform offers fully integrated Office 365 for the Education and Learning Management System (EDUIS), which is an information system of the Ministry of Education and Culture of the Republic of Srpska, which aims to support efficient management of education and development of a modern education system. Supported subjects include mother language, mathematics, music, physics and art. According to the President of Republika Srpska's Syndicate of Education, Science and Culture, ICT teachers already employed in schools provided hands-on assistance to colleagues on how to use online platforms and tools. This was not, however, recognized as an additional effort by school principals (key informant interview, 2021).

Implementation of distance learning in the Federation of Bosnia and Herzegovina was under the authority of relevant cantonal ministries and institutes. The majority of schools were left to choose among a variety of solutions, mainly applications for online meetings and lessons (Google Meet, Zoom, Moodle). On multiple occasions teachers attended online courses that required use of different platforms (key informant interview, 2021).

During the COVID-19 pandemic, teachers' unions called for dialogue with competent ministries of education so as to assess the appropriateness of proposed teaching modalities prior to reaching binding decisions. They asked for tailored teacher capacity building as well as necessary equipment to implement online teaching and/or distance learning. Estimates suggest that three-fourths of teachers delivered distance learning using their own devices (key informant interview, 2021).

#### ***Support by international and private organizations prior to and during COVID-19***

The education sector in Bosnia and Herzegovina has benefited from financial and technical support from international organizations and donors and private organizations, as pertains to digitalization in education.



**Box 3. CoderDojo schools of programming**

Bit Alliance, an association of the largest information technology (IT) companies in Bosnia and Herzegovina, aims to develop more opportunities in the IT industry. The Alliance runs activities that aim to reduce the lack of highly skilled employees and enhance the IT industry infrastructure. In order to enhance opportunities to learn programming and other IT skills, Bit Alliance organized free programming through CoderDojo schools. Workshops on programming were organized in 16 locations in 11 cities in Bosnia and Herzegovina. To date more than 700 primary and secondary students attended a coding programme, which was supported by volunteer mentors.

**Source:** Bit Alliance, n.d.

The British Council's 21st Century Schools programme, in cooperation with education institutions, aims to equip students (aged 10-15) in the Western Balkans with critical thinking, problem solving and programming skills, which are put into practice through the use of micro bit devices (pocket sized computers). As part of the programme, teachers undergo induction training on how to develop these skills through the use of micro bit devices. One of the outcomes of the programme was the development of the Best Practice Guide for 21st Century Schools, which aims to support teachers' CPD to include critical thinking, problem solving and programming elements in their teaching (British Council, 2020).

The aim of the European Union-funded Education for Employment project was to increase the responsiveness of the education sector to labour market needs in Bosnia and Herzegovina. The project worked to increase institutional capacities and coordination within the education sector at all levels. Its components included strengthening lifelong learning career guidance systems; developing qualifications and standards at the higher education level; promoting new teacher training programmes at the initial and in-service levels; and advancing measures to improve human resource development across the education system (Education for Employment, 2020). Although not focused on digitalization directly, the project placed strong emphasis on teachers' competences and teaching methods (key informant interview, 2021).

#### Box 4. GIZ-led initiative in technical and vocational training

A technical and vocational training project, as supported by BMZ and the Swiss Agency for Development and Cooperation and implemented by GIZ (2019–2023), focuses on providing support to dual-oriented vocational education and training. Due to the needs emerging from the COVID-19 pandemic, the project partially re-focused its efforts towards supporting the digital skills and competences of teachers, educating approximately 2,000 teachers in Microsoft tools for online teaching. Furthermore, GIZ, in cooperation with the Institute for Technological Development of the German state of Hessen (Hessische Landesstelle für Technologiefortbildung Dr-Frank-Niethammer-Institut) developed a manual for didactic competences required for distance learning. As part of this cooperation, education as well as training of trainers was implemented for the benefit of the pedagogical institutes in Bosnia and Herzegovina. This initiative aimed to increase institutional capacity and to anchor such training in the catalogue of trainings offered to teachers within regular continuous development programmes.

**Source:** Interview with GIZ country office in Bosnia and Herzegovina, 2021.

The OSCE Mission to Bosnia and Herzegovina launched in April 2021 an [e-learning course](#) on ‘Strengthening Teacher Competencies for Inclusive and Quality Education’ for teachers, teacher faculty students, future teachers and other interested education professionals. The course is accessible free of charge. In addition, in 2021, UNICEF, UNESCO, ILO and United Nations Volunteers (UNV) launched a project entitled ‘Reimagining Education for Marginalised Girls and Boys during and post COVID-19 in Bosnia and Herzegovina’, which supported gender responsive approaches to address learning losses and to prevent dropouts, particularly amongst marginalized groups. The project also offered support to the teaching profession, the development of skills for employability and recognition of connectivity as an essential component to the right to education (UNESCO, 2021). In terms of providing support to the teaching profession, project activities involved developing and providing technical standards for e-learning and training teachers to enhance their digital skills in managing electronic platforms and e-teaching tools. The project also provided training on “Digital TVET: Modular content creation and e-pedagogy” to teachers and trainers of selected professions and (T)VET schools. It was expected to be offered to representatives of pedagogical institutes in order to mainstream e-learning and e-pedagogy in teacher training activities.

## ▶ 8. Long-term projections

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### 8.1. State-level initiatives

The Bosnia and Herzegovina Ministry of Civil Affairs prepared a working document entitled 'Priorities in Integrating Entrepreneurial and Digital Competence into Education Systems in Bosnia and Herzegovina 2019–2030'. The document aims to strategically integrate digital skills and competences in formal education in line with the European Digital Competence Framework (DigComp). The key components of the DigComp are information and data literacy; communication and collaboration; digital content creation; safety; and problem solving. Some of the priorities of the document include developing a web platform to support co-development of digital resources and exchange of practice and commencing online teacher training for a cross-curricular approach in key digital competences. Once the working document is adopted, it would then be implemented through various policies and at different education governance levels (ETF, 2020).

The Directorate for Economic Planning prepared the Economic Reform Programme 2021–2023 (Bosnia and Herzegovina Directorate for Economic Planning, 2021) to address, among many socio-economic reform priorities, "improving the link between education and the labour market" (p. 72). In Republika Srpska specifically, the measure embraces numerous activities, such as improving working conditions in schools; modernizing the teaching process in primary education; improving the quality of textbooks and other teaching aids in accordance with modernized curricula; continuing a project ("one pupil – one iPad or computer) that aims to equip schools with modern equipment and communication tools; and encouraging lifelong learning.

### 8.2. Strategic framework in Republika Srpska

In Republika Srpska, the Education Development Strategy for Republika Srpska for the Period 2016–2021 (Government of Republika Srpska, 2016), prioritizes reducing drop-out rates and increasing the quality of education, including by aligning the professional development of teachers in pre-service and in-service with competency standards, providing in-service training to support application of modern teaching methods and ICT in teaching and learning and developing a database of teachers that have undergone in-service training, among other things.

The development of a new strategy has been initiated by the tripartite council, which has organized 13 working groups, which are made up of representatives from the pedagogical institute, the Institute for Adult Learning, the Chamber of Commerce, the Union of Municipalities and Cities and educational institutions. The strategy will, among other things,

include digitizing teaching and learning materials and purchasing IT equipment for 500 schools (key informant interview, 2021).

The overall aim of the Ministry of Education and Culture is to

- ▶ implement an information system in all primary schools (already completed) and all secondary schools (currently implemented in 12 schools). Students' progress will be continuously monitored from pre-school to the end of high school;
- ▶ integrate educational tools and platforms and develop digital content in teaching and learning in order to modernize and raise the quality of the teaching process; and
- ▶ provide training on the use of technology in teaching and learning, which will be developed with the pedagogical institute (key informant interview, 2021).

#### Box 5. Digitalization in education in Republika Srpska

In Republika Srpska, teachers in primary and secondary schools have been participating in training on the use of digital technology in the teaching and learning process since 2012. The intensity of this training has greatly increased since the beginning of 2020, and is anticipated to be given on a continuous basis in order to prepare teachers and to provide them with new opportunities and better conditions in a changing education environment, including one that may involve working from home in specific circumstances. Insecurity and stress on the part of some teachers who lack experience with digital devices and tools for teaching and learning is expected.

Several laws and by-laws have been introduced to regulate management of electronic pedagogical documentation in schools and the implementation of e-enrolment in schools and distance learning. The Ministry of Education and Culture drafted a plan for the digitization of textbooks in cooperation with the Institute for Textbooks and Teaching Aids and has direct support from the telecom operator Mtel in improving internet connections in schools. The Ministry also keeps records of school equipment and the number of active users for the Microsoft Office 365 tools on the Ministry's platform, and conducts regular evaluations of virtual classrooms and student learning and behaviour at the end of each school year and semester.

**Source:** Interviews with the Ministry of Education and Culture and the pedagogical institute, 2021.

### 8.3. Strategic framework in the Federation of Bosnia and Herzegovina

In the Federation of Bosnia and Herzegovina, the recently adopted Federation of Bosnia and Herzegovina Development Strategy 2021–2027 (Government of the Federation of Bosnia and Herzegovina, 2020), proposes a strategic framework for long-term economic and social development. Education is a shared responsibility of the entity and the cantons, with the prevailing financial and human capacity embodied within cantonal ministries and agencies (pedagogical institutes). Nevertheless, cantonal governments must harmonize

their development efforts and projections with those established at the entity level. The development strategy aims to reduce drop-out rates as well as support educational institutions to provide more intensive ICT knowledge and use (table 10).

<b>Table 10. Federation of Bosnia and Herzegovina Framework indicators for primary and secondary education</b>		
<b>Baseline and target indicators (2027)</b>	<b>2018</b>	<b>2027</b>
<b>Improving quality and ensuring education (pre-schooling, primary and secondary levels) for all</b>		
BiH ranking in PISA	62 out of 79	40 out of 79
% drop-out primary education	0.09%	0.03%
% drop out secondary education	0.69%	0.3%
<b>Support to educational institutions to provide more intensive ICT knowledge and use</b>		
Number of classes in ICT	NA	NA
Number of computers at disposal for students (on 100)	5.7	20

**Source:** Government of the Federation of Bosnia and Herzegovina, 2020.

The strategy highlights the need for improving communication infrastructure (wireless communication) and for the provision of digital equipment to support learning and knowledge acquisition. Furthermore, it underlines the necessity of ensuring cooperation between the education system and the private sector/industry to support interactive education and the introduction of interactive digital content as well as adequate web platforms for teaching and learning. It proposes integration of science, technology, engineering and mathematics (STEM) subjects from primary to tertiary levels of education.

**Box 6. Education development in cantons Sarajevo, Tuzla and Zenica-doboj, 2021-2027**

- ▶ Canton Sarajevo (2020) plans to invest approximately EUR 8 million in primary and secondary education to improve the human and infrastructural capacities of educational institutions; modernize the curricula; establish support for talented students; develop a comprehensive system of evaluation, assessment and reporting on learning outcomes; and improve the system of initial education and CPD for teachers.
- ▶ The Tuzla Ministry of Education plans to invest approximately EUR 185,000 into ICT infrastructure – specifically, internet connectivity, platforms for teaching and learning and electronic class registers. The target indicator set for measurement is increasing the number of computers available to students (5 per 100 students in 2021; 10 per 100 students in 2027) (Tuzla Canton, 2021).
- ▶ The Zenica-doboj cantonal government foresees the following projects over next three years: providing CPD opportunities to teaching staff with the aim of updating their knowledge and developing additional skills; fully digitalizing (equipment) the educational sector to improve the quality of teaching in classrooms; and ensuring access to online platforms to support distance learning, which may be required in crisis situations. The government plans to invest approximately EUR 10 million in education, however, the financial support planned for particular projects and indicators (number of teachers trained, access to internet, computers and software to be procured) has not yet been determined (Zenica-doboj Canton, 2021).

**Source:** Strategic development documents and interviews with competent cantonal ministries, 2021.

## ► 9. Ways forward

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Primary and secondary education in Bosnia and Herzegovina was highly impacted during the COVID-19 pandemic by lack of prior investments in adequate technology-related tools and resources, such as digitized learning and teaching material, digital content and online learning platforms. The official statistics show that, on average, one computer was available to seven students in Republika Srpska and 21 students in the Federation of Bosnia and Herzegovina (Institute of Statistics of the Federation of Bosnia and Herzegovina, 2021a, 2021b; Republika Srpska Institute of Statistics, 2021a, 2021b). Local disparities in terms of available devices and internet connectivity were highly pronounced. During the pandemic, institutional support was primarily provided to the health and private sectors in order to protect the safety and health of the public as well as to ensure active employment. Lack of adequate attention to education left the sector vulnerable.

### 9.1. COVID-19 and the use of digital technologies in education

During school closures (March 2020 to September 2021), teachers were tasked with delivering distance and online teaching and learning. The lack of computers and digital devices in schools required teachers to respond to this challenge with resources and devices available in their households. Although some training was provided on the use of digital technologies for teaching and learning, particularly in Republika Srpska, teachers in both entities relied on the support of their peers, primarily teachers in informatics, to transition to virtual classrooms and distance teaching and learning. Lack of ICT skills was particularly pronounced among older teachers, with some teachers resisting to adopt digital technology in their practice. This resistance, however, diminished as it became necessary to adopt technology to continue learning (key informant interview, 2021).

Some studies indicate that distance learning created stress for teachers, students and parents (proMENTE and Step by Step, n.d.b). Other challenges included conducting student assessments, with average results of student achievement far exceeding multi-annual averages, which resulted in some highly demanded schools enrolling only those students with the absolute highest ratings; initial efforts of teachers to prepare and deliver education exceeded eight hours a day, but gradually decreased with time; and work-based learning in (T)VET was suspended, leaving students with no option to gain practical skills and competences, which impeded school-to-work transitions (key informant interview, 2021).

According to several key informants interviewed (2021), since the resumption of school teaching in September 2021, many teachers abandoned the available digital technologies for teaching and learning and returned to teaching methods used prior to the COVID-19 pandemic. This is somewhat different in Republika Srpska and in Canton Sarajevo, as they

already had some digital solutions in place. However, these solutions do not necessarily relate to the use of digital technologies in teaching and learning, but rather for management and monitoring purposes.

(T)VET was particularly impacted by the COVID-19 pandemic, which required many schools to completely suspend or postpone work-based learning and apprenticeships. Greater focus must be placed on embracing technology for teaching and learning in schools as well as on enhancing teachers' capacities in this regard. Theoretical components of T(V)ET programmes can be more easily covered through virtual and distance modalities, but more creativity is required of all education stakeholders, including teachers and trainers, in realizing the practical components, which may be easier for some vocations/occupations than others (ILO, UNESCO and World Bank, 2020).

## **9.2. Learning from school closures and the lockdown**

Following the lockdown and school closures, education sector stakeholders agreed that it was necessary to create a system and provide the capacities for the integration of digital technologies in teaching and learning, and to use the momentum and experiences gained during distance learning to institute changes. In Canton Sarajevo, for example, the government recently adopted changes in the regulatory framework that concerns primary and secondary education, introducing one-week obligatory online teaching and learning per semester. Several short-term objectives are expected to be achieved, namely teachers will implement a one-week online module to incentivise them to use digital technologies and tools throughout the school year; the government will undertake a mapping to support socially excluded students by provide them with devices and internet connectivity to access online learning, with the overall aim of reducing the drop-out rate, especially among students from remote areas (key informant interview, 2021).

## **9.3. Digitalization as an accelerator in the improvement of education quality**

Long-term projections and initiatives concerning education development in Bosnia and Herzegovina appear to be mixed. State-level authorities work to provide the framework for quality measures, such as the adoption of the CCC and occupational standards and the teaching of life skills. Authorities also emphasize improving school-to-work transitions and combatting skills mismatches in order to improve labour market efficiency. Republika Srpska's Education Development Strategy for the Period 2022–2030 aims to digitize teaching and learning materials, equip schools with IT equipment, introduce an information system and upgrade an existing online platform to support collaboration in digital content development. Only a few cantons in the Federation of Bosnia and Herzegovina – Canton Sarajevo, Zenica-doboj Canton, West-Herzegovina Canton and Bosnia-podrinje Canton – have taken significant steps forward to support digitalization in education, with strong support from the international community.



One of the main challenges to meaningful change and improved education quality is limited human capacities from relevant ministries, pedagogical institutes to teachers. Developing competences and skills through in-service training and professional development will be essential for delivering education priorities. The Education Management Information System (EMIS), which is intended for data collection and management in primary and secondary schools, was launched through a World Bank-funded project in 2004 (and is still active). EMIS aims to improve the system of education planning through the collection of educational data and information, and thereby make more efficient and effective the management of educational resources and contribute to the improvement of management capacities, procurement of equipment, teacher training and other education-related activities. However, the pedagogical institutes do not possess interactive databases on teachers' (self-) evaluation, organization of targeted trainings, including those that place emphasis on the use of digital technologies, and measurements of the effects and progress in teachers' skills and competences. A database on engaged teachers is also highly demanded by teachers' associations who do not have the capacity for its development.

Policy planning, effective management and digitalization efforts need to be informed by relevant data. As such, the education sector management system needs to support

- ▶ school development plans, based on self-evaluations conducted by principals and insights provided by parents and local education stakeholders (preferably the system would enable aggregation of data for planning purposes);
- ▶ monitoring teachers' skills and competences as well as mapping skills gaps and professional development needs; and
- ▶ preparing catalogues of trainings and accompanying training material by pedagogical institutes.

To further digitalization in education, the government needs to financially support the development of web platforms and spaces for teaching and learning; uploading and sharing teaching and learning material; exchanging best practices and collaborating; and developing digital content. Textbooks should also be digitized to support access to learning materials.

Training on the use of digital technologies for pedagogical purposes can work to build teachers' confidence in the use of technology as well as demonstrate opportunities available through technology to enhance teaching and learning.

#### 9.4. Investing in digital infrastructure

Governments across jurisdictions need to implement the measures outlined in their respective development strategies. Existing measures foresee procurement of computers. Internet connectivity, however, does not appear to be a high of a priority, even though it is increasingly being recognized as a right to education. These measures need to ensure that

the capacities of schools are strengthened so that digital technologies integrated effectively in teaching and learning processes. Maintaining and developing partnerships with telecom operators can work to ensure stable internet connections and can promote social corporate responsibility.

The digitalization of education provides a unique opportunity for governments to implement long-term strategies in relation to inclusion and reduction of drop-out rates, especially by making available to students digital devices and internet connectivity, which is especially relevant to those learners residing outside urban areas.

## ▶ References

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- Agency for Statistics of Bosnia and Herzegovina. 2021a. *First Release. Demography and Social Statistics. Primary Education in the School Year 2020/2021*.
- . 2021b. *Statistics for Sustainable Development Goals Bosnia and Herzegovina*.
- . 2019. *Use of Information and Communication Technologies in Bosnia and Herzegovina*. Demographic data.
- Bit Alliance. n.d. *CoderDojo Schools of Programming*. Sarajevo: Bit Alliance.
- Bosnia and Herzegovina Directorate for Economic Planning. 2021. *Economic Reform Programme 2021-2023*.
- British Council. 2020. *Best Practice Guide for 21st Century Schools*. Sarajevo: British Council.
- CEIC Data. 2020. "Bosnia and Herzegovina BA: School Enrollment: Secondary: Private: % of Total Secondary." London: CEIC Data.
- Canton Sarajevo. 2020. *Canton Sarajevo Development Strategy 2021–2027*. Sarajevo: Institute for Development Planning of the Canton Sarajevo.
- Education for Employment. 2020. *The EU Funded Project "Education for Employment, Bosnia and Herzegovina"*. Sarajevo: Education for Employment.
- European Commission. 2020. *Bosnia and Herzegovina 2020 Progress Report*. Brussels: European Commission.
- European Training Foundation (ETF). 2020. *Digital Skills and Online Learning in Bosnia and Herzegovina*. Digital Factsheet December 2019.
- Government of Republika Srpska. 2016. *Education Development Strategy for Republika Srpska for the Period 2016–2021*. Ministry of Education and Culture.
- Government of the Federation of Bosnia and Herzegovina. 2020. *Federation of Bosnia and Herzegovina Development Strategy 2021–2027*. Institute for Programming Development.
- Institute of Statistics of the Federation of Bosnia and Herzegovina. 2021a. *Primary Education 2020/2021. Statistical Bulletin 326*.
- . 2021b. *Secondary Education 2020/2021. Statistical Bulletin 330*.
- International Labour Organization (ILO). 2021. *Digitalization in Teaching and Education in Ethiopia, Kenya, Malawi, Rwanda and the United Republic of Tanzania*.
- ILO, UNESCO, and World Bank. 2020. *ILO-UNESCO-WBG Joint Survey on Technical and Vocational Education and Training (TVET) and Skills Development during the Time of COVID 19*. Geneva: ILO.
- Naletilić, Marija. 2019. "Bosnia and Herzegovina's 'CCC' focuses on key competences and learning outcomes." UNESCO-International Bureau of Education (IBE), 19 June 2019.

- Organisation for Economic Co-operation and Development (OECD). 2021. *Education at a Glance 2021: OECD Indicators*. Paris: OECD Publishing.
- . 2019. *Bosnia and Herzegovina – Programme for International Student Assessment (PISA) 2018 Results*. Country Note.
- proMENTE and Step by Step. n.d.a. *Analyses of Teacher Policies in Bosnia and Herzegovina*.
- proMENTE and Step by Step. n.d.b. *Procjena Online Nastave Tokom Pandemije COVID-19 od Strane Roditelja, Učenika i Nastavnika u BiH – Izvještaj*.
- Republika Srpska Institute of Statistics. 2021a. *Primary Education 2020/2021. Statistical Bulletin*.
- . 2021b. *Secondary Education 2020/2021. Statistical Bulletin*.
- Serdarevic, Nino, and Slavko Simic. 2017. *Work-based Learning Opportunities for the Youth in Bosnia and Herzegovina – Final Report*. European Bank for Reconstruction and Development
- Tuzla Canton. 2021. *Tuzla Canton Development Strategy for the Period 2021–2027*.
- UNESCO. 2021. "Reimagining Education for Marginalised Girls and Boys during and post COVID-19 in Bosnia and Herzegovina". 3 May 2021.
- UNESCO. 2020. "Teacher Task Force Calls to Support 63 million Teachers Touched by the COVID-19 Crisis". 27 March 2020.
- . UNESCO, ILO and UN Volunteers. 2021. *Analiza postojećih elemenata IKT infrastrukture za osnovno, srednje i visoko obrazovanje u administrativnim jedinicama Bosne i Hercegovine (unpublished)*.
- UNICEF and UNESCO. 2020. *Rapid Situation and Needs Assessment – Education in Bosnia and Herzegovina. Phase II*.
- United States Agency for International Development (USAID). 2017. *Brief Overview of Main Challenges in Primary and Secondary Education in BiH (Based on Desk Research)*. Sarajevo: Monitoring and Evaluation Support Activity (MEASURE-BiH).
- . 2018a. *Brief Assessment of Basic Education in Bosnia and Herzegovina – The Follow-on. Final Report*. Sarajevo: MEASURE-BiH.
- . 2018b. *National Youth Survey in Bosnia and Herzegovina 2018: Findings Report*. Sarajevo: MEASURE-BiH.
- Vujatovic, Dajana. 2021. "Korona Prepolovila Praksu Učenika." *Nezavisne Novine*, 19 May 2021.
- Westminster Foundation for Democracy (WFD). 2020. *Cost of Youth Emigration from Bosnia and Herzegovina*. London: WFD.
- World Bank. 2020. *Bosnia and Herzegovina – Human Capital Index 2020*.
- . 2019. *Bosnia and Herzegovina – Review of Efficiency of Services in Pre-University Education: Phase I – Stocktaking*.

Zenica-doboj Canton. 2021. *Zenica-doboj Canton Development Strategy for the Period 2021–2027*.

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