

Bosnia and Herzegovina

M.A. Branka Popić
M.A. Žaneta Džumhur

The Agency for Pre-Primary, Primary, and Secondary Education

Introduction

Overview of Education System

The education system in Bosnia and Herzegovina reflects the organization of the state, defined by the Constitution of Bosnia and Herzegovina, the Constitutions of the Entities and Cantons, and the Statute of the *Brčko* District of Bosnia and Herzegovina, which legally defines responsibilities with respect to education. Hence, *Republika Srpska*, 10 cantons in the Federation of Bosnia and Herzegovina, and *Brčko* District of Bosnia and Herzegovina have full and undivided responsibility for education.

There are 14 ministries of education in Bosnia and Herzegovina: 2 ministries at entity levels, 1 ministry in *Brčko* District, 10 ministries across the cantons, and the Ministry of Civil Affairs, which has an education sector with a coordinating role at the state level. Pedagogical institutes are established as independent education institutions or under the jurisdiction of the ministries in the canton/entity or district to which they belong; there are seven pedagogical institutes in Bosnia and Herzegovina.

According to law, the Agency for Pre-Primary, Primary, and Secondary Education operates at the state level. The Agency is responsible for establishing learning standards, evaluating results, and developing the Common Core Curriculum for preschool, primary and secondary education, and for other specialized activities regarding learning standards and evaluation of education quality provided by special laws and other regulations.^{1,2,3} The Agency is also responsible for conducting large-scale international education surveys.

Education in Bosnia and Herzegovina has four levels. However, to make these levels comparable to other countries' education systems, Bosnia and Herzegovina uses the International Standard Classification of Education (ISCED).

Primary education is compulsory, free of charge, and delivered through classrooms offering class teaching in Grades 1 through 3, class and subject teaching in Grades 4 through 6, and subject teaching in Grades 7 through 9. Compulsory primary education lasts for nine years, and some parts of the country include compulsory preschool education in the year prior to Grade 1. Children typically enroll in primary school in the year they turn 6; they must be 6 years old by September 1 to begin school in September. High school enrollment does not depend on passing an entrance exam and varies across the cantons, entities, and *Brčko* District. Some secondary schools (e.g., art

schools) require students to pass an entrance exam. Secondary education is optional except in Canton Sarajevo, where the first two years are compulsory.

Education is delivered in three official languages—Bosnian, Croatian and Serbian— depending on education needs and population structure. There are also private primary and secondary schools that deliver classes in English, French, Turkish, and German.

Preschool education (ISCED 0) is an integral part of the education system. It is regulated by the laws of the appropriate education authorities, which comply with the Framework Law on Preschool Education in Bosnia and Herzegovina (Official Gazette of Bosnia and Herzegovina No. 88/07). Preschool education is delivered at three levels:

- Nursery (ages 6 months to 3 years)
- Kindergarten (ages 3 to 6 years)
- Preschool preparatory program (150 to 180 hours in the year prior to starting Grade 1)

It is estimated that the coverage of preschool children in Bosnia and Herzegovina is around 14 percent, which is much lower than the European average. According to the Europe 2020 Strategy, at least 95 percent of children between the ages of 4 and 6 should participate in preschool education.

Although preschool education in the year prior to starting primary education is compulsory according to the Framework Law on Preschool Education in Bosnia and Herzegovina, compliance varies across education authorities. Some of them have not yet adopted their own laws in line with the framework, mainly due to financial reasons. In the Federation of Bosnia and Herzegovina— apart from Central Bosnia Canton, Herzegovina-Neretva Canton, West Herzegovina Canton and *Brčko* District, which have not passed legislation in line with the Framework Law—preschool education in the year prior to starting primary education is compulsory for all children. In *Republika Srpska*, preschool education in the year prior to starting primary education is optional.

Under the current law, primary education (ISCED 1 and 2) is compulsory and free. However, in most schools, parents buy textbooks and other school supplies. The only criterion for enrolling in first grade is that the child must turn 6 by September 1 of the year of enrollment.

A major reform in primary education took place in 2004 when compulsory education was extended from eight years to nine years. Secondary education (ISCED 3) is available in the form of general education (grammar school), vocational secondary education, arts education, and religious education. General secondary education, arts education, and religious education last for four years, while vocational secondary education, delivered through technical or vocational secondary schools, lasts for three or four years.

Use and Impact of TIMSS

In 2007, TIMSS was administered to eighth grade students, with analysis published in 2009.⁴ The material was made public, but aside from few enthusiastic teachers and individuals, education authorities have not used the results for shaping education policies. Also, there were no systematic

changes to student achievement in mathematics based on the TIMSS results. TIMSS 2019 marked the first time fourth grade students in Bosnia and Herzegovina participated in TIMSS.

The Mathematics Curriculum in Primary Grades

The Common Core Curriculum in Mathematics was developed by the Agency for Preprimary, Primary and Secondary Education based on learning outcomes, and it is available for all education authorities in Bosnia and Herzegovina.⁵ However, very few ministries have used the document to adapt the existing curriculum into one that focuses on learning outcomes rather than learning content.

The curriculum is delivered in three languages: Bosnian, Croatian, and Serbian. Primary education is taught in the official languages of the constituent peoples of Bosnia and Herzegovina, in both official Cyrillic and Latin scripts. Also, each canton, entity, and *Brčko* District can use specific curricula recommended and monitored by the appropriate ministry.

The curriculum is adapted by the Minister of Education upon proposal of the Pedagogical Institute, in accordance with the Common Core Curriculum referred to in Articles 42 and 43 of the Framework Law on Primary and Secondary Education in Bosnia and Herzegovina.⁶

The Common Core Curricula for Mathematics⁷ comprises the following domains:

- Sets, Numbers and Operations
- Algebra
- Geometry and Measurement
- Data and Probability

Exhibits 1 and 2 present the mathematics topics covered in curricula delivered in *Republika Srpska* and Sarajevo Canton, and in Croatian.

Exhibit 1: Mathematics Curricula for *Republika Srpska*⁸ and Sarajevo Canton⁹

Location	Topics
Republika Srpska	<ul style="list-style-type: none"> ▪ Numbers up to 1,000 ▪ Basic arithmetic operations in the set of natural numbers 110 to 1,000 ▪ Geometric figures and their relationships ▪ Fractions ▪ Measurement and units of measurement
Sarajevo Canton	<ul style="list-style-type: none"> ▪ Numbers up to 1,000 ▪ Adding and subtracting multiples of 100 ▪ Lines in a plane ▪ Multiplication and division up to 1,000 ▪ Division with remainder and multiplication and division without a times table ▪ Measurement

Exhibit 2: Mathematics Curriculum in Croatian¹⁰

Language	Topics
Croatian	<ul style="list-style-type: none"> ▪ Numbers ▪ The letter as a sign for the number ▪ Comparing numbers up to 1,000 ▪ Roman numerals up to 100 ▪ Writing two- and three-digit numbers ▪ Adding and subtracting multiples of 100 ▪ Adding and subtracting three-digit numbers and single-digit numbers ▪ Writing addition and subtraction of numbers up to 100 ▪ Writing addition and subtraction of numbers up to 1,000 ▪ Planes, geometric shapes in a plane ▪ Lines; half-length and length as parts of a line ▪ Length ▪ Multiplying sums ▪ Multiplying and dividing by 10 and 100 ▪ Multiplying two-digit numbers by one-digit numbers ▪ Writing multiplication of two-digit numbers by one-digit numbers ▪ Dividing sums ▪ Division ▪ Writing division of two- and three-digit numbers by one-digit numbers ▪ Order of operations, parentheses ▪ Problem solving by composing math expressions

The Science Curriculum in Primary Grades

The Common Core Curriculum for Science was developed by the Agency for Preprimary, Primary and Secondary Education based on learning outcomes. It is available to all education authorities in Bosnia and Herzegovina.¹¹ However, very few ministries have used the document to adapt the existing curricula into one that focuses on learning outcomes rather than learning content.

The Common Core Curriculum for Science¹² comprises the following domains:

- Earth
- Structure and Functional Connection Between Living and Nonliving Nature
- Structure of Matter and Changes in Energy
- Man as a Biological and Social Being

The science curricula in the Croatian language¹³ include the following topics:

- Cardinal points
- Position, horizon, vision
- Orientation in space according to objects in nature
- Site plan
- Geography—relief, maps

- Homeland features, lowland
- Waters of homeland
- Importance of water for human life
- Experiment—states of water: solid (ice), liquid, or gas (vapor)
- Adriatic Sea—sea, coast, island, and peninsula
- Homeland climate and weather characteristics
- Homeland economic activities
- Economy and environmental quality—environmental protection and preservation
- My county
- Present, past, and future—ancestors and descendants
- Timeline, key terms
- My homeland in the past
- Transportation
- Health
- Fauna and flora and their benefits

The science curricula in *Republika Srpska* includes the following general objectives:

- Expanding students' cognitive processes and experience about the nature and society of the wider environment and *Republika Srpska*
- Developing abstract thinking and ability to relate symbols to real objects
- Acquiring knowledge on the cause and effect relationships of natural resources and social processes
- Fostering students' interest in discovering phenomena in natural and social environment
- Developing positive student personality

The science curriculum in the Croatian language includes the following specific objectives:

- Teaching students to orient in space and time
- Introducing students to the characteristics and particularities of *Republika Srpska* relief
- Developing love and respect for their homeland and people who live there
- Instructing students to preserve *Republika Srpska's* natural resources and develop ideas for their exploitation and renewal
- Developing environmental awareness among students in respect to preserving the environment for new generations
- Teaching students to use information they receive for personal growth and wellbeing of society

- Developing decent and nonviolent communication as a major determinant of modern and humane society
- Creating conditions for further education and self-education

The science curricula in the Bosnian language¹⁴ include the following content areas:

- My Environment
- Nature and Natural Processes
 - Diversity of phenomena and processes in nature
 - Characteristics of living beings in relation to the environment
 - Living beings in annual and temporal changes
 - Human activities related to the seasons
 - Sunlight, water, and air as living conditions
 - Air movement, wind; wind speed and direction, local winds
 - Changes in matter properties by warming
 - Green plant; parts of the plant, the role of individual parts
 - The man as a natural and social being
 - Atmospheric precipitation
- Time and Space
 - Past, present, and future of the countryside
 - Homeland landmarks
 - Day and hour
 - Orientation on the map
 - Finding significant geographical features
- Society
 - Cultural, public, and education institutions in my region
 - Wider homeland—canton; natural features
 - Transport connectivity in wider homeland and in canton
 - Broader development: economy, tourism
 - Linking the economy to homeland characteristics
 - Natural geographic features of Bosnia and Herzegovina
- Hygiene
 - Leisure time and recreation as hygienic necessity
 - Pathogens—enemies of health
 - Culture of life
 - Pollution of soil, water, and air

Professional Development Requirements and Programs

Each appropriate education ministry provides a mandatory plan for implementing professional development programs in the next school year, on the basis of a proposal from the Pedagogical Institute, no later than June 30 of the current year. Education institutions then develop a plan to implement special professional development programs, upon the Council of Teachers or Council of Educators' expert team proposal. The Ministry of Education decides on mandatory professional development programs for all education staff upon the proposal of the Pedagogic Institute.

Every teacher is responsible for participating in professional development in accordance with the laws on primary education in Bosnia and Herzegovina (Exhibit 3). However, analyses indicate that these programs are outdated, do not follow education trends, and actually do not enable professional development. Therefore, this area needs to be revisited with the new rules on professional development and the promotion of educators, teachers, and professional associates in education institutions in accordance with the law. Regulations should also contain indicators for evaluating continuous professional development and elaborate on conditions and procedures for acquiring teaching titles. Generally, teachers lack adequate education and support to develop professional competencies. There is a need for common understanding of teaching competencies.

Lack of legislation, financial resources, facilities, and other resources prevent teachers in certain areas of Bosnia and Herzegovina from participating in professional development. On the other hand, in some areas, almost all teachers who meet education experience requirements receive the title of mentor or advisor. These circumstances demotivate high performing teachers, prevent effective use of human resources to improve the quality of education as a whole, and have a negative impact on the teaching profession.¹⁵

Exhibit 3: Articles of the Entity, Cantonal and Brčko District Laws Related to Teacher Professional Development in Primary Education

Law	Articles
128/5000 Republika Srpska Law on Primary Education, Official Gazette of Republika Srpska No. 74/08, 71/09, 104/11, and 33/14	Article 120 (1) For the purpose of acquiring new knowledge, training and professional development, the teaching staff, professional associates, and school directors are covered by mandatory trainings, professional trainings, and assessment programs. (2) Training programs shall be adopted by the Ministry in accordance with the principles and standards defined by this law.
Tuzla Canton Law on Primary Education (Official Gazette of Tuzla Canton, No. 6/04-310, 7/05-230, and 17/11-1844, 9/15	Article 76 Teachers have the right and obligation to prepare themselves for organizing and conducting direct educational work, monitoring, encouraging and assisting the development of students, professional development and performing other tasks set out in this Law and the Rules of Primary School. Professional assistance to teachers for individual and collective professional development is provided by the pedagogical institute. The catalog and the program of professional development of teachers are adopted by the pedagogical institute.

Law	Articles
Canton 10 Law on Primary Education (2004)	Article 72 Teachers and professional assistants have the right and duty to professional and pedagogical training. The program and organization of compulsory forms of training are adopted by the Ministry at the proposal of the pedagogical institute.
Sarajevo Canton Law on Primary Education (2004, 2006, 2011)	Article 78 Teachers, experts and other associates are obliged to develop professionally throughout their working life, with the aim of quality monitoring, encouraging and assisting in the education and development of students, and performing other tasks defined by the relevant regulations. The Rulebook on Vocational Training shall be adopted by the Minister.
Herzegovina-Neretva Canton Law on Primary Education "NN HNZ" 5/00, 4/04, 5/04, 1/14 SN HNK 5/00, 4/04, 5/04, 1/14	Article 90 Teachers and professional associates have the right and the obligation to continue professional development. The program and organization of compulsory forms of professional development are adopted by the Ministry. Article 90 Education staff have the right and obligation to continue professional development. The program and organization of compulsory forms of professional development are adopted by the Ministry.
Una - Sana Canton Law on Primary and General Secondary Education (2004)	Article 144 In order to acquire new knowledge, training, and professional development, teachers, professional assistants, and school directors are required to participate in professional trainings and assessment programs. The programs referred to in Paragraph 1 of this article shall be prescribed by the Minister.
Zenica-Doboj Canton Law on Primary School (2004)	Article 74 It is the right and obligation of teachers to organize and carry out direct educational work, and monitor, encourage, and assist the development of students, continually professionally refining and performing other tasks established by this law and the acts of the school.
Posavina Kanton Law on Primary Education (2004)	Article 76 Teachers and the associates have the right and the duty of professional and pedagogical training. The program and organization of compulsory forms of training are adopted by the Minister upon the proposal of the pedagogical institute.
Brčko District Law on Education in Primary and Secondary Schools in the Brčko District (2008)	Article 102 (Professional Development) (1) Teachers, professional associates, and teaching assistants shall be obligated to improve with the purpose of successful realization and improvement of education work in accordance with the professional development program. (2) Professional development program for teachers, professional associates, and teaching assistants shall be prescribed by the Head of the Department, upon the proposal of the pedagogical institution, and shall be delivered to schools no later than September 10 of the current year.

Professional development can take place in school or out of school. For example, teachers can present an experimental class to their peers, take part in scientific research, or share their experiences with different learning activities. They can also participate in out of school professional development programs approved by the appropriate ministries of education and pedagogical institutes.

Monitoring Student Progress in Mathematics and Science

Given the fragmented education system across 10 cantons, *Republika Srpska*, and *Brčko* District, national monitoring in mathematics and science is the responsibility of each relevant ministry of education. External evaluations have been carried out at the state level; namely, in 2011, students in Grades 3 through 6 of primary education participated in an assessment of student achievement in mathematics and science.

Methods for monitoring and evaluating student achievement at schools are similar across the cantons, *Republika Srpska*, and *Brčko* District. Student achievement is monitored and evaluated throughout school year. In most parts of Bosnia and Herzegovina, students in Grade 1 participate in a descriptive assessment, and students in Grades 2 through 8 participate in numerical assessments. In Grades 1 through 5, assessments take place approximately one month after the completion of each unit. The frequency of written and oral examinations as well as the evaluation of homework depend on the teachers at a given level of education. Teachers cooperate within Teacher Councils and share their evaluation practices. In addition to evaluating student achievement, teachers descriptively evaluate students' behavior. School grades are numeric with accompanying descriptors:

- 1: Insufficient
- 2: Sufficient
- 3: Good
- 4: Very good
- 5: Excellent

Descriptive grades for student behavior are:

- Exemplary
- Very good
- Good
- Satisfactory
- Not satisfactory

In most parts of Bosnia and Herzegovina, Grade 1 students are given descriptive grades with clear, written reasoning. At the elementary level, narrative descriptions are easier understood than numerical grades.

Special Initiatives in Mathematics and Science Education

Special initiatives in mathematics and science teaching focus on science, technology, engineering, and mathematics (STEM), while science and fine arts teaching use a cross-curricular approach to STEM.¹⁶ Initiatives for gifted students focus on their earlier completion of education and support for their participation in international competitions, innovation fairs, and other programs. As for gender differences, it is necessary to foster affirmation of female students in STEM and overcome preconceptions that certain professions are intended only for boys or girls. The birth rate declines noticeably in some regions, and there are more combined classes of lower grades in primary schools.

According to the Law on Primary Education in *Republika Srpska*, Article 48 schools are responsible for identifying talented students; organizing their education, monitoring, and encouragement; and providing additional teaching according to their preferences, abilities, and interests.¹⁷ The Minister of Education approves the curriculum for talented students and a rulebook that establishes criteria for selecting them. However, there is no evidence the article is fully respected and that programs for talented students are implemented. Some initiatives for highly talented students include extra preparations for their participation in municipal, regional, and state competitions. These preparations are not realized through the regular teaching process but take place through teachers' additional efforts to adapt the curriculum to the talented students' needs.

To support talented students in mathematics, the Council of Math Teachers in Sarajevo Canton has initiated the publication of a collection of math tasks used previously in primary school math competitions. The publication will support the teaching of talented students to prepare them for math competitions. Also, the Ministry of Education, Science and Youth of Sarajevo Canton, supported an initiative of the II Gymnasium in Sarajevo to organize additional work for talented students in mathematics. Teachers held extra mathematics classes on Saturdays for talented students from primary and high schools. These students later achieved remarkable results at competitions. The Ministry also supported the work of associations that organize classes for talented students.

Initiatives regarding gender and socioeconomic differences are not systematically regulated across the education sector in entities, cantons, or *Brčko* District.

Suggested Readings

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