BULGARIA

Iliana Tsvetkova
Democratic changes

- Bulgaria has been much affected by the so called Eastern European democratic reforms taking place since 1989.

- Bulgaria has made significant progress in its transition to a democratic society and a functioning market economy.
Education

- Education has not been a governmental priority since the beginning of the democratic changes.

- Teaching used to be a well paid profession
Teachers in the past

- Traditionally teachers were considered respectable persons

- Bulgarian people placed an important value on education
Teachers now

- Teachers are not as well respected any more

- The general opinion is that they are to blame for the recent decrease of the quality of education
The result...

- The two factors:
  - low salary
  - low respect

Lead to

less and less young people entering the teaching profession
Teacher preparation

- It is mainly university-based with a school-based practicum

- No induction in the teaching profession

- In-service teacher education has not changed a lot
School education in Bulgaria

- **Basic education**
  - primary school (Grades 1 to 4)
  - pre-secondary/middle school (Grades 5 to 8)

- **Secondary education** (Grades 9 to 12)
Mathematics teachers

- **Primary school** (Grades 1 to 4)
  - one teacher for all subjects, including mathematics
  - prepared at the pedagogical faculties at the universities

- **Middle&Secondary school** (after Grade 5)
  - teacher specifically prepared to teach mathematics
Organization of the instructions

- One mathematics teacher instructs the same group of students for the entire middle school education (from Grade 5 to Grade 8)

- One mathematics teacher teaches the students from Grades 9 to Grade 12
Teacher preparation institutions

- Maths teachers are expected to have a strong background in mathematics

- Educated at university departments of mathematics

- Teachers are prepared to teach an additional subject (e.g. informatics)
Teacher preparation courses

- Teacher preparation in Bulgaria is subject-matter oriented

- Preparation in departments of mathematics at the universities

- Courses in general pedagogy and psychology are taught by lecturers from departments of education
Finishing preparation program for secondary math teacher

- Pass all university exams on
  - Mathematics
  - Mathematics pedagogy
  - General pedagogy
- Pass the school-based practicum, and the required final exam
- Graduates receive
  - Bachelor’s degree
  - Teaching certificate
- No additional formal training is required
Mathematics curriculum and programs

- The curriculum in mathematics is centralized - determined by the Ministry of Education, Youth and Science
- Mathematics is a compulsory subject from grade 1 to the end of the secondary education

\[
\frac{\text{Average mathematics instructional time}}{\text{Total instructional time in the school education}} = 12\%
\]

(TIMSS 2007)
On national level, there are three educational content standards on mathematics:

- For primary school (end of grade 4)
- For pre-secondary school (end of grade 8)
- For secondary school (end of grade 12)

They describe what pupils are expected to know by the end of each school level.
There are national programs of the study on mathematics for each grade.

They describe in details the topics that are taught grade by grade.

Teachers have to keep to these programs.
National assessment

- In mathematics it takes place at the end of the school year (May) on three levels:
  - End of grade 4
  - End of grade 7
  - End of grade 12 (matura)

- National tests are prepared by the Ministry of Education
The role of teacher unions

- There is a teacher union, but it does not have much power and influence.

- It does not have special programs for supporting mathematics teaching.
Entry into teaching mathematics

- There is not an induction program

- Teachers are hired by the school principal
Learning materials

Teachers are expected to use the following learning materials:

- National content standards
- National programs of the study
- National textbooks (some of them have supplement for teachers)
- National tests

Any other subsidiary materials that can be found in the stores
Mathematics curriculum
grades 1 – 4

- Arithmetic of natural numbers
- Basic knowledge about: lines, angles, triangle, square, rectangle, circle
- Measure of length, weight, time, angles
- Perimeter of triangle, square, rectangle
- Area of rectangle
Mathematics curriculum
grade 5

- Fractions and decimals, including arithmetic operations
- Quotient and percent
- Divisibility (prime numbers; divisibility by 2, 3, and 5; common deviser and multiple)
- Basic knowledge about cube and parallelepiped, including surface area and volume
- Area of triangle, parallelogram, trapezium
Mathematics curriculum
grade 6

- Negative numbers
- Rational numbers
- Number to the power of integer number
- Basic knowledge about prism, pyramid, cylinder, cone, and sphere including surface area and volume
- Polygon, regular polygon, including perimeter and area
- Data representation (graphs, tables, diagrams)
- Basic algebraic transformations with polynomials
Mathematics curriculum
grade 7

- Basic algebraic transformations with polynomials. Using formulas
- Linear equations and inequalities
- Axiomatic approach to geometry
- Parallel lines and properties of the angles when intersecting them, sum of the angles in a triangle
- Congruent triangles
- Geometrical properties of parallelogram and trapezium
Mathematics curriculum
grade 8

- Square root
- Quadratic equations
- Simultaneous linear equations and inequalities
- Notion about function. Linear function
- Vectors, center of gravity and orthocenter of a triangle
- Isometries (line and centre symmetry, rotation, translation)
- Circle, angles connected with a circle
- Inscribed polygon, inscribed circle
Mathematics curriculum
grade 9

- Rational algebraic expressions and equations
- Simultaneous quadratic equations
- Irrational algebraic expressions and equations
- Proportional segments
- Thales theorem
- Similar triangles
- Right angled triangle. Pythagoras
- Trigonometric function in a right angled triangle
Mathematics curriculum grade 10

- Quadratic function
- Rational inequalities
- Exponent and logarithm
- Trigonometric functions in \([0^\circ, 180^\circ]\)
- Sine and Cosine theorems
- Area of polygon and circle
- Basics of combinatorics
- Elementary probability
Mathematics curriculum
grade 11

- Number sequence. Progressions
- Descriptive statistics
- Trigonometric functions
- 3-D geometry - lines and planes in the space
- Parallelepiped, prism, pyramid (including surface area and volume)
Mathematics curriculum
grade 12

- 3-D geometry - cylinder, cone and sphere (including surface area and volume)
- Structure of the real numbers, complex numbers
- Random variables, distributions and densities
- Connections between Equations, inequalities and functions
- Analytic geometry
Mathematics textbooks

- 2 - 3 alternative textbooks for each grade
  - approved by the Ministry of Education
  - follow the topics in the corresponding program of the study for the grade

- Each school chooses the textbooks for its pupils in the beginning of the school year
National tests

- National assessments
  - end of grade 4 and 7
  - test with multiple choice items

- Matura
  - end of grade 12
  - Test including multiple choice items and open ended items
Mathematics journals and publications

- Three journals publish methodological materials to help math teachers

- The Ministry of Education recommends some of the teaching materials (either methodological or mathematical) published by official publishing houses
OTL mathematics on the first five years of teaching

- There are few opportunities for in-service education
- Professional teaching specialization
- Short-term training courses for acquiring and improving professional teaching skills
In Bulgaria there are five nationally recognized professional degrees.

- The highest is the first degree; the lowest is the fifth degree.
- There are certain requirements for obtaining each of these degrees.
- Obtaining a degree is not obligatory. It is up to the teacher.
For the beginning teachers (the first five years)

- To apply for the fifth degree (the lowest one) a teacher needs to have at least four consecutive years teaching experience

- Therefore, this is the only degree that beginning teachers may obtain
Thank you for your attention!