Türkiye

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Introduction

Overview of Education System

In Türkiye, the Ministry of National Education (MoNE) is responsible for planning, programming, executing, monitoring, inspecting, and assessing all education and training facilities.[1] The national education system, determined by National Education Basic Law No. 1739,[2] consists of two main parts, namely, formal education and nonformal education. Formal education is the regular education conducted within a school for individuals in a certain age group and at the same level under programs developed in accordance with the purpose. Formal education includes preprimary school, primary school, lower secondary school, upper secondary school, and higher education institutions.[3]

Preprimary education institutions can be opened as independent kindergartens. They also can be opened with the approval of the state territory as practice classes in vocational and technical secondary education institutions that have child development and education fields, as well as nursery classes in other educational institutions.

The compulsory primary education age covers children from 6 to 14 years old. Children who are 6 years old by December 31 (i.e., children who are 5 years 9 months by the end of September of the year of registration) are enrolled in Grade 1 of primary education.

The objectives of primary education are to ensure that every Turkish child acquires the necessary knowledge, skills, behavior, and habits to become a good citizen and is raised in accordance with the concept of national morals, and that the child is prepared for life and for the next level of education in accordance with the child's interests, talents, and capabilities.

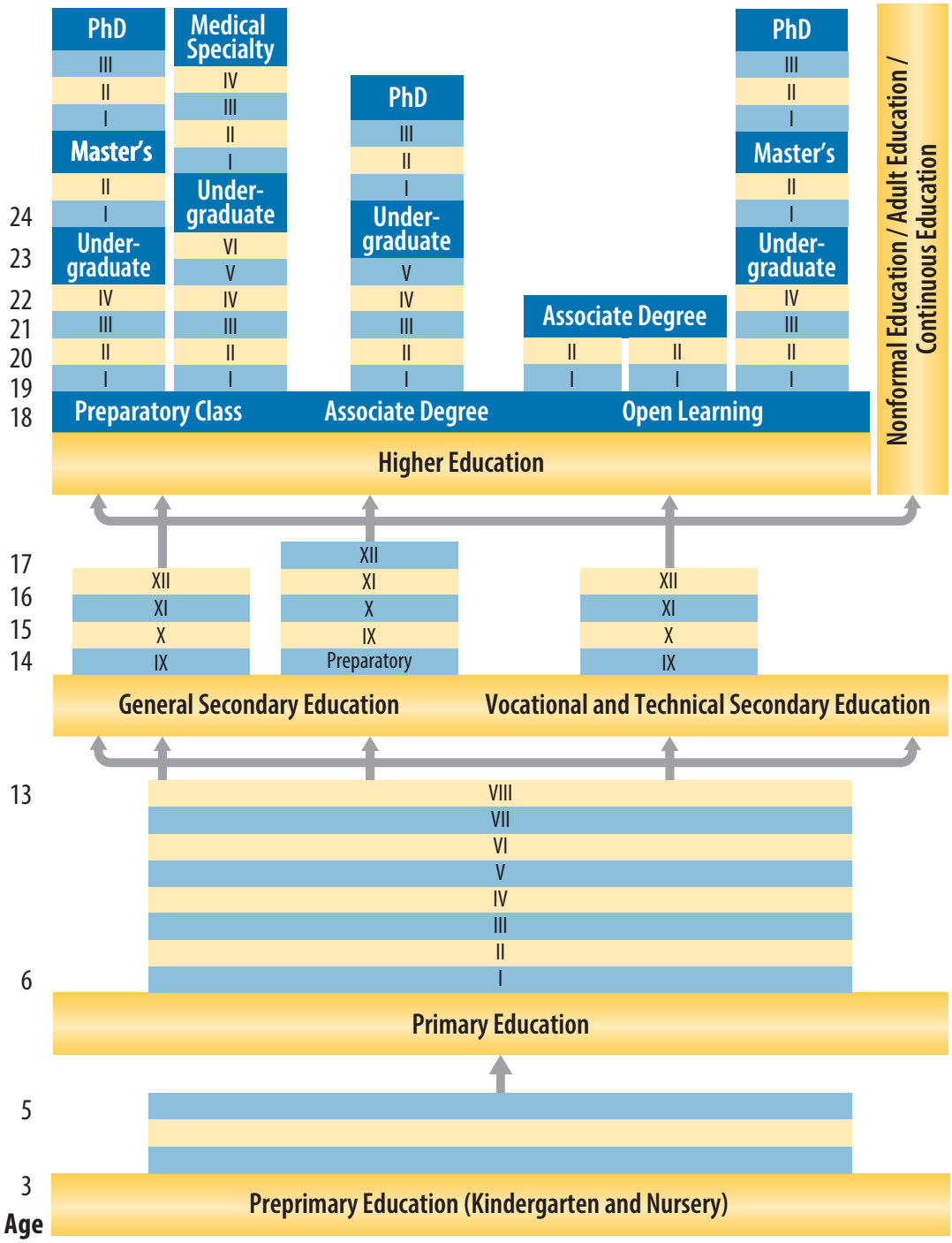
Upper secondary education includes all the teaching institutions, general vocational, and technical education institutions with at least 4-year compulsory formal or nonformal education, based on completing primary and lower secondary education. The aims and duties of secondary education, in accordance with the general purposes and basic principles of national education, are as follows:

- enable all students to be aware of problems in society and have the power to look for solutions and contribute to the country's economic, social, and cultural development and strength

- prepare students for higher education or for life and job fields in accordance with their interests, aptitude, and abilities, striking a balance between students' expectations and abilities and the needs of society[4]

According to the Turkish Constitution, Turkish is the official language of the country. The language of instruction in schools must be Turkish. Exhibit 1 presents the general structure of the Turkish education system.[5]

Exhibit 1: General Structure of the Turkish Education System



Use and Impact of TIMSS

Türkiye participated in TIMSS 1999 and TIMSS 2007 at the eighth-grade level, and in TIMSS 2011 and TIMSS 2015 at both the fourth- and eighth-grade levels. Additionally, Türkiye participated in TIMSS 2019 and TIMSS 2023 at both the fifth- and eighth-grade levels. TIMSS is one of several international indicators used to monitor education in Türkiye. Educators in Türkiye consider their students' scores and rankings on international assessments to be important reflections of their teaching. In this way, TIMSS and other international research projects affect curriculum development and education reforms indirectly.[6]

The Mathematics Curriculum in Primary and Lower Secondary Grades

The vision of the current primary mathematics curriculum emphasizes educating students in the use of mathematics in their lives to solve problems and to share solutions and ideas. In this context, the main purpose of the mathematics curriculum at the primary and lower secondary levels is to educate students so they can use mathematical literacy skills, understand mathematical concepts, and use these concepts in daily life. In addition, curriculum topics are prepared according to the developmental level of students in every grade. These strategies are intended to enhance students' active participation in learning mathematics and its principles.[7]

There are five mathematics learning areas in Grades 5 to 8 (lower secondary school): Numbers and Operations, Algebra, Geometry and Measurement, Data Processing, and Probability. Exhibit 2 presents these learning areas and their respective content across grades.[8]

Exhibit 2: Mathematics Curriculum Learning Areas and Content, Grades 5 to 8

Learning Area	Grade 5 Content	Grade 6 Content	Grade 7 Content	Grade 8 Content
Numbers and Operations	• natural numbers and operations with them • fractions and operations with them • decimal notation • percentages	• operations with natural numbers • operations with fractions • decimal notation • multipliers • sets • integers • ratios	• operations using integers and rational numbers • percentages • rates and ratios	• multipliers • exponents • square roots • real numbers

Exhibit 2: Mathematics Curriculum Learning Areas and Content, Grades 5 to 8 (Continued)

Learning Area	Grade 5 Content	Grade 6 Content	Grade 7 Content	Grade 8 Content
Algebra		• algebraic expressions • writing an algebraic expression suitable for a verbally given situation and a verbal situation for a given algebraic expression	• algebraic expressions • patterns and relations • equality and equations	• linear equations • algebraic expressions and identities • inequalities
Geometry and Measurement	• basic geometric concepts and drawings • triangles, quadrangles, geometric objects • measuring area, time, and liquids	• angles, geometric objects, circles • measuring angles, area, time, and liquids	• lines and angles, polygons, circles • area of a circle • different aspects of objects	• triangles, geometric objects, geometric transformations, and projection • congruency • similarity
Data Processing	• creating research questions • data collection • using a frequency table and column chart and interpreting data	• creating research questions for two sets of data • showing the data of two groups in a column chart • data analysis; smallest value, largest value, span, arithmetic mean	• data analysis; line graphs, circle graphs, median, mode	• data analysis • interpreting line and column charts of up to three data groups
Probability				• probability of simple events • determining the possible states of an event • events involving more, less, or equal probability • calculating the probability of a simple event

The Science Curriculum in Primary and Lower Secondary Grades

In Grades 1 to 3, primary school teachers teach a course called Knowledge of Life. However, the science content of this course is limited because teaching science is not the course's main objective. In Grades 3 and 4, another course, Sciences, is taught and is compulsory. Primary school teachers teach Sciences in Grades 3 and 4, and science specialist teachers teach the course in Grades 5 to 8, where Sciences is also compulsory.

There are four learning areas in the science curriculum for Grades 3 to 8: Earth and the Universe, Life and Living Beings, Physical Phenomena, and Matter and Its Nature. Each of the four science learning areas includes several units that are developed in a spiral mode throughout the grades. Exhibit 3 presents a summary of the science and technology content areas and their units in Grades 4 to 8.[9]

Exhibit 3: Science Curriculum Learning Areas and Content, Grades 4 to 8

Learning Area	Grade 4 Content	Grade 5 Content	Grade 6 Content	Grade 7 Content	Grade 8 Content
Earth and the Universe	• Earth's crust and motions of Earth	• the Sun, Earth, and the Moon	• the solar system and eclipses	• the solar system and beyond	• seasons and climate
Life and Living Beings	• foods, humans, and the environment	• world of living • humans and the environment	• systems in the body • systems in the body and their health	• cells and cell divisions • living things: reproduction • growth and development	• DNA and genetic code • energy conversions and environmental science
Physical Phenomena	• effects of forces, light, and sound • technology • simple electric circuits	• measuring force and friction • diffusion of light • components of electric circuits	• forces and motion • sound and its properties • conduction of electricity	• forces and energy • interaction of light and matter • electric circuits	• pressure • simple machines • electric charges and electric energy
Matter and Its Nature	• properties of matter	• matter and change	• matter and heat	• pure substances and mixtures	• matter and industry

The basic aims of the science curriculum are as follows:

- gain basic knowledge of astronomy, biology, physics, chemistry, Earth, environmental sciences, and science and engineering applications
- adopt scientific process and research skills in the process of discovering nature, understand the relationship between humans and the environment, and solve problems encountered in this area

- raise awareness in interactions between individuals, the environment, and society, and develop awareness of sustainable development regarding society, the economy, and natural resources
- encourage students to take responsibility for daily life problems and use information about science, scientific process skills, and other life skills
- develop career awareness and entrepreneurship skills related to science
- help students understand how scientists obtain scientific knowledge and use it in research
- arouse interest and curiosity in events occurring in nature and students' immediate surroundings
- emphasize the importance of safety in scientific studies
- develop the ability to reason, scientific thinking habits, and decision-making skills using sociological issues
- ensure the adoption of universal moral values, national and cultural values, and ethical scientific principles

Teacher Professional Development Requirements and Programs

In Türkiye, MoNE's General Directorate of Teacher Training and Development is responsible for the professional development of teachers, which is planned based on needs analyses that consider requests from other directorates, teachers, school administrators, and emerging developments in the field. These analyses determine the areas for professional development, aligning with MoNE's policies, priorities, and overarching policy documents.

The prepared Professional Development Plan is announced to teachers and school administrators through MoNE's website and sent to schools via official correspondence. Teachers and school administrators can apply for the desired training programs online, choosing between face-to-face or distance learning methods. Teachers selected among the applications participate in professional development training and receive a certificate upon completion.

These training programs, developed by MoNE, aim to inform teachers about new approaches, methods, and techniques used in education and training to support their professional and personal development; improve knowledge and skills in measurement and evaluation; increase proficiency in professional knowledge and skills; and develop skills in the use of new digital technologies and technological environments.

Monitoring Student Progress in Mathematics and Science

MoNE is responsible for evaluating and assessing student performance in Türkiye. The Assessment and Evaluation Regulation issued by MoNE on September 9, 2023, delineates the methodologies and protocols governing centralized system examinations administered by MoNE, as well as national/international monitoring surveys. It also outlines procedures for

tracking academic and social development in preschool and primary education institutions, along with standardized written examination practices in secondary and higher education institutions. Furthermore, the regulation specifies the roles, authorities, and responsibilities of measurement and evaluation center directorates.[10]

The only national examination with consequences for individual students who study in schools affiliated with the Directorate of Basic Education is the high school entrance exam, which is given to eighth-grade students transitioning from lower secondary to upper secondary education. In order to monitor student progress, the following monitoring studies are implemented by MoNE according to the Assessment and Evaluation Regulation: National Assessment of Student Learning (ABİDE), school-based monitoring, and common written examinations.

The National Assessment of Student Learning (ABİDE) is a research study that monitors and evaluates the levels of students' acquisition of high-level thinking skills such as critical thinking, problem-solving, reasoning, and interpretation through real-life scenarios. This assessment is conducted at the provincial level, aiming to compare and evaluate students' proficiency levels over the years. It is conducted for mathematics, science, and the Turkish language for fourth- and eighth-grade students; and mathematics, Turkish language and literature, physics, chemistry, and biology for 10th-grade students. School-based monitoring is a curriculum-based study that monitors students' knowledge and skills acquired in specified subjects at predetermined grade levels, and feedback is provided to both students and teachers.[11]

References

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