

The Kingdom of Morocco



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Introduction

Overview of the Education System

The Kingdom of Morocco's 2011 Constitution specifies that the state, public institutions, local authorities and families should work toward facilitating citizens', and in particular children's, equal access to education, vocational training, physical education, and art.¹

A number of institutions, statutes, decrees, and circulars regulate education in the country. The Ministry of National Education, Higher Education, Staff Training, and Scientific Research oversees all areas related to the provision of both public and private education. The ministry is run according to the National Charter for Education and Training adopted in 1999, which recommended decentralized education delivery and increased responsiveness to local needs and realities.² Accordingly, regional Academies for Education and Training in each of the 16 administrative regions of Morocco have been charged with, among other things, developing up to 30 percent of the curriculum for their respective regions to help ensure that these curricula are locally relevant. In addition, regional *Délégations* are charged with, among other things, providing services for education in their respective regions.

The implementation of the National Charter for Education and Training has resulted in renewing curricula and textbook assessment and evaluation. The National Directorate of Curricula develops the core curriculum, establishes pedagogical standards, and adopts textbooks according to the guidelines and specifications established by the ministry. These guidelines are used as a frame of reference in teacher training and the development of teaching materials.

The National Education Emergency Program was designed by the Moroccan Government with the support of development partners. The four-year program covers the period of 2009–12 and its purpose has been to accelerate the

implementation of reform resulting from the National Charter of Education and Training. The specific objective of the program is to make education available to all and improve the quality of teaching and performance of the education system. The program supports the efforts of the Moroccan Government in skills development and poverty reduction under the National Human Development Initiative, as well as helping the country make significant strides toward meeting some of its UN Millennium Development Goals by 2015.³

Morocco's education system is divided into preprimary, primary, secondary, and tertiary education.

The National Charter of Education and Training mandates that preprimary education be available to all children between four and six years of age. Preprimary education in Morocco is provided through two types of schools: kindergartens and Quranic schools. Kindergartens, which are generally privately owned, provide education primarily in cities and towns. Quranic schools prepare children for primary education by focusing on basic literacy and numeracy skills and have always been at the forefront in the battle against illiteracy, particularly in remote areas of the country.⁴ Preprimary teachers develop their own curriculum according to a set of principles established by the Ministry of Education that take into account students' physical and cognitive development, needs, interests, and abilities.⁵ Attempts have been made within the framework of the National Education Emergency Program to enable primary schools to host preprimary classes with the intention that this model could be expanded in the future.

Children generally attend primary school from ages 6–12. Over the last ten years, Morocco's gross enrollment rates within primary education have been consistently rising and dropout rates have been falling. According to the National Education Emergency Support Program, many school-age children in impoverished families stay out of school due to the high cost of schooling (e.g., expenses relating to textbooks, school materials, and other incidentals), and are therefore bound to work to supplement the family income.⁶ To combat educational exclusion, Morocco's government launched *Tayssir*, a conditional cash transfer program whose aim is to encourage higher primary school enrollment. *Tayssir* grants a stipend to impoverished families who enroll and keep their children in school. At the end of primary school, students must fulfill the requirements of the school leaving qualification, *Certificat d'Etudes Primaires*, to be eligible for admission to lower secondary schools.

Lower secondary school in Morocco is also compulsory. This stage lasts for three years (Grades 7–9) and is attended by children ages 13–15.⁷

Upper secondary school also lasts three years. During the first year, all students follow a common core curriculum in arts or science and technology. Following the first year, students are streamed into one of two tracks: the general and technical track, leading to the Baccalaureate, or the vocational track, leading to professional qualifications. Within the general track, first-year students study arts, science, technology, mathematics, or Islamic disciplines. Second-year students study Earth and life sciences, physics, agricultural science, technical studies, or one of two mathematics tracks (Track A in which students study Earth and life sciences, or Track B in which students study engineering sciences).

Higher education in Morocco is offered at 16 universities (*grandes écoles*) and institutes, such as Hassan II Institute of Agronomy and Veterinary Sciences. Admission is open to students who have attained the upper secondary school Baccalaureate. Many higher education institutions also require that students have minimum grades in their proposed majors and pass an entrance examination.

Languages of Instruction

According to the 2011 Constitution, Arabic and Amazigh are the two official languages of the Kingdom of Morocco. Arabic is the medium of instruction for mathematics and science at the fourth and eighth grades.

The 1999 Charter for Education and Training stipulated that an open approach toward the Amazigh language would be endorsed.⁸ To this end, the Royal Institute for the Amazigh Culture (IRCAM), which was created in 2001 under provisions of the Royal Dahir, has been designing various teaching materials and teacher training programs in Amazigh jointly with the Ministry of Education. Some 12,000 teachers, 300 inspectors, and 558 school principals have so far received Amazigh teacher training through IRCAM. The inclusion of Amazigh in the school curriculum was a remarkable event within Morocco's educational spheres.

The 2011 Constitution supports learning foreign languages and stipulates that the most widely used foreign languages shall be taught as means of communication, integration, and interaction with other societies in the spirit of openness to other cultures and civilizations.⁹ French, which is taught in kindergartens and the first and second grades of public primary schools, is often used as the language of government, diplomacy, technology, and economics

in Morocco. French also is the medium of instruction for some technical disciplines in upper secondary schools, as well as for higher education institutes and engineering schools. English also is gaining ground as the most popular foreign second language and is used as the medium of instruction in a small number of higher education institutes and engineering schools. Spanish, Italian, and German also are taught as foreign languages beginning in Grade 9.

Mathematics Curriculum in Primary and Lower Secondary Grades

Currently in Morocco, a new primary school curriculum is under development, which is aligned with the vision of the National Reform for Education and Training and in compliance with the National Education Emergency Support Program. The curriculum also reflects the newly adopted competency-based approach and its offshoot, the pedagogy of integration, which emphasizes the need to train students to face the challenges of globalization and technological development.¹⁰ Accordingly, as was the case with the 2002 mathematics and science curriculum, the new curriculum draws upon the tenets of the competency- and value-based approaches, as well as the innovative active learning-oriented pedagogical model.¹¹

The mathematics curriculum content for both grades reflects continuity between primary and secondary education, enabling students to strengthen previously learned concepts and skills while developing others. Generally, the curriculum enables students to strengthen their mathematical reasoning. Specifically, the fourth grade mathematics curriculum aims to enable students to do the following:

- ◆ Enjoy learning through practical activities;
- ◆ Gain confidence and competence in using numbers and number systems;
- ◆ Develop problem-solving abilities;
- ◆ Explore shape and space within a range of meaningful contexts;
- ◆ Develop measuring skills in a range of contexts; and
- ◆ Develop insights into the importance of mathematics in a growing number of occupations and in daily life.

The fourth grade syllabus for mathematics is organized around the following areas: ¹²

- ◆ Place value—Numbers up to 999,999 (addition, subtraction, multiplication, division, and using written and mental calculation strategies).
- ◆ Measurement—Length, weight, time, capacity, and volume.
- ◆ Geometry—Basic geometric patterns, such as rectangular and square symmetry, rotational symmetry, and translations.

The eighth grade mathematics curriculum aims to enable learners to do the following:

- ◆ Acquire and apply knowledge and skills pertaining to number, measurement, space, and statistics necessary for use in everyday mathematical situations;
- ◆ Acquire mathematical knowledge and skills necessary for further mathematics studies;
- ◆ Develop the ability to make logical deductions and inductions through problem solving;
- ◆ Acquire oral and written language skills to clearly communicate mathematical ideas and arguments;
- ◆ Develop a positive attitude toward, confidence in, and enjoyment of mathematics;
- ◆ Develop the ability to appropriately monitor and evaluate one's own progress; and
- ◆ Develop the skills necessary to plan and carry out a project.

The content of the mathematics syllabus for the eighth grade includes the following components: ¹³

- ◆ Number—Numerical operations on rational numbers, powers of real numbers, and solving equations and formulas for a given variable.
- ◆ Statistics.
- ◆ Geometry—Axial symmetry, the Pythagorean theorem, the cosine of an angle, vector equality, and vector addition.

Science Curriculum in Primary and Lower Secondary Grades

As stated above, Morocco's 2002 curriculum draws upon the tenets of the competency- and value-based approaches, as well as the innovative active learning-oriented pedagogical model. The science curriculum content for both fourth and eighth grades reflects continuity between primary and secondary education, enabling students to strengthen previously learned concepts and skills while developing others.

The goals of the fourth grade science curriculum are as follows: ¹⁴

- ◆ Build upon interest in and stimulate curiosity about our environment through high-quality science learning experiences;
- ◆ Gain deeper personal insights and, by implication, gain aesthetic appreciation of the natural world;
- ◆ Develop scientific inquiry skills, attitudes, and values;
- ◆ Develop the ability to use scientific knowledge and methods in making personal decisions; and
- ◆ Maximize understanding of the influence of science and technology on our environment and our lives.

The syllabus for fourth grade science includes the following topics:

- ◆ Types of gases and common properties of gases;
- ◆ Nutrition, balanced meals, and principles of digestion;
- ◆ Locomotion, especially adaptations of animals living in water;
- ◆ Measuring matter;
- ◆ Physical and chemical changes;
- ◆ The life cycle, with insects and plants as models;
- ◆ Classification of animals;
- ◆ Classification of flowering plant families;
- ◆ Water and the environment, water use and conservation, pollution, and organisms in nature; and
- ◆ Electricity and how electric circuits work.

The eighth grade science curriculum is designed to enable students to gain awareness and understanding of the skills needed in science. The distinguishing

feature of the syllabus for this grade is that it focuses equally on the acquisition of scientific knowledge and thinking processes. It is organized around the following areas: ¹⁵

- ◆ The theory of plate tectonics, evidence supporting the movement of continents, geological phenomena, earthquakes, volcanoes, tectonic processes resulting in the formation of rocks and mountains, and the Earth system;
- ◆ Animal reproduction, fertilization, continual development, and the concept of developmental stages;
- ◆ Plant reproduction and its processes;
- ◆ Reproductive systems and their functions, pregnancy, delivery, breast feeding, and birth control;
- ◆ Heredity, hereditary characteristics and diseases, and the role of reproductive cells in the transmission of hereditary characteristics;
- ◆ The genetic ill-effects of intermarriage among blood relatives; and
- ◆ Cloning.

Instruction for Mathematics and Science in Primary and Lower Secondary Grades

In Morocco, fourth grade mathematics is taught two lessons per week, each lasting 2.5 hours. Of these five hours of instructional time, one hour is devoted to remedial work and one hour is devoted to assessment. Eighth grade mathematics is taught for four hours per week. Science is taught weekly in two 45-minute sessions for fourth grade. At the eighth grade, science is taught for 28 hours each semester, focusing on each content area for between two and eight hours.

Instructional Materials, Equipment, and Laboratories

Mathematics and science teachers across the country use textbooks approved by the Ministry of National Education, in compliance with book specifications issued by the ministry. Teachers can supplement the textbooks with materials designed by inspectors or supervisors to further address specific student needs.

Until 1999, textbooks had been designed by committees within the ministry. As of the 2012–13 school year, a new generation of primary school

textbooks will be available following approval by a jury consisting of content area specialists appointed by the ministry.¹⁶

Science laboratories are not always available in primary schools. However, all lower secondary schools have their own science laboratories that accommodate requirements of the national curriculum. Greater efforts are being made to recruit more qualified laboratory technicians in order to ensure equipment maintenance and safety.

Use of Technology

Since 1999, the Ministry of Education has been implementing a policy promoting information and communication technology (ICT) in education, in accordance with Article 10 of the Charter of Education and Training.¹⁷ In March 2005, the ministry launched the Generalization of Information Technologies and Communication in Education (GENIE) initiative to improve the quality of teaching and learning through the use of ICT in all public schools.¹⁸ Through GENIE, all Moroccan schools are being equipped with computer laboratories supported by ADSL Internet access and are providing training for teachers, headmasters, advisors, and inspectors.

Grade at Which Specialist Teachers for Mathematics and Science are Introduced

Teachers with specialties in mathematics and science are critical for improving student mathematical ability and self-confidence. However, primary school teachers, unlike their peers in lower secondary schools, are not required to specialize in mathematics and science.

Homework Policies

Educators in Morocco tend to continue to prioritize homework assignments. Homework builds responsibility, self-discipline, learner autonomy, and lifelong learning habits and provides reinforcement for learning outcomes. Homework assignments include practice tasks or activities, preview assignments, extension assignments, and creative activities.

Teachers and Teacher Education

Teacher Education Specific to Mathematics and Science

The Teacher Training Center for Primary School Teachers (*Centre de Formation des Instituteurs*) and the Regional Pedagogical Center (*Centre Pédagogique Régionale*) for lower secondary school teachers provide full-time courses and a

practicum leading to a professional graduate certificate in education. In order to be admitted to either teacher college, applicants must hold a two-year General University Studies Diploma (*Diplôme d'Etudes Universitaires Générales*), pass an entrance examination, and participate in a background interview. Teacher education at the colleges consists of a practice-based, one-year course for teachers, which includes a practicum and supervised class observations intended to provide hands-on experience in teaching.

Teacher education is generally divided into two major areas:

- ◆ Foundational knowledge about specific issues related to the philosophy of education, education psychology, and the sociology of education; and
- ◆ Methodologies for teaching different content areas.

Upon the successful completion of the training course, teacher trainees are appointed to primary or lower secondary schools.

Requirements for Ongoing Professional Development

The National Charter for Education and Training prioritizes professional development of teachers and school administrators.¹⁹ Pedagogical inspectors play an important role in the education system in Morocco. They design teacher professional development programs, colloquia, and seminars and supervise teachers, among other endeavors, to further improve teaching and learning within the 16 Regional Academies for Education and Training across the country.

Monitoring Student Progress in Mathematics and Science

The Ministry of National Education in Morocco has implemented policies that require students to pass exit examinations at each level of education in order to obtain a leaving certificate and, by implication, continue to the next level. However, within primary school, students are automatically promoted from one grade to the next. Correspondingly, dropout rates have declined during the last ten years, particularly for primary school students.

At each educational cycle, the following exit examinations are administered:

- ◆ Primary School Exit Examination—This examination is given across the 16 regions, and is developed by commissions of experienced teachers and inspectors from the *Délégations* and the Academies for Education and Training, respectively. Students are required to pass this examination to be eligible for admission to lower secondary school.

- ◆ Lower secondary School Exit Examination—This examination also is given across the 16 regions, and also is developed by commissions of experienced teachers and inspectors from the *Délégations* and the Academies for Education and Training, respectively. Successful students are awarded a leaving certificate and are eligible for enrollment in upper secondary schools.
- ◆ The Baccaureate Examination—This is a national achievement examination developed at the National Center for Examinations. The exam takes 3 or 4 days to complete and covers the content and objectives outlined in the syllabi for upper secondary education. The content included in the Baccaureate depends on the specific coursework taken by the student. Some subjects are tested either through school assessment at the end of the first or second year of Baccaureate-track education or through the regional *Academie*, an examination given in the second semester of the first year of Baccaureate-track education. Students who achieve an overall average of 10 or better on a 20-point scale are awarded the Baccaureate Diploma. The National Charter for Education and Training stipulates that all students who pass the Baccaureate examination are eligible (in the year in which they pass the examination) for tuition-free studies at one of the public universities across the country.

Formative assessment is an important source of feedback for teachers and is geared toward helping them to gauge the effectiveness of their teaching strategies in relation to the curriculum as well as to orient teaching style to student learning style. Teachers use formative assessment aligned with ministerial circulars and pedagogical guidelines as a source of information about student progress and ability.²⁰ Formative assessments are curriculum-based tests of student competencies, which provide opportunities for remediation.²¹

Teachers administer formative assessments at the end of the first semester and the end of the school year. These are school-based tests and are administered under standardized testing conditions. Their purpose is to determine how well students have achieved the overall syllabus objectives for the semester or year. Tests are broad in coverage and assess a representative sample of content from the syllabus covered during the semester or year. Teachers also administer short quizzes at different stages of instruction.

The 1999 Charter for Education and Training stipulated that Morocco's assessment and certification system should be overhauled. In response, the National Center for Evaluation and Examinations has led significant reform of

the assessment and certification system. In an effort to ensure uniformity and standardization in the evaluation process, the center developed frameworks and guides for the design, administration, and scoring of exam papers. Moreover, in collaboration with the Higher Council for Education, the center launched the National Program for the Evaluation of Acquired Learning Outcomes (*Programme National d'Evaluation des Acquis*, or PNEA) to implement a periodic assessment of student learning. The PNEA nationwide system of assessment makes it possible to gauge whether or not learning outcomes have been met, and to define a benchmark against which to systematically evaluate the quality of education being provided. The executive summary of PNEA 2008 includes a series of recommendations to improve the teaching and learning of languages, mathematics, and science.²²

An in-depth diagnosis of the school exams and certification system is underway within the National Center for Evaluation and Examinations with the aim of redefining the system within a national policy framework for evaluating learning outcomes. The National Education Emergency Support Program is, in part, the outcome of a variety of studies and assessments, and aims to further build the credibility of the assessment and certification system.

Impact and Use of TIMSS

The reliable, valid, and detailed data that TIMSS provides about Moroccan student achievement in mathematics and science has been beneficial to education reform in Morocco. Equally important are the TIMSS data about the educational environment within which students learn these two subjects at the primary and lower secondary levels. Through the international perspective provided by TIMSS, Moroccan educators have gained deeper insights into ways to further improve mathematics and science teaching.

The National Center for Evaluation and Examinations, in collaboration with the Regional Academies of Education and Training, organized 16 nationwide seminars geared toward implementing the provisions of the National Education Emergency Support Program regarding student assessment. These seminars were an opportunity to disseminate data about Moroccan student achievement in mathematics and science (as well as reading) and identify the areas and skills needing further attention. Educators, parents, and other stakeholders were called upon to develop improvement plans to help students enhance their competency in mathematics and science.

In light of Morocco's TIMSS results, the Ministry of National Education has launched the Evaluation of Prerequisites program (*L'Evaluation des Prérequis*) designed to nurture a culture of assessment in mathematics and science, and particularly to diagnose key competencies (and resources) students should master within the new science and mathematics curriculum. This program, administered nationwide at the very beginning of each school year, enables teachers to identify students' areas of strength or areas needing improvement during instruction and according to each students' individual learning pace.²³ Within the framework of the assessment program, diagnostic tests are administered and scored at the very beginning of the school year. Students with similar learning difficulties are grouped and specific remedial work programs are designed and implemented for these student groups. One of the major benefits of this program is that when teachers cannot easily resolve students' difficulties on their own, headmasters, inspectors, pedagogical advisors, and school management councils are all called upon to develop a context-specific improvement plan to provide more extra-curricular student support.

Similar to the Evaluation of Prerequisites program, National Program for the Evaluation of Acquired Learning Outcomes (PNEA) ensures efficient and objective evaluation of student achievement. PNEA was designed to assess and monitor student competencies with a broader perspective on matters of curriculum, training, and research from international assessment results.²⁴

Suggested Readings

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