Palestinian National Authority

Dr. Mohammad Matar
Dr. Samah Iriqat
Alaa Sajdiay
Muna Salman
Center for Educational Research and Development/
Ministry of Education

Introduction

Overview of Education System

The education system in Palestine has made significant progress, achieving basic education for both boys and girls with high enrollment rates. Numerous efforts have been made by the Ministry of Education (MoE) based on the Education Sector Strategic Plan (EDSP) (2017–2022) (which was extended by 1 year to 2023).

The main pillars of this strategy are as follows:

- access—ensure safe, inclusive, and equitable access to education at all levels
- quality—develop a student-centered learning and teaching pedagogy and environment
- governance and management—promote accountability, results-based leadership, governance, and management[1]

Progress toward quality education was already slower than required before the pandemic because of the ongoing humanitarian and political crisis, but COVID-19 has had devastating impacts on education in Palestine, causing learning losses and the closing of schools for long periods. To tackle these challenges, the MoE has prioritized the following actions in an effort to achieve Sustainable Development Goal 4 (SDG4) and its seven targets as established by the United Nations:

- achieve effective and inclusive partnerships at the national, regional, and international levels
- optimize education policy frameworks and foster more impactful collaborative practices
- ensure a highly equitable, inclusive, and high-quality education system for all
- mobilize resources for adequate financing for education
- ensure monitoring and review of all targets[2]

The MoE has been committed to providing high-quality education services to students despite the effects of the ongoing conflict on schools, teachers, and students.[3]

In collaboration with national, regional, and international partners, the MoE is highly committed to ensuring the implementation of its vision that posits "Palestinian society has values, culture and technology to produce knowledge and employ it for its liberation and development."[4]

The MoE adopted a comprehensive policy framework aimed at delivering high-quality education services.[a] This framework focuses on the following:

- monitoring and optimizing the quality of teaching and learning through established mechanisms
- providing a coherent framework for curriculum development and assessment, ensuring alignment with national and international standards
- guiding the achievement of desired educational outcomes, adapting to the evolving demands of the 21st century
- leveraging information and communications technology (ICT) for education advancement, including:
  - developing and offering sustainable, smart electronic learning resources
  - enhancing the quality of e-services provided by the MoE
  - sharing educational content through online platforms and the Palestine Educational TV Channel[b]
  - providing remote learning options to all schools and students in crises and emergency circumstances[5]

The Palestinian education system pursues comprehensive inclusion and equality across all education levels structured into the following four cycles:

- kindergarten—This is a 2-year program that begins at age 4 and is noncompulsory. Preschool education includes activities and programs designed to create a supportive and favorable learning environment for young children. The goal is to offer children a balanced and enriching educational experience that helps them to develop essential skills, knowledge, and social abilities. Preschool education aims to provide a nurturing and stimulating setting that fosters learning, exploration, and growth in young children, preparing them for a successful future education journey. The MoE pursues a dual strategy to improve the quality and access to preschool education. Firstly, the MoE aims to enhance the quality of existing preschool programs through comprehensive interventions. Secondly, it plans to expand access by encouraging the private sector to establish kindergartens and by integrating preschool classes within public basic schools. During the 2022–2023 academic year, 169,671 students were enrolled in kindergarten in Palestine,[6] representing a gross enrollment rate of 71.7%.[7] Since 2013–2014, the MoE has implemented a policy to introduce KG2 (the second year of the kindergarten program) classes in some government schools. As of

a See https://www.moe.pna.ps/category/content/1036 for more information.

b See https://elearn.edu.ps/ for more information.

2022–2023, the number of kindergartens has increased to 409, reaching remote and underprivileged areas. This initiative aims to achieve the following objectives:
  - provide children with a suitable educational environment and care for balanced educational growth
  - assist children in developing positive attitudes toward school to ensure smooth transitions from home to school
  - foster the development of good health practices among children
  - improve children's social relationships and interactions
  - encourage the development of positive attitudes and a love for school life among children
- basic education—This is a 9-year cycle comprising Grades 1 to 9 (ages 6 to 15) and is compulsory. The objectives of basic education are to achieve general educational goals and prepare citizens in all aspects of life. In Grades 8 and 9, students are categorized and enrolled in various types of lower secondary education based on their academic performance. During the 2022–2023 academic year, 1,114,832 students were enrolled in basic education in Palestine,[8] representing a gross enrollment rate of 99.4%.[9]
- secondary education—This is a 3-year cycle covering Grades 10 to 12 (ages 16 to 18). While 10th grade is compulsory,[10] the other two grades are noncompulsory. The aim is to equip citizens with diverse capacities and skills, particularly in specialized cultural, scientific, and vocational areas that meet the current and future needs of Palestinian society. This stage includes two main streams: academic (scientific and literary) and vocational/applied. The academic stream is applicable in Grades 11 and 12, while the vocational and applied streams are applicable in all grades. The applied stream provides students with vocational education and training that enables them to enter the labor market directly after graduation. Secondary education in Palestine is based on a common cultural foundation and specialized academic subjects, leading to the General Secondary Education Certificate Examination. During the 2022–2023 academic year, 268,100 students were enrolled in secondary education in Palestine,[11] representing a gross enrollment rate of 81.5%.[12]
- nonformal education—The MoE, in collaboration with partner organizations, offers nonformal educational programs that deliver educational activities and experiences outside of the formal school framework. These programs aim to transfer knowledge, develop skills, and instill values beyond the scope of traditional schooling. The MoE offers the following two types of nonformal education:
  - Parallel education is designed for individuals who have previously discontinued their formal schooling after completing 5 or 6 years of basic education.
  - Literacy and adult education targets individuals ages 15 and above who lack fundamental literacy skills.

Use and Impact of TIMSS

Palestine has taken part in four TIMSS cycles: 2003, 2007, 2011, and 2023. The main objective for this participation is to acquire qualitative and quantitative indicators about Palestine's education system that may help inform policies and direct education reform plans.

As a direct result of participating in TIMSS, specialized committees were established to review and enrich mathematics and science curricula; develop items similar to released TIMSS items from previous cycles; and develop training and remedial materials to be used by subject supervisors, subject committees, and teachers.

Following the analysis of TIMSS data, the Center for Educational Research and Development (CERD) in Palestine developed leaflets and reports covering the following topics:

- identifying and analyzing strengths and weaknesses of student performance
- proposing questions and activities that can support mathematics and science teaching and learning

Findings from previous TIMSS cycles (2003, 2007, and 2011) provided rich datasets for researchers in national universities and other independent research centers.

TIMSS will continue to provide valid and reliable data for the annual monitoring and evaluation report for the MoE.

The Mathematics Curriculum in Primary and Lower Secondary Grades

Before 2000, two curricula were used in Palestine: the Jordanian curriculum in West Bank schools and the Egyptian curriculum in Gaza schools. Palestine initiated the first curriculum-related education reform in 2000 after establishing the Palestinian Curriculum Development Center (PCDC), beginning with authoring the first national curriculum for Grades 1 and 6. Subsequently, two grades were introduced each year, with the national curriculum for Grades 2 and 7 established in 2001, and so on. This process continued until 2006, when the Palestinian national curriculum for all grades became available.

The PCDC develops curricula benefiting from best practices in the region and with support from international experts. It is also responsible for developing the curriculum framework document for Grades 1 to 12 and authoring teacher guides for all grades and subjects.

The curriculum content enhances the Palestinian narrative, ensuring alignment with Palestinian cultural and historical perspectives while maintaining academic rigor. These materials emphasize life skills, creative thinking, problem-solving, and linking content to life experiences.[13]

In academic year 2017–2018, mathematics and science textbooks for all grades were redeveloped and implemented in all schools. In the same academic year, a new version of the national curriculum was also developed. Within this reform, the mathematics curriculum was revised to emphasize learning outcomes and real-life applications. Consequently, the new

mathematics textbooks were supplemented with e-content uploaded to educational platforms, and educational lessons were broadcast via the Palestine Educational TV Channel.

The curriculum content aligns with international standards and covers key content domains such as Number, Algebra, Geometry, Measurement, and Probability and Statistics. Students are required to show proficiency in cognitive domains such as knowing, understanding, applying, problem-solving, and reasoning.

The expected outcomes in mathematics for students in Grades 1 to 9 are as follows:

- Number—demonstrate knowledge of place value and the four arithmetic operations (addition, subtraction, multiplication, and division); solve problems by computation, estimation, and approximation; and compare and order fractions and decimals
- Algebra—evaluate expressions for given numeric values of variables, simplify or compare algebraic expressions to determine equivalence, model situations using expressions, evaluate equations or formulas given values of variables, solve simple linear equations and inequalities, write linear equations and inequalities, and solve problems using equations or formulas and functions
- Geometry—recognize relationships between three-dimensional shapes and their two-dimensional representations, use visual and spatial inference to solve problems, and apply geometric transformation and symmetry to analyze mathematical problems
- Measurement—understand the characteristics that make things measurable, as well as measurement systems and operations; and apply techniques, tools, and formulas to determine appropriate measurements
- Probability and Statistics—organize and display data using tables, pictographs, bar graphs, pie charts, and line graphs; recognize and describe approaches to organizing and displaying data that could lead to misinterpretation; use data from experiments to predict the chances of future outcomes; and formulate questions that require appropriate data collection[14]

The Science Curriculum in Primary and Lower Secondary Grades

The most recent curriculum reform in Palestine has placed significant emphasis on enhancing the science curriculum, particularly its breadth and quality. For Grades 1 to 9, there is an integrated science curriculum, while in Grade 10, science is divided into three subjects: biology, chemistry, and physics.

The expected outcomes in science for students in Grades 1 to 8 are as follows:

- Force and Movement—understand the fundamental principles of force and movement and their interrelation; use laboratory equipment and instruments to explore scientific measurements; follow safety rules and procedures in the classroom, school, and laboratory; use oral and written mathematical and physical representations to describe scientific concepts related to force and movement

- Matter and Energy—gain knowledge of the concepts, facts, and basic principles related to matter and energy; recognize the role of God (Allah) in the universe and the impact of the world's materials on one's life; investigate things by using scientific methods; use laboratory materials and tools to explore science principles; and follow safety rules and procedures in the laboratory, classroom, school, and home
- Organisms and Their Environment—gain understanding of the characteristics of living organisms and their needs, life cycles, and their relations with each other and the environment; and demonstrate knowledge and skills necessary for understanding the nature of the human body and maintaining one's health
- Meteorology—understand the components and characteristics of the atmosphere and its interaction with the surface of Earth
- Terrestrial Materials—understand the components and characteristics of land and water systems, their interactions, and human impact on them
- Astronomy—understand the components of the universe, its characteristics and origin, and the physical rules that govern the world
- Earth's History—gain knowledge of how Earth has changed over time
- Geological Processes—understand geological processes and their role in the formation of topographic features and geological phenomena
- Oceans—understand that oceans are a complex and dynamic system in which natural systems, minerals, and weather interact with each other[15]

Teacher Professional Development Requirements and Programs

The MoE in Palestine acknowledges that enhancing the quality of education is a key priority for the nation's development. As a result, quality education was one important goal in the EDSP 2017–2022. Quality education will not be achieved without quality pre- and in-service training and professional development of teachers.

The National Institute for Educational Training (NIET)[c] was established within the MoE in 2005 to be the hub for all capacity-building programs and in-service teacher training activities, particularly through the implementation of the national Teacher Education Strategy (TES) developed in 2009.

TES aims to enhance the quality of teachers' training as a way of enhancing the learning opportunities for all students in Palestine. With the same scope of TES, the Education Strategic Plan 2024–2029 emphasizes the quality of teachers' training through an ongoing professional development program both in-service (as part of NIET) and preservice (as part of the collaboration with national universities). School principals play a crucial role in inspiring, motivating, and coaching teachers.

c See http://www.niet.ps/ for more information.

Monitoring Student Progress in Mathematics and Science

Education assessment policies have been revised to ensure that classroom assessment practices align with the education reform, which prioritizes student-centered learning and students' overall growth. A range of assessment strategies have been used to track the progress of individual students, including the following:

- classroom-based assessments, including teacher-made tests, formative assessment techniques, and authentic assessment (observation, reflection, checklists, and rubrics)
- national assessments, implemented since 2008 in 2-year cycles, covering core subjects in pivotal classes (mathematics and science are tackled in such assessments)
- examinations, such as a school leaving exam (Grade 12) following a census approach
- international large-scale assessments, with Palestine having participated in four cycles of TIMSS (2003, 2007, 2011, and 2023), one cycle of PISA (2022), and one cycle of LaNA (International Association for the Evaluation of Educational Achievement [IEA]'s Literacy and Numeracy Assessment) (2023)

The MoE issues an annual instruction to regulate classroom-based assessments and examinations. The general features for these regulations are as follows:

- Students in Grades 1 to 4 are promoted automatically unless their parents express a desire for them to repeat a grade.
- Students in Grades 5 to 12 only progress to the next grade level if they do not fail more than two subjects. In the case of failing one or two subjects, students are required to either pass a makeup exam with a minimum score of 50% or complete a project.
- In Grades 5 to 11, retention is permitted for up to 5% of students based on specific conditions in each class.
- The General Secondary Education Certificate Examination is given to students who have completed 12 years of schooling. The results of these examinations are key for admission to higher education.

Special Initiatives in Mathematics and Science Education

The MoE has implemented various programs aimed at improving the quality of education. Some of these initiatives focus on the teaching and learning of mathematics and science. Two examples of these initiatives are as follows:

- science, technology, engineering, and mathematics (STEM) initiative—The STEM initiative emphasizes technology integration in education and encourages interdisciplinarity. The MoE has adopted this initiative in the teaching and learning of mathematics and science since 2019. A subsample of schools within this initiative was assessed in TIMSS 2023.

- Project for Improving Quality of Mathematics and Science Education (PIQMAS)—PIQMAS is a project that has been in implementation since 2014. The objectives are to improve knowledge and skills of authors for mathematics and science curricula and to improve the capacity of mathematics and science supervisors and teachers to develop relevant teaching and learning materials.

References

1 Ministry of Education and Higher Education (MoEH). (2016). *Education sector strategic plan 2017–2022*. https://www.moe.pna.ps/uploads/EDUCATION%20SECTOR%20STRATEGIC%20PLAN%20%20%202017-2022.pdf

2 Ministry of Education and Higher Education (MoEH). (2016). *Education sector strategic plan 2017–2022*. https://www.moe.pna.ps/uploads/EDUCATION%20SECTOR%20STRATEGIC%20PLAN%20%20%202017-2022.pdf

3 Palestinian News & Info Agency. (2022). *Ramallah*. Retrieved from https://info.wafa.ps/ar_page.aspx?id=oZyVVKa28221379956aoZyVVK

4 Ministry of Education. (2021). *Education strategic plan 2021–2023*. Ramallah: Author.

5 Ministry of Education. (2022). *Curriculum plan*.

6 Ministry of Education. (2023). *Yearbook of statistical education for scholastic year 2022/2023 (statistics for kindergartens and schools)*. https://www.moe.pna.ps/uploads/20240104134818.pdf

7 Ministry of Education. (2022). *Monitoring and evaluation report 2021: For the scholastic year 2021–2022*. https://www.moe.pna.ps/uploads/20230201205607.pdf

8 Ministry of Education. (2023). *Yearbook of statistical education for scholastic year 2022/2023 (statistics for kindergartens and schools)*. https://www.moe.pna.ps/uploads/20240104134818.pdf

9 Ministry of Education. (2022). *Monitoring and evaluation report 2021: For the scholastic year 2021–2022*. https://www.moe.pna.ps/uploads/20230201205607.pdf

10 Ministry of Education. (2017). *Education Law*. Ramallah: Author.

11 Ministry of Education. (2023). *Yearbook of statistical education for scholastic year 2022/2023 (statistics for kindergartens and schools)*. https://www.moe.pna.ps/uploads/20240104134818.pdf

12 Ministry of Education. (2022). *Monitoring and evaluation report 2021: For the scholastic year 2021–2022*. https://www.moe.pna.ps/uploads/20230201205607.pdf

13 Ministry of Education. (2015). *General framework for mathematics*. https://elearn.azureedge.net/Books/G-Line/Math-1-12.pdf

14 Ministry of Education. (2015). *General framework for mathematics*. https://elearn.azureedge.net/Books/G-Line/Math-1-12.pdf

15 Ministry of Education. (2015). *General framework for science*. https://elearn.azureedge.net/Books/G-Line/Science-1-12.pdf