Oman

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Introduction

Overview of Education System

For centuries, the government of the Sultanate of Oman has understood the importance of education in leading comprehensive development of the country, and it directed its education policy toward expanding education and making it accessible to all. In the present stage of the country's development, the government's priority is to improve the quality of education. The need now is to promote innovative knowledge and appropriate values so that Omani human resources possess the required competencies to make a positive contribution to national development.

Recognizing the importance of ensuring that education keeps pace with rapid developments in knowledge, technology and the economy, the previous Sultan Qaboos bin Said stressed the need for Omani students to develop awareness and responsibility and the importance of helping students acquire experience and skills to reach higher cognitive levels. At the annual sitting of the Council of Oman in 2011 and 2012, he emphasized the revision of education policies, plans, and programs to keep pace with the changes that the country is going through.

The Ministry of Education is responsible for managing education at all stages (Grades 1 to 12). Ministry responsibilities include developing education policies, curricula, and schoolbooks; developing methods to assess student performance; and overseeing and providing technical and administrative support for teaching and administrative personnel in schools. The Directorates of General of Education across all governorates are responsible for implementing the Ministry's plan. In return, the Ministry is working toward conferring more financial and administrative powers on these directorates.

In 1998, the Ministry of Education began a project to reform the basic education system into one that emphasizes a student-centered, active learning pedagogy and formative continuous assessment. Activity-based learning is central to the new basic education system, and resources for hands-on activities are incorporated into the mathematics and science curricula to provide for active learning classrooms. Exhibit 1 presents the structure of the basic education system.

Exhibit 1: Structure of Basic Education

Level	Grades	Structure
Cycle One	1–4	▪ Coeducational ▪ 1,600 minutes per week ▪ 175 days per year
Cycle Two	5–10	▪ Separate boys' and girls' schools ▪ 1,600 minutes per week ▪ 207 days per year (includes examination days)
Post-Basic (Secondary)	11–12	▪ Separate boys' and girls' schools ▪ 1,600 minutes per week ▪ 207 days per year (includes examination days)

The Ministry of Education is also responsible for approving the curriculum of all private schools in Oman. Monolingual schools deliver instruction in Arabic; bilingual schools deliver instruction in Arabic and English. International schools use various languages of instruction and follow the education program of their particular country (e.g., India, Sri Lanka, France, Pakistan, and the United States).

Schools are free to select the source of the curriculum and learning resources, but the curriculum must be submitted to the Ministry for approval, and students are required to participate in standardized testing. The number of private schools has been growing in recent years, but compared with neighboring Gulf countries, the private sector continues to play a relatively small role in Oman, which means the government continues to assume most of the cost of providing education.

Use and Impact of TIMSS

The Sultanate of Oman participated in TIMSS 2007, TIMSS 2011, and TIMSS 2015, with the objective of developing and improving the quality of education. All three cycles had a direct impact on curricula and assessment in the Omani educational system, as follows:

- Curricula—The scope and sequence of both the mathematics and the science curricula were revised completely for all grades. The Cambridge Curriculum was introduced and implemented gradually from Grades 1 to 4 and Grades 5 to 8, in all public schools. Similar procedures will be followed to implement the curriculum in Grades 9 to 12.
- Assessment—The low performance of Omani students in TIMSS 2007 and TIMSS 2011 was attributed mainly to their lack of familiarity with the types of questions (and the phrasing of questions) in the assessments. Subsequently, the Ministry has developed an assessment system that focuses on educating teachers in two main aspects of question development:
    - Classification of questions—Teachers have been trained on classifying questions into the four cognitive domains of Knowledge, Understanding, Application, and Reasoning. Students are assessed according to these domains in both mathematics and science.

- Format and wording of questions—Teachers have been trained to develop questions in line with TIMSS and to incorporate them into classroom instruction daily, specifically in implementing the Cambridge Curriculum for mathematics and science.

The results of TIMSS2015 indicate the positive impact of these initiatives. Although student performance was again below the international average in TIMSS 2015, performance in both grades and in both assessed subjects improved significantly.[1]

The Mathematics Curriculum in Primary and Lower Secondary Grades

The Ministry of Education has introduced the Cambridge Curriculum for mathematics in Grades 1 to 12. The implementation of this new curriculum has been gradual, beginning in Grades 1 to 4 in 2017–2018, Grades 5 to 6 in 2018–2019, and Grades 7 to 8 in 2019–2020, in all public schools. A similar process will be implemented for the remaining grades.

The mathematics curriculum has been developed around the following strands: Number and Number Theory; Number Operations; Geometry, Trigonometry, and Spatial Sense; Measurement; Pre-Algebra and Algebra; and Data Management and Probabilities. All learning outcomes correlate to a specific level of achievement in the strand for each grade level.

- Number and Number Theory—This strand emphasizes students' developing number sense. The curriculum states that this development is best accomplished by students' searching for and understanding the many patterns and relationships among numbers. Being able to use estimation and mental calculation strategies is paramount. It is critical that students have an understanding of the concepts of whole and rational numbers. Integers, negative rational numbers, and irrational numbers are introduced in later grades. The curriculum also incorporates calculator skills and appropriate calculator use. Calculators are considered tools for studying number patterns, solving realistic problems, and eliminating tedious computations.
- Number Operations—The ability to perform mathematical operations with confidence reflects the development of number sense. The curriculum introduces addition, subtraction, multiplication, and division sequentially throughout the grade levels for each of the number systems. Specific operations are taught in an iterative manner, reinforcing concepts developed in previous grades.
- Geometry, Trigonometry, and Spatial Sense—The development of geometrical concepts and spatial awareness is best accomplished through the continuous integration of geometry in the curriculum. Students learn these concepts by actively manipulating, drawing, constructing, and creating geometric shapes and objects and making connections to the real world. Geometry should be experiential and reflected in the students' environment as an exciting and applicable element of mathematics.
- Measurement—The development of measurement sense is emphasized when students are actively engaged in the processes of comparing, estimating, and measuring. Regular integration with other school subjects such as science, physical education, art, and social studies makes this strand one in which applicability can be easily demonstrated.

- Pre-Algebra and Algebra—Patterns and models are the links students need to make connections between mathematics and the world in which they live. Exploring patterns and models leads students to develop mathematical competence and gain an appreciation for the beauty and power of mathematics. It is essential for students in the early grades to explore patterns to develop an understanding of the concept of variables and of algebraic thinking. Algebra extends the study of operations and relationships of numbers to the use of variables. It provides the ability to represent mathematical rules using symbols. Given suitable instruction, students in Grades 5 to 10 can learn some of the fundamental aspects of algebra. Students should understand the concept of functions as rules or mapping that assigns to each member of one set a member of another set. The practical applications of functions and graphs should be taught, especially as they relate to science. This strand emphasizes developing an understanding of basic concepts rather than manipulating symbols or using terminology.
- Data Management and Probabilities—This strand emphasizes the use of graphs, tables, and lists related to numbers and statistics. Students learn to manipulate data. This strand also includes the subject area of probabilities, which is related to the analysis of chance of occurrence for events.
- Problem solving—This strand involves applying techniques and skills, and understanding strategies to solve mathematical problems.

It is important to note that although fourth grade students were taught according to the Cambridge Curriculum for mathematics, students in eighth grade were taught the previous national mathematics curriculum. Exhibit 2 lists the main topics in Grade 4.[2]

Exhibit 2: Main Mathematics Topics for Grade 4

Unit	Title	Topics
1	Number and Problem Solving	1. Numbers and the number system 1.1. Reading, writing and partitioning numbers 1.2. Ordering, comparing and rounding four-digit numbers 1.3. Multiplying and dividing by 10 and 100
		2. Addition and subtraction (1) 2.1. Addition (1) 2.2. Subtraction (1) 2.3. Partitioning to add and subtract
		3. Multiplication and division (1) 3.1. Learning and using multiplication facts 3.2. Using doubles 3.3. Multiplying a two-digit number by a single digit
		9. The number system and properties of number 9.1. Decimal numbers in context 9.2. Positive and negative numbers 9.3. Odd and even numbers

Unit	Title	Topics
		10. Addition and subtraction (2) 10.1. Adding and subtracting near multiples of 10 10.2. Choosing the most efficient subtraction strategy
		11. Multiplication and division (2) 11.1. More multiplication 11.2. Dividing two-digit numbers by single-digit numbers
		18. Special numbers 18.1. Special numbers
		19. Fractions and divisions 19.1. Exploring fractions 19.2. Fractions, decimals and mixed numbers 19.3. Fractions and division
		20. Ratio and proportion 20.1. Ratio and proportion
2	Measurement and Problem Solving	4. Weight 4.1. Measuring weight
		5. Time (1) 5.1. Telling the time (1) 5.2. Using timetables
		6. Area and perimeter (1) 6.1. Area (1) 6.2. Perimeter (1)
		12. Angles, position and direction 12.1. Angles and turning 12.2. Position and direction
		13. Symmetry 13.1. Shapes and symmetry
		14. Two-dimensional and three-dimensional shapes 14.1. Two-dimensional shapes 14.2. Three-dimensional shapes
		21. Capacity 21.1. Measuring capacity
		22. Time (3) 22.1. Measuring time 22.2. Calculating time
		23. Area and perimeter (3) 23.1. Area and perimeter
3	Handling Data and Problem Solving	7. Graphs, tables and charts (1) 7.1. Tally charts and bar charts 7.2. Pictograms
		8. Carroll and Venn diagrams 8.1. Carroll diagrams 8.2. Venn diagrams
		15. Length 15.1. Measuring length

Unit	Title	Topics
		16. Time (2) 16.1. Telling the time (2) 16.2. Using calendars
		17. Area and perimeter (2) 17.1. Area (2) 17.2. Perimeter (2)
		24. Graphs, tables and charts (2) 24.1. Tables and bar charts 24.2. Frequency tables and tree diagrams
		25. Venn and Carroll diagrams 25.1. Carroll diagrams (2) 25.2. Venn diagrams (2)

Exhibit 3 lists the learning objectives for Grade 8.[3]

Exhibit 3: Learning Objectives for Grade 8 Mathematics

Unit	Title	Learning Objectives
1	Sets and Relationships	1. Clarify the concept of union of two or more sets and use symbols 2. Clarify the concept of intersection of two or more sets and use symbols 3. Find the number of subsets 4. Understand and clarify the processes of "difference" between two sets 5. Solve problems involving application of sets and use symbols 6. Identify the finite and infinite sets 7. Identify and describe the rational numbers and their operations 8. Define and use the terms domain and range of the relationship 9. Representation of arranged pairs at the Cartesian coordinate system
2	Algebraic Expressions and Polynomials	1. Understand and use negative powers 2. Apply the exponents rule to a monomial 3. Find the value of algebraic expression in one variable using relative numbers 4. Apply the index laws for multiplication and division of simple algebraic expression 5. Add and subtract simple algebraic fractions 6. Simplify or transform algebraic expressions by taking out a common factor
3	Congruence and Similarity	1. Sort shapes by lines of symmetry 2. Use simple shapes to identify and draw reflections 3. Identify the properties of identical triangles 4. Determine the symmetrical elements in congruent triangles 5. Determine whether triangles are congruent using three sides, two sides and the angle between them 6. Create shapes similar to a given shape using a drawing scale 7. Create congruent triangles using: bending the paper, a semi-mirror

Unit	Title	Learning Objectives
		8. Use a caliper and a straight edge to create a congruent triangle with a known triangle 9. Create regular polygons using calipers and a straight edge
4	Geometry	1. Find the sum of the measurements of the internal and external angles of any polygon 2. Find the inner angle of any polygon 3. Determine the measurement of the central angle in a regular polygon 4. Calculate the surface area of a cylinder and a prism 5. Find the volume of a cylinder and a prism 6. Determine the effect on the size of a rectangle when minimized one or more dimensions 7. Define the rectangles of the middle triangle and clarify its properties
5	Functions and Equations	1. Solve a first order equation involving one variable 2. Find the value of a variable in relation to other variables that are related 3. Understand the concept of inequality and use it 4. Read information from a straight-line graph 5. Verify that an ordered pair is a solution to a linear relationship 6. Draw a linear function using ordered pairs 7. Display a relationship in a sketch or a graph
6	Statistics and Probability	1. Distinguish between a sample and a statistical community and recognize the relationship between them 2. Recognize that the data collected is affected by the nature of the sample, the method of collection, the sample size 3. Discuss the pros and cons of using a sample or a statistical community 4. Identify the following central tendencies for a data set: arithmetic mean, median, mode 5. Create a set of numbers if the science of the medium, median and mode 6. Use the following terms correctly: experimental probability, theoretical probability 7. Calculate the theoretical probability of an event

The Science Curriculum in Primary and Lower Secondary Grades

The Ministry of Education has also introduced the Cambridge Curriculum for science in Grades 1 to 12. Similar to the mathematics curriculum, the implementation of this science curriculum has been gradual, beginning in Grades 1 to 4 in 2017–2018, Grades 5 to 6 in 2018–2019, and Grades 7 to 8 in 2019–2020, in all public schools. A similar process will be implemented for the remaining grades.

Grade 4 Science Curriculum

The science curriculum learning outcomes are designed to support student acquisition of the knowledge, skills, and attitudes needed for developing scientific literacy. These outcomes encompass three overarching areas—knowledge, skills, and attitudes—as described below.[4] Exhibit 4 shows the units and objectives of the Grade 4 science curriculum.

Exhibit 4: Learning Objectives for Grade 4 Science

Unit	Title	Learning Objectives
1	Humans and Animals	1. Distinguish that humans and some animals have bony skeletons 2. Identify that bones have different shapes and sizes 3. Discriminate that bones are joined together to form the skeleton 4. Distinguish that skeletons grow as humans grow, support, and protect the body 5. Describe muscles and their role in animals with skeletons 6. Explain the role of drugs as medicines 7. Describe how medicines prevent, cure, or alleviate symptoms of illness 8. Identify ways in which medicines are taken 9. Describe how medicines work by killing germs or by replacing missing substances in the body
2	Living Things and the Environment	1. Describe how different animals are found in different habitats and are suited to the environment in which they are found 2. Distinguish how different animals are found in different habitats and are suited to the environment in which they are found 3. Describe ways that people affect the environment, for example, river pollution, and recycling waste
3	Solids, Liquids and Gases	1. Identify states of matter: solids, liquids, and gases 2. Distinguish that matter is made up of particles 3. Describe particles of the three states of matter 4. Relate the distance between particles of matter to their properties 5. Describe shapes of the three states of matter 6. Distinguish, boiling, freezing and melting 7. Distinguish that different solids have different melting points
4	Sound	1. Describe how sound travels through materials 2. Distinguish how well sound travels through solids, liquids, and gases 3. Relate sound to vibration of particles 4. Distinguish that trapping sound vibrations can make sound louder 5. Describe the relationship between the size of vibration and the type of sound produced (soft or loud) 6. Name the instrument for measuring sound 7. Identify decibels as the unit of volume of sound 8. Distinguish materials that can and cannot muffle sound 9. Identify pitch of sound and relate it to speed of vibrations of particles 10. Apply concept of pitch on common musical instruments 11. Apply concept of pitch on air musical instruments
5	Electricity and Magnetism	1. Describe the flow of current in a circuit 2. Identify the components of a simple electrical circuit 3. Distinguish open and closed circuits 4. Describe what happens when bulbs are added or removed from a circuit 5. Identify voltage as the unit that describes the strength of electricity 6. Relate voltages of cells and batteries to functioning of components in an electrical circuit 7. Identify mains of electricity in relation to high voltage

Unit	Title	Learning Objectives
		8. Describe safety measures to be taken around electricity 9. Describe materials that are attracted to magnets 10. Identify poles of a magnet 11. Identify attraction and repulsion as forces 12. Compare strength of magnets 13. Distinguish alloys and give examples

The scientific inquiry section of the curriculum framework is based on four main strands, with objectives students are expected to achieve at each stage. Scientific inquiry skills are taught alongside other content. Learners are expected to acquire these skills through various learning activities. The strands are:

- Ideas and evidence—Students should learn how to collect evidence in a variety of contexts and to test ideas or prediction based on scientific knowledge
- Plan investigations—Students should be able to suggest questions that can be tested, make predictions, and communicate. They should be able to design a fair test, plan how to collect sufficient evidence, choose equipment, and decide which variables to measure.
- Obtain and present evidence—Students should be able to make relevant observations and comparisons in a variety of contexts; measure temperature, time, length, and force; begin to think about the need for repeated measurements of, for example, length; and be able to present results in drawings, bar charts, and tables.
- Consider evidence and approach—Students should be able to identify simple trends and patterns and suggest explanations for some of them, explain what the evidence shows and whether it supports predictions, communicate this explanation clearly to others, and link evidence to scientific knowledge and understanding in some contexts.

Grade 8 Science Curriculum

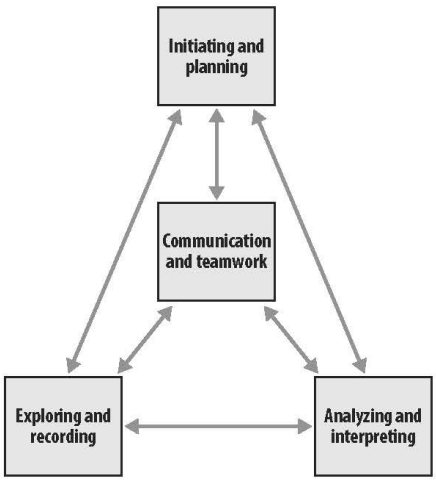
Students will acquire knowledge and understanding of concepts in Life Science; Physical Science; Earth and Space Science; Nature of Science; and Science, Technology and Society. They will apply their understanding to interpret, integrate, and extend their knowledge.[5] Students will demonstrate an understanding of the following:

- Living things and their interactions within an ecosystem
- The structure, function, and interactions of systems of the human body
- The structure, properties, changes, and uses of natural or manmade substances
- The forms and transformations of energy and the need for people to use energy wisely
- Cycles and change through the study of local and global environments and the universe
- Scientific inquiry and the application of scientific knowledge to technological developments, and the achievements of Arab scientists
- How science and technology affect and are affected by social and global issues

Students will develop the skills required for scientific and technological inquiry, solving problems, communicating scientific ideas and results, working collaboratively, and making informed decisions. Exhibit 5 depicts four broad areas of skill outlined in the curriculum framework, as follows:

- Initiating and planning—This area encompasses the skills of questioning, identifying problems, isolating variables, and selecting variables for investigation.
- Exploring and recording—This area encompasses the skills of setting up an experiment or investigation, making observations, and collecting and recording data.
- Analyzing and interpreting—This area encompasses the skills of examining observations and data, presenting them in a way that can be interpreted, drawing conclusions, and evaluating and applying results.
- Communication and teamwork—In science, as in other areas, communication skills are essential at every stage where ideas are being developed, tested, interpreted, debated, and agreed upon. Teamwork skills also are important because the development and application of scientific ideas is a collaborative process in the classroom and in society.

Exhibit 5: Skill Areas in Grade 8 Science Curriculum Framework



Each group of skills is developed from Grade 1 to Grade 10, with increasing scope and complexity. It is expected that students will:

- Ask questions about objects and events in their immediate environment and develop ideas about how these questions might be answered
- Observe and explore materials and events in their immediate environment and record the results

- Identify patterns and order in objects and events studied
- Work with others and share and communicate ideas about their explorations
- Ask questions about objects and events in the local environment and develop plans to investigate those questions
- Observe and investigate their environment and record the results
- Interpret findings from investigations using appropriate methods
- Work collaboratively to carry out science-related activities and communicate ideas, procedures, and results
- Ask questions about relationships between and among observable variables and plan investigations to address the questions
- Conduct investigations into relationships between and among observations, and gather and record qualitative and quantitative data
- Analyze qualitative and quantitative data and develop and assess possible explanations
- Work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures, and results

Attitudes are generalized aspects of behavior that are modeled for students by example and reinforced by selective approval. Attitudes are not acquired in the same way as skills and knowledge. They cannot be observed at any particular moment, but are evidenced by regular, unprompted manifestations over time. It is expected that students will be encouraged to:

- Recognize and appreciate the contribution of science to their understanding of the world
- Show interest in and curiosity about objects and events within their immediate environment
- Willingly observe, question, and explore
- Consider their observations and their own ideas when drawing conclusions
- Appreciate the importance of accuracy
- Be open-minded in their explorations
- Work with others in exploring and investigating
- Be sensitive to the needs of other people, other living things, and the local environment
- Show concern for their safety and that of others in carrying out activities and using materials
- Appreciate that the applications of science and technology can have advantages and disadvantages
- Appreciate and respect that science has evolved from different views held by women and men from a variety of societies and cultural backgrounds

- Show a continuing curiosity and interest in a broad scope of science-related fields and issues
- Confidently pursue further investigations and readings
- Consider career possibilities in science and technology related fields
- Consider observations and ideas from a variety of sources during investigations and before drawing conclusions
- Value accuracy, precision, and honesty
- Persist in seeking answers to difficult questions and solutions to difficult problems
- Work collaboratively in carrying out investigations as well as in generating and evaluating ideas
- Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment
- Evaluate and determine the consequences of proposed actions, projecting beyond personal experience
- Show concern for safety in planning, carrying out, and reviewing activities
- Become aware of the consequences of their actions

Professional Development Requirements and Programs

Until recently, the Ministry's Human Resources Development Directorate had sole responsibility for delivering in-service training for teachers in Oman. It provided courses at the central, regional, and school levels with training organized in a cascade approach. This process involved identifying trainers at the regional level, training them centrally, and then sending them back to their regions to implement centrally developed training programs for teachers, principals, and subject supervisors.

In an attempt to bring about fundamental change in classrooms, the Ministry has established the Specialized Institute for the Professional Training of Teachers (SIPTT). The institute opened officially in 2014 in a newly adapted temporary facility that houses 56 training classrooms, a library, a science laboratory, meeting rooms, and a restaurant. It is responsible for meeting the training requirements for all professionals who are involved directly in the classroom learning process (e.g., teachers, school principals and supervisors) and for providing training at different stages of their career development. To ensure the program has direct impact on student standards, the following principles have been taken as a basis for program design:

- Comprehensive—A high proportion of teachers and supervisors from selected subjects and specialties and participation by all schools
- Sustained—Two-year programs to embed knowledge, skills, and attitudes

- Integrated—Face-to-face training using a range of active learning methods, online learning that enables participants to engage with the institute while in the workplace, and workplace training to provide practical opportunities to develop skills and embed practice
- Coherent—Developed using international best practices and research and to include all Ministry priorities and initiatives
- Accredited—By a qualification from a recognized authority and allowing for credit accumulation leading to the award of higher degrees as teachers progress through their career
- Supported—Through ongoing contact, monitoring, and evaluation by trainers

The Ministry has developed professional standards for teachers, principals, vice principals, and supervisors. These standards are an important development in helping to clarify roles and evaluate staff performance, and in determining appropriate staff development programs.

The professional development structure in the SIPTT has two main functions:

- To maximize the effectiveness of staff in their existing role by:
  - Ensuring ongoing professional development according to need
  - Providing individual responsibility and accountability through assessment and a licensing system
- To provide a fair and accurate system to inform career progression based on:
  - Experience
  - Judgments of effectiveness of staff in their current roles
  - Participation in accredited and assessed professional development activities

The SIPTT focuses on literacy and numeracy by providing five strategic training programs that target teachers of mathematics, science, Arabic, and English:

- Math Experts—for teachers of Grades 5 to 10
- Science Experts—for teachers of Grades 5 to 10
- Field Two Experts—for teachers of Grades 1 to 4
- Arabic Experts—for teachers of Grades 1 to 4
- English Experts—for teachers of all grades

These programs emphasize higher order thinking skills, 21st century skills, professional standards, inquiry-based learning, and the establishment of active learning communities through the application of active learning strategies, assessment for learning, and assessment as learning.

The SIPTT's long-term programs are designed to be sustainable, feasible, and accredited for all teachers in Oman, as the institute's main purpose is to improve student outcomes through the professional development of the education workforce. All institute strategies and operations will support the production of research evidence to inform future development facilitated by the organizational structure and the institute's online learning platform.

The SIPTT promotes and develops a national dialogue about the education profession, as well as debate and collaboration through face-to-face activities and collaborative tools in the online learning platform. The online learning platform enables teachers to share ideas, resources, and good practices, and to celebrate success. This collaborative approach will, in turn, raise expectations among educators, students, parents, and the wider community.

Monitoring Student Progress in Mathematics and Science

The General Directorate of Educational Evaluation has prepared student assessment documents for every subject area at every grade level. These documents specify assessment arrangements and criteria. Assessment arrangements differ by grade level. Exhibit 6 presents assessment arrangements for Grades 1 to 12.

In Cycle One (Grades 1 to 4) schools, the focus is on internal formative and summative assessment using a broad range of evidence including, for example, oral presentations, teachers observations, projects, and short tests, coupled with evaluative information collated in student-led portfolios. No formal examinations are administered at this stage. Students receive an overall score out of 100 and a grade from A to E (A representing 90 percent to 100 percent and E representing 49 percent or lower).

The evaluation of student performance in Grades 5 to 12 (Cycle Two and post-basic) is based on an accumulation of results over the academic year, beginning in the first semester. Results from continuous assessment and an examination administered at the end of the first semester in January are collated into an overall grade out of 100 in each subject area.[6] Overall grades below 50 are considered failing, and grades at or above 50 are considered passing. Examination and continuous assessment results from both semesters are weighted equally when calculating the overall average for the year. The examinations in Grades 5 to 9 are administered at the regional level, while those in Grades 10 to 12 are administered at the central level. The examinations for Grade 12 are scored centrally, while the examinations for Grades 5 to 11 are scored by schools.

Exhibit 6: Assessment Arrangements

Grades	Examinations	Continuous Assessments	Scoring	Administration
1–4	-	100%	-	-
5–9	40%	60%	School level	Regional level
10	60%	40%	School level	Central level
11	60%	40%	School level	Central level
12	70%	30%	Central level	Central level

In Cycle One (Grades 1 to 4), students receive four report cards per year—three descriptive reports on student achievement in each subject identifying strengths and weaknesses and a final report card. The final report card is issued at the end of the school year and includes both letter grades and numeric grades for each subject. In Cycle Two and post-basic education (Grades 5

to 12), students receive four report cards per year, of which two are descriptive (one in the middle of each semester) and two present letter grades (A to E) and numeric grades for each subject (one at the end of each semester).

In Cycle One, there is no grade retention. Students who receive a failing grade (E) continue to the next grade level with planned remedial help and an individual progress plan. In Grades 5 to 10, advancement to the next grade depends on the number of basic subjects passed or failed (i.e., Islamic, Arabic, English, mathematics, science, and social studies). Students who receive a failing grade in one, two, or three basic subjects must retake the corresponding examinations. Students who fail an examination retaken in one or more basic subjects must repeat the grade. Students with a grade average of E across the two semesters in more than three basic subjects do not have the option of retaking examinations and must repeat the grade. Students who repeat a grade and then again fail one or more of the basic subjects at the end of the year are permitted to progress to the next grade level with a remedial plan in place.

Plans have been developed to establish a National Centre of Educational Evaluation and Examination that will be responsible for the delivery of a robust assessment and qualifications system through the production of valid and reliable assessment instruments supported by quality statistical analysis and research capabilities and an online platform for assessment.

Special Initiatives in Mathematics and Science Education

A significant change brought about by the transition to basic education was an increase in time allocated for teaching mathematics and science as well as computer technology skills.

Another initiative in mathematics and science education in Oman is the Cognitive Development Program for Students in Science, Mathematics, and Environmental Geography Concepts. This program was introduced in the 2007–2008 school year following a royal directive, and is regarded as an important Ministry program. The aim of the program is to encourage students to acquire knowledge; improve their level of attainment in science, mathematics, and environmental geography; and enhance their study of the practical aspects of these subjects to achieve an appropriate balance between student outcomes in the sciences and the humanities in Grades 11 and 12, and also to meet the requirements of a developing society. The program encourages students to conduct research and investigation, practice systematic scientific thinking, and develop their innovation capabilities.

The program aims to motivate teachers to improve their performance by refreshing their approach to dealing with multilevel abilities within the classroom. It encourages teachers to follow the latest developments in science, mathematics, and environmental geography as well as promoting their scientific competitiveness. It also supports the skill development of teachers and supervisors by organizing training programs at the central and local levels that focus on how to help students develop higher order thinking skills through appropriate question development.

The Cognitive Development Program for Students in Science, Mathematics, and Environmental Geography Concepts encompasses a set of tools that include oral contests, student

innovations, robot competitions, coding programs, and Scientific Olympics programs. In addition, during the past three years, many programs have been introduced in the Ministry to support and promote science and innovation, including building capacity programs for teachers and students regarding higher order thinking skills; scientific research methodology; intellectual property; renewable energy; and science, technology, engineering, and mathematics (STEM). Cooperation between the Ministry and private sector institutions has resulted in many awards and programs in the field of innovation, which has created a positive orientation for students to find innovative solutions to the challenges facing key sectors in the Sultanate as well as urgent global issues. The programs also include annual scientific events, such as the Oman Science Festival and National Science Week, that promote science and innovation among students and other sectors of society.

Suggested Readings

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