Iraq

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Introduction

Overview of Education System

During the 1970s and 1980s, Iraq's education system was considered to be one of the best in the Middle East. There was a high percentage of literate people able to read and write. However, Iraq's education system has suffered due to ongoing military conflict. The years of war and sanctions have taken their toll, as the quality of education has deteriorated, the number of teachers has decreased, and many schools have been damaged or destroyed. Many teachers left the country, and the illiteracy rate is now high in Iraq. The current Iraqi government is working to improve the country's education system; however, it still suffers from a lack of funding and faces a number of challenges, such as weak infrastructure and a shortage of qualified teachers.[1]

Public education in Iraq is free at all levels, and the government subsidizes the cost of curricular materials and supplies needed for the education process, including all teaching aids and teachers' guides. Education in Iraq is run by the Iraqi Ministry of Education (MOE). The MOE is responsible for setting education policies, preparing plans, and approving and developing curricula for various types and stages of education.

Iraq's education system is divided by two periods:

- Before 2003, Iraq had an education system that was highly centralized and focused heavily on education goals and providing free places to study for all Iraqis. As a result, literacy rates in Iraq were among the highest in the Middle East.
- After 2003, the education system became decentralized, with control transferred to the Iraqi governorates (the provincial education council). This decentralization led to a decline in education standards.[2]

There have been recent efforts to centralize Iraq's education system again, and the Iraqi government has education as one of its priorities. As a result, the education system in Iraq has been slowly improving, and the country is committed to providing all children access to quality education. The Iraqi government has placed great emphasis on developing the education sector as a means to improve the quality and standard of living of its citizens.

Exhibit 1 presents the structure of the education system in Iraq.

Exhibit 1: Structure of the Education System in Iraq

Level	Grade	Structure
Kindergarten (preschool)	divided into kindergarten and preschool	• This level of education is for children ages 4–6. • Kindergarten is optional and not compulsory.
Primary education	1–6	• This is the first stage of compulsory education in Iraq. • Primary education starts when children are 6 years old and lasts for a period of 6 years. • The highest score a student can receive in each subject is 10 in the first three grades, followed by a score if 100 in Grades 4–6. • Ministerial exams are held at the end of Grade 6.
Secondary education (intermediate stage)	7–9 (also called Grades 1–3 at the intermediate level)	• Science includes three specialized subjects (chemistry, physics, and biology). • Grade 9 students must pass a Ministerial exam to move on to the preparatory stage.
Secondary education (preparatory stage)	10–12 (also called Grades 4–6 at the preparatory level)	• This level is taught at a general scientific or literary secondary school or at an industrial, agricultural, or commercial vocational secondary school. • The last grade of preparatory school is considered the most important grade of education. At the end of the year, Ministerial exams are held, and the grades a student receives on those exams determine the college or university where the student will study.

In Iraq, student attendance is continuously monitored to avoid dropouts or unexcused absences from school. The MOE follows discipline rules and instructions indicated in Chapter Seven of Article 45 of the amended *Secondary Schools System No. (2) of 1977*.[3]

The official school year begins at the end of September and ends in May. Ministerial exams are taken by students in the sixth grade of primary school (Grade 6) and the third intermediate grade (Grade 9). Baccalaureate exams (the central exam), which are taken by students at the end of the preparatory stage of secondary education (Grade 12), usually take place in June.

There are different types of schools in Iraq, including public, private, international, and religious schools. There is no cost to attend public schools, where curricular and education materials are subsidized by the government, while private and international schools charge tuition fees.[4,5]

Public schools adopt unified national curricula in approved languages, some of which are all in Arabic and some of which have science and mathematics curricula that are only in English (e.g., schools for the distinguished). There are other schools in which the curricula are translated according to the languages approved by the Iraqi constitution (Kurdish, Turkmen, and Syriac).

Private schools adopt national curricula like the public schools, but they teach enrichment curricula in addition to the national curricula. International schools adopt international curricula, such as Oxford or Cambridge International, or follow a special curriculum that differs from the national curriculum taught in Iraqi schools.

There is a type of religious school affiliated with the religious endowments in Iraq. They are also considered public schools where education is free, but their curricula focus on religious specializations in addition to other curricula, including Islamic history, Islamic world geography, Arabic, and mathematics.

Use and Impact of TIMSS

Iraq's participation in TIMSS 2023 is an advanced step toward raising the level of education in Iraq. Iraq hopes to analyze TIMSS data to identify areas of weakness and enhance the strengths of the national curriculum in particular and the education system in general.

The Mathematics Curriculum in Primary and Lower Secondary Grades

Iraq's national mathematics curriculum that pertains to the teaching of mathematics to the majority of students in Grades 4 and 8 was built and designed by a team of specialists in the MOE/General Directorate of Curricula under the supervision of experts from the United Nations Educational, Scientific and Cultural Organization (UNESCO) in accordance with standards to achieve the goal of building modern curricula to make students successful lifelong learners.

The series of Iraqi mathematics books is organized according to six actions: I learn, I come, I acknowledge, I speak, I solve, I think, and I write. The exercise book uses a consistent structure that matches the student book using paragraphs with three actions: I verify, I solve, and I solve a problem.

The mathematics book for the fourth grade of primary school includes four basic axes: the axis of numbers and operations, the axis of algebra, the axis of geometry and measurement, and the axis of statistics and probability.[6,7]

The Iraqi mathematics series curriculum applied to students assessed in TIMSS 2023 is summarized in Exhibit 2.

Exhibit 2: Mathematics Topics for Grade 4

Chapter	Title	Topics/Lessons
1	Numbers Up to 999,999	• tens and hundreds of thousands • millions • numbers that are in the millions • comparing numbers and ordering them • problem-solving plan (four steps)
2	Addition	• addition with renaming (associative) ones and tens • adding numbers into the millions • estimating the results of the addition • problem-solving plan (exact or estimated answer)
3	Subtraction (The Reverse Solution)	• subtracting numbers within the millions • estimating the results of subtraction • open numerical sentences
4	Statistics and Probability	• representing data with columns and interpreting their structure • possibility • problem-solving plan (creating a regular list)
5	Multiplication	• multiplication patterns • multiplying a two-digit number by a one-digit number • estimating the result of multiplication • multiplication by multiples of 10 • multiplication of 2 two-digit numbers • problem-solving plan (creating a table)
6	Division	• division by a one-digit number • estimating the result of division • divisibility by (2, 3, 5, 10) • factors and multiples of numbers • problem-solving plan (writing a numerical sentence)
7	Ordinary Fractions	• representing fractions on a number line • equivalent fractions • comparing and ordering fractions • adding common fractions • subtracting common fractions • fractional numbers • problem-solving plan (finding a pattern)

Exhibit 2: Mathematics Topics for Grade 4 (Continued)

Chapter	Title	Topics/Lessons
8	Decimals	• tenths • parts of a hundred • comparing decimals with their arrangement • converting between ordinary fractions and decimals • problem-solving plan (logical justification)
9	Engineering	• angles • properties of square and rectangle • congruence and similarity • location and direction • geometric patterns • problem-solving plan (creating a model)
10	Measurement	• perimeter and area of squares and rectangles • standard length units • standard units of capacity and mass • problem-solving plan (guessing and checking)

The Science Curriculum in Primary and Lower Secondary Grades

The science curriculum that pertains to science instruction for the majority of students in the fourth grade of primary school was built and designed by a team of specialists in the MOE/ General Directorate of Curricula under the supervision of experts from UNESCO in accordance with standards.

The series of Iraqi science books is based on constructivist theory and organizes lessons according to the five-stage learning cycle: preparation, exploration, explanation and interpretation, evaluation, and expansion and enrichment. The books in the series are also built on an integrated evaluation system of activities and content so that teaching is directed and based on data that reflect the reality of students' learning.[8,9]

The science book for the fourth grade of primary school includes six units: classification and diversity of living organisms, life cycles of living organisms, matter, fossil energy and environmental pollution, force and energy, and Earth and the universe. The book is accompanied by a teacher's guide and an activity book.

Exhibit 3 presents the learning objectives for Grade 4 science.

Exhibit 3: Learning Objectives for Grade 4 Science

Unit	Title	Learning Objectives
		• Scientific skills[a] • Scientific method
1	Classification and Diversity of Living Organisms	• Chapter 1: Simple living organisms • Lesson 1: Bacteria, their structure and characteristics • Lesson 2: Algae, their structure and properties • Skills focus: What effect does temperature have on bacterial growth? • Chapter 2: Complex living organisms • Lesson 1: Complex plants • Lesson 2: Complex animals • Scientific reading: Mammals and their diversity
2	Life Cycles of Living Organisms	• Chapter 3: Plant life cycles • Lesson 1: Life cycles of nonflowering plants • Lesson 2: Life cycles of flowering plants • Scientific reading: Rare plants in my country • Chapter 4: Animal life cycles • Lesson 1: Life cycles of invertebrate animals • Lesson 2: Life cycles of vertebrate animals • Scientific reading: Animals with unordinary life cycles
3	Matter	• Chapter 5: Physical changes • Lesson 1: Physical change and its properties • Lesson 2: Freezing, fusion, evaporation, and condensation • Skills focus: What is the effect of temperature on the evaporation rate? • Chapter 6: Chemical changes • Lesson 1: Chemical change and its properties • Lesson 2: Burning and rust • Scientific reading: Paint technology and rust resistance

a These two learning objectives are part of an introduction to make students aware of the necessity of learning these skills to be like a scientist or researcher in every lesson they learn (I work like a scientist).

Exhibit 3: Learning Objectives for Grade 4 Science (Continued)

Unit	Title	Learning Objectives
4	Fossil Energy and Environmental Pollution	• Chapter 7: Fossil fuel sources • Lesson 1: Formation of fossil fuels • Lesson 2: Types of fossil fuels • Science and society: Rationalizing the consumption of energy sources • Chapter 8: Environmental pollution • Lesson 1: Pollution and its types • Lesson 2: The effect of pollution on living organisms • Scientific reading: The role of plants in eliminating pollutants
5	Force and Energy	• Chapter 9: Force and motion of bodies • Lesson 1: The effect of force on the movement of objects • Lesson 2: Simple machines • Scientific reading: Machines used by the ancients • Chapter 10: Sound energy • Lesson 1: Sound and its characteristics • Lesson 2: Transmission of sound in materials • Scientific reading: Measuring the depth of the ocean
6	Earth and the Universe	• Chapter 11: The weather • Lesson 1: Temperature and atmospheric pressure • Lesson 2: Wind and humidity • I work like a scientist: How do I use a rain gauge to measure the amount of rain? • Chapter 12: The solar system • Lesson 1: The solar system and its planets and moons • Lesson 2: Other bodies in the solar system • Scientific writing: How did the Arabs care about the solar system?

The science curriculum for eighth-grade students is divided into specialized subject curricula (chemistry, physics, biology). It was built and designed by a team of specialists in the MOE/ General Directorate of Curricula under the supervision of experts from UNESCO in accordance with standards.

Teacher Professional Development Requirements and Programs

Professional development requirements for fourth-grade mathematics and science teachers are met through the following:

- On a monthly basis, the principal enters a classroom for teacher observation. Afterward, the principal evaluates and provides feedback to the teacher in two stages:
  - orally, in which the principal discusses classroom observations with the teacher to improve any issues
  - in writing, in which the teacher is evaluated based on several evaluation levels (cognitive, skill, and value) and the written evaluation gets placed in the teacher's evaluation record
- On a monthly or quarterly basis, the teacher is visited by the competent supervisor to the class. After observing the teacher in the classroom, the supervisor evaluates the teacher orally and in writing, as the principal did, but uses a more extensive and more specialized form to write the evaluation, which includes an evaluation of the teacher's cognitive, skill, and value levels. A paper copy of the teacher's evaluation is sent to the General Directorate of Education.
- Specialized courses are held once or twice per year at teacher preparation, training, and educational development institutes. Instructors of these courses provide intensive specialized material for a short period of time (5 days or 1 week), and development courses on different teaching methods are occasionally taught. At the end of the course, teachers are tested on the material.[10,11]
- Courses and workshops are held in cooperation between the MOE and organizations such as UNESCO or the United Nations Children's Fund (UNICEF). Teachers attend these training courses to enhance their cognitive and skill level capabilities.

Monitoring Student Progress in Mathematics and Science

Monitoring student progress in mathematics and science is done through several school activities and procedures, including the following:

- daily tests, in which students write answers on the blackboard during daily or weekly oral exams
- monthly written tests during each semester on a set of topics that the student has learned during the month
- quarterly (semiannual) tests during the academic year
- an annual test
- a school card that an education counselor can use to evaluate a student's progress at various levels, whether social, economic, or personal. There are designated fields on the card to indicate the student's academic progress or lack of progress. The effectiveness of the evaluation on the card depends on whether the education counselor is available in the school and how thorough the education counselor is when filling out the card.

- national tests conducted in cooperation with UNICEF. A comprehensive national test for mathematics and science was conducted for students in the fourth grade of primary school in 2019.
- the Service Delivery Indicator (SDI) survey for literacy/reading and mathematics for students in the fifth grade of primary school, conducted with support from the World Bank and the National Foundation for Educational Research (NFER) at the beginning of the 2022 academic year (i.e., students in the fourth grade of primary school who qualified for the fifth grade)

Special Initiatives in Mathematics and Science Education

Special initiatives in mathematics and science education include the following:

- school readiness program (Ahlan Semsem) for students in the first grade of primary school, in cooperation with the International Rescue Committee, for the purpose of preparing children who are not enrolled in kindergarten. School readiness has become part of the education calendar (the first 10 days of each school year) when children have experiences in which science, mathematics, and other learning takes place through play to break down educational, psychological, and social barriers. Supervisors and teachers of the first grade of primary school are trained in the program, which is being implemented in all governorates as of 2024. This is the third year of the program, and it has become part of the Ministry's offerings.
- strategic initiatives implemented in cooperation with UNICEF:
  - a program to increase reading skills in students in the first three grades that includes two guides, one for teachers and one for curriculum makers
  - a document on quality standards for students in kindergarten that addresses curriculum, teacher and supervisor roles, kindergarten management, and the kindergarten environment. The document was prepared in cooperation with UNICEF in line with developments in the field of education with the goal of achieving comprehensive quality for this important stage of early childhood before basic education (the primary stage).
- another program developed in cooperation with the International Rescue Committee that trains curriculum workers to prepare play-based activities for students in the first three grades. The activities include topics related to mathematics and science, as well as other school subjects.

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