CHAPTER 5

The Science Curriculum

The first part of Chapter 5 presents information about the curricular goals in the TIMSS 1999 countries, referred to as the intended curriculum. Data are provided about how the curriculum is supported and monitored within each country and the relationship between national testing and the curriculum. The second part of the chapter contains teachers' reports about the science topics actually studied in their classrooms, also known as the implemented curriculum.

In comparing achievement across countries, it is important to consider differences in students' curricular experiences and how they may affect the science they have studied. At the most fundamental level, students' opportunity to learn the content, skills, and processes tested in the TIMSS 1999 assessment depends to a great extent on the curricular goals and intentions inherent in each country's policies for science education. Just as important as what students are expected to learn, however, is what their teachers choose to teach them. The lessons provided by the teacher ultimately determine what science students are taught.

Chapter 5 presents information about the curricular goals in the TIMSS 1999 countries and teachers' reports about the science content studied. Teacher's instructional programs for their classes are usually guided by an "official curriculum" that describes the science education that should be provided. The official curriculum can be communicated by means of documents or statements of various sorts (often called guides, guidelines, or frameworks) prepared by the education ministry or by national or regional education departments. These documents or statements, together with supporting material such as instructional guides or mandated textbooks, are referred to as the intended curriculum.

To collect information about the intended science curriculum at the eighth grade in each of the TIMSS 1999 countries, the National Research Coordinators responsible for implementing the study completed questionnaires and participated in interviews. As part of the process, information was gathered about factors related to supporting and monitoring the implementation of the official curriculum, including the availability of teacher tra9(1v4g,instructional g5.2934 00260sessm-]TJT*-0.0002 Tc[(aents,)cess,o(

Background data provided by National Research Coordinators.

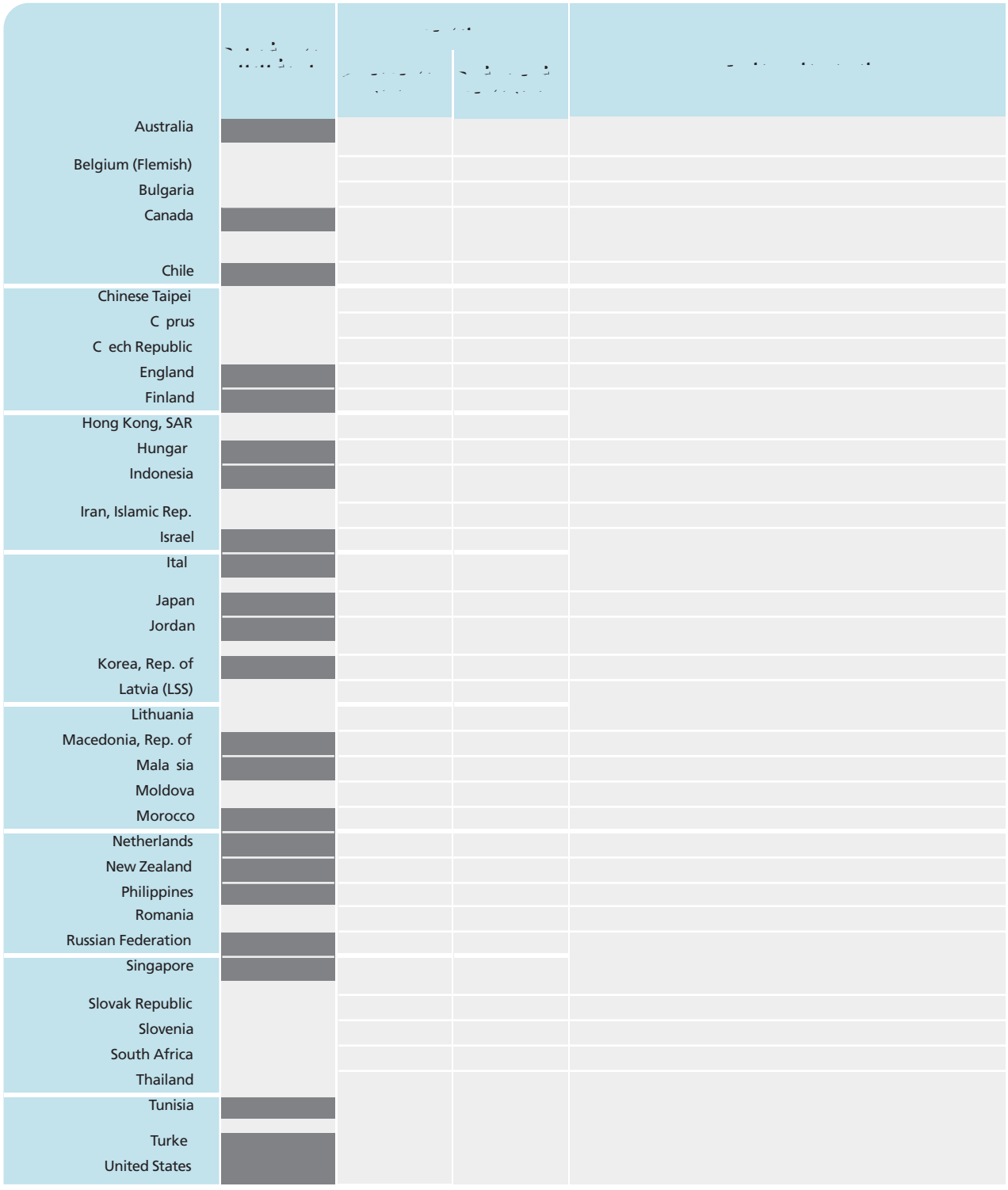
1 Australia: Yes in 4 of 8 states/territories.

2 Canada: Results shown are for the majority of provinces.

3 Geography is considered to be an integrated social studies and natural science course at grade 8; geography teachers were not sampled in the TIMSS studies.

Background data provided by National Research Coordinators.

1 Belgium (Flemish): Curricula were introduced as follows: 1997-98 (biology); 1997 (technological education), early 1990 (physics); 1997 (earth science); 1997-99 (applied sciences); 1989 (scientific



Background data provided by National Research Coordinators.

1 Public examinations are also used for system-wide assessment purposes in these countries: Malaysia, Morocco, Netherlands, Philippines, Singapore, Tunisia, and Turkey.

2 Australia: System-wide assessments are administered in 3 of 8 states/territories.

3 Canada: System-wide assessments are administered in 5 of 10 provinces.

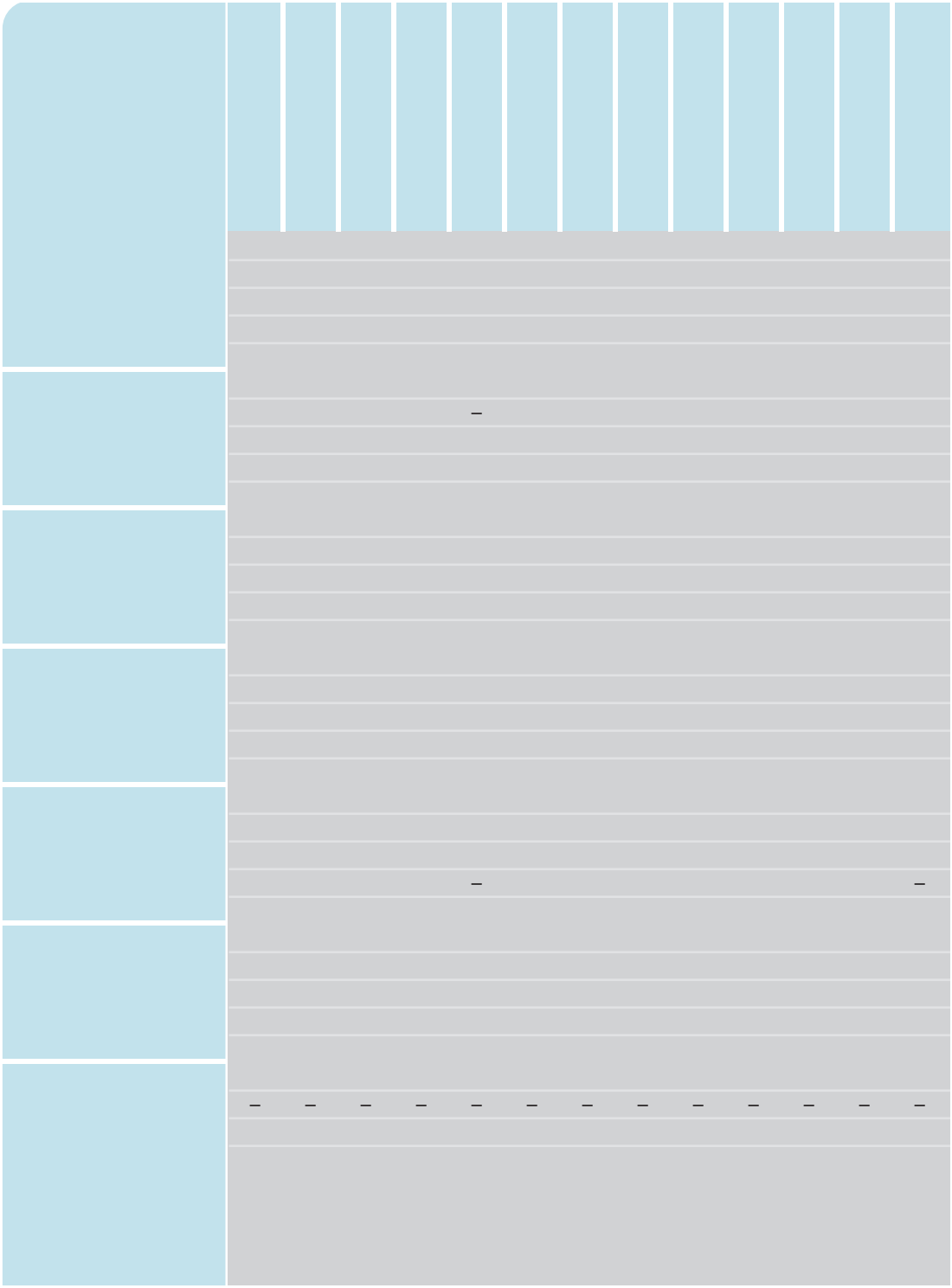
At grade 8, students take the following sciences: earth science is included in geography 6%;

Background data provided by National Research Coordinators.

1 Czech Republic: There is the same curriculum with different levels for different groups in physics and chemistry (2 levels); there is one curriculum for all students, and teachers adapt to students' needs, in life science and earth science.

2 England: While there is one "programme of study" for grades 6-8, the document identifies nine performance-levels describing the types and range of performance that pupils working at a particular level should demonstrate.

3 United States: Most state standards are designed for all students.



Background data provided by National Research Coordinators.

1 Australia: Results shown are for the majority of states/territories.

2 Belgium (Flemish) and Russian Federation: The single codes are derived from a combination of codes for individual sciences.

3 Canada: Results shown are for the majority of provinces.

Australia	r	83 (2.6)	0 (0.3)	5 (1.6)	1 (0.4)	4 (1.3)	2 (0.7)	4 (1.2)
Canada	r	55 (3.5)	14 (2.3)	6 (1.7)	1 (0.7)	1 (0.6)	19 (2.7)	3 (1.2)
Chile		71 (4.0)	1 (0.9)	22 (3.4)	1 (0.9)	0 (0.0)	2 (1.1)	2 (1.2)
C prus	s	17 (3.6)	1 (1.3)	17 (3.2)	39 (4.5)	13 (2.6)	6 (2.3)	6 (2.8)
England		– –	– –	– –	– –	– –	– –	– –
Hong Kong, SAR		92 (2.6)	0 (0.0)	3 (1.5)	0 (0.0)	1 (0.0)	4 (1.9)	0 (0.0)
Iran, Islamic Rep.		53 (4.6)	0 (0.0)	13 (2.7)	14 (3.1)	3 (1.4)	16 (2.9)	1 (0.8)
Israel	s	34 (4.4)	1 (0.0)	21 (3.9)	3 (1.3)	7 (2.5)	28 (4.5)	6 (2.1)
Ital		0 (0.0)	20 (3.2)	49 (3.9)	13 (2.6)	3 (1.2)	11 (2.6)	3 (1.4)
Japan		64 (4.6)	1 (1.0)	7 (2.4)	6 (2.1)	11 (2.7)	6 (2.1)	5 (1.9)
Jordan		30 (4.1)	3 (1.4)	12 (3.0)	19 (3.5)	14 (3.2)	21 (3.6)	1 (0.8)
Korea, Rep. of		49 (4.0)	2 (1.0)	10 (2.0)	5 (1.6)	5 (1.7)	26 (3.2)	4 (1.6)
Mala sia		100 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
New Zealand		94 (1.7)	1 (0.5)	2 (0.9)	1 (0.6)	0 (0.0)	2 (1.6)	1 (0.6)
Philippines		88 (2.7)	6 (2.1)	3 (1.2)	0 (0.0)	1 (0.8)	2 (1.2)	1 (0.0)
Singapore		69 (4.1)	0 (0.0)	5 (2.0)	4 (1.8)	7 (2.3)	11 (2.5)	4 (1.6)
South Africa	r	48 (5.0)	1 (0.8)	7 (2.5)	8 (2.8)	5 (2.3)	31 (4.0)	1 (0.9)
Thailand		81 (3.2)	7 (2.0)	4 (1.6)	1 (0.8)	3 (1.3)	3 (1.4)	1 (1.0)
Tunisia		8 (2.4)	8 (2.1)	81 (3.4)	1 (0.0)	0 (0.0)	0 (0.0)	3 (1.5)
Turke		74 (3.1)	0 (0.3)	3 (1.3)	8 (2.1)	2 (1.0)	11 (2.7)	2 (0.9)
United States	r	41 (4.7)	28 (4.8)	5 (1.5)	2 (0.8)	3 (1.0)	21 (3.1)	1 (0.4)
		58 (0.8)	5 (0.4)	14 (0.5)	6 (0.4)	4 (0.4)	11 (0.6)	2 (0.3)

SOURCE: IEA Thirdinternational

Background data provided by teachers.

( ) Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

A dash (–) indicates data are not available.

An "r" indicates teacher response data available for 70-84% of students. An "s" indicates teacher response data available for 50-69% of students.

percent of students were expected to have been taught substantial percentages of the topics. In addition, if content within a topic area required different responses, National Research Coordinators chose the response that best represented the entire topic area and noted the discrepancy (see Exhibit A.11 cocho3otehnt ndix for detailsdc.rriculum

- Earth processes and histor (weather and climate, ph sical c cles, plate tectonics, fossils)

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- Ph sical properties and ph sical changes of matter (weight, mass, states of matter, boiling, free ing)
- Subatomic particles (protons, electrons, neutrons)
- Energ t pes, sources, and conversions (chemical, kinetic, electric, light energ ; work and efficienc)

- Classification of matter (elements, compounds, solutions, mixtures)
- Structure of matter (atoms, ions, molecules, cr stals)
- Formation of solutions (solvents, solutes, soluble/insoluble substances)
- Acids, bases, and salts
- Chemical reactivit and transformations (definition of chemical change, oxidation, combustion)
- Energ and chemical change (exothermic and endothermic reactions, reaction rates)
- Chemical bonding and compound formation (ionic, covalent)
- Chemical equations
- Atomic structure
- Atomic number and atomic mass
- Periodic table
- Valenc

- Pollution (acid rain, global warming, o one la er, water pollution)
- Conservation of natural resources (land, water, forests, energ resources)
- Food suppl and production, population, and environmental effects of natural and man-made events

SOURCE: IEA Trends in International Mathematics and Science Study (

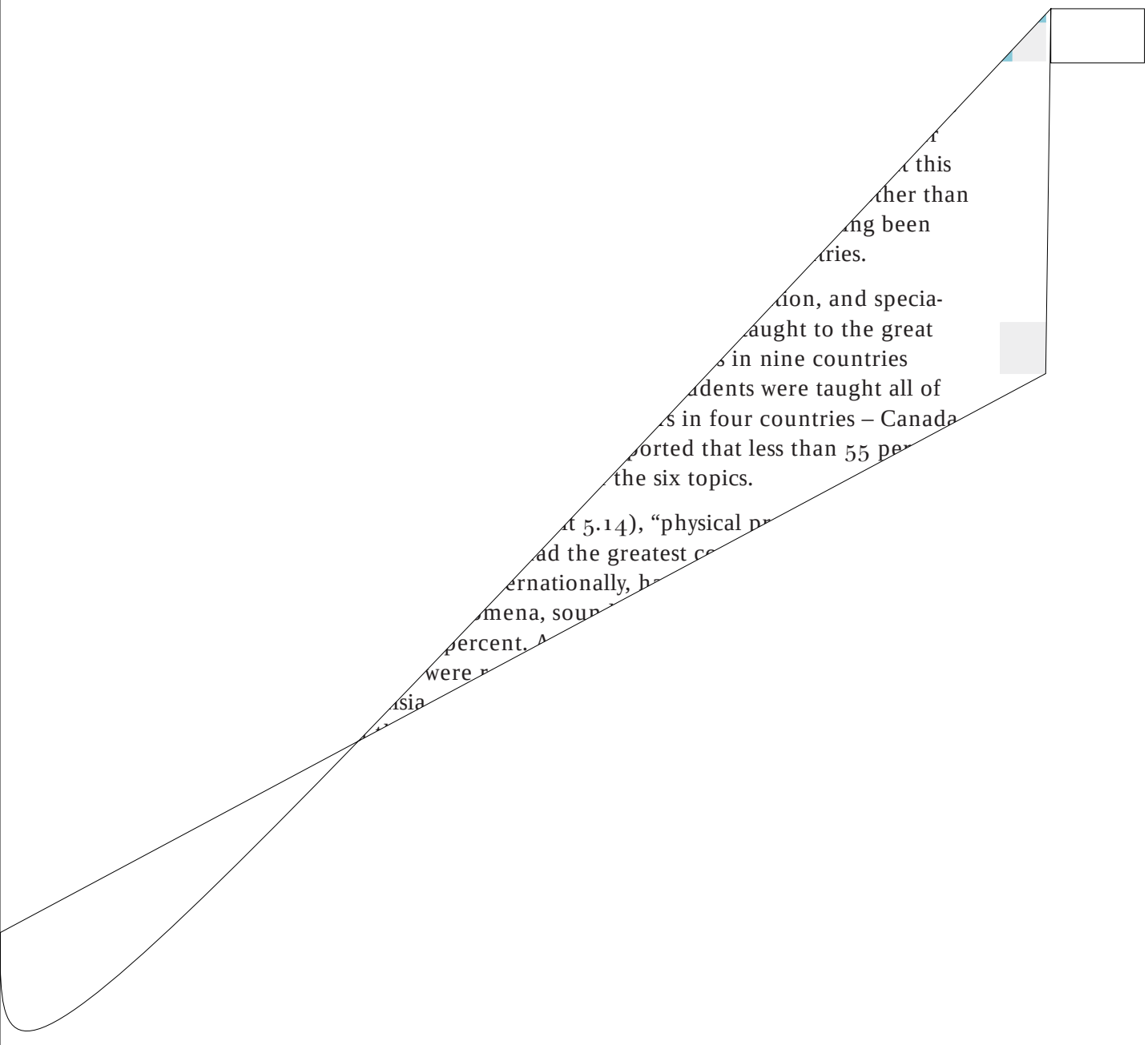
- Scientific method (formulating h potheses, making observations, drawing conclusions, generali ing)
- Experimental design (experimental control, materials, and procedures)
- Scientific measurements (reliabilit , replication, experimental error, accurac , scales)
- Using scientific apparatus and conducting routine experimental operations
- Gathering, organi ing, and representing data (units, tables, charts, graphs)
- Describing and interpreting data

■ Topics included in the curriculum and teacher questionnaires (intended and implemented curriculum).

◆ Topics also included in the curriculum questionnaire (intended curriculum).

Background data provided by National Research Coordinators according to the national curriculum. NRCs indicated the percentage of students who should have been taught each of the topics listed in exhibit 5.10. The response categories were: all or almost all of the students (at least 90%); about half of the students; only the more able students (top track - about 25%); only the most advanced students (10% or less); not included in curriculum through grade 8. (See reference exhibits R2.3-R2.8 for detail by topic.)

A dash (–) indicates data are not available.



and the Netherlands, reported having taught "classification of matter" and "structure of matter" to 97 percent or more of their students. Most of these countries reported that over 90 percent of their students were taught "chemical reactivity and transformations" as well. Furthermore, in both Hungary and the Netherlands, 97 percent or more of the students were reported to have been taught all the topic areas. In contrast, in Belgium (Flemish) and Tunisia, teachers reported that fewer than 15 percent of their students were taught each of the chemistry topic areas.

5.16 Most students in most countries were taught environmental and resource issues topics (see Exhibit 5.16), especially "pollution" and "conservation," with 21 countries teaching these topics to 75 percent or more of their students. One country, Japan, reported teaching fewer than 30 percent of their students each of the topics in this area.

5.17 Each of the scientific inquiry and the nature of science topics (see Exhibit 5.17) was taught to 75 percent or more of the students, on average internationally. Ninety percent or more of the students in four countries – England, the Netherlands, Romania, and Singapore – were taught all six topic areas. Teachers in all countries taught each topic to more than 60 percent of their students except in seven countries: Belgium (Flemish), Iran, Israel, Jordan, South Africa, Tunisia, and Turkey.

	Earth's physical features (layers, landforms, bodies of water, rocks, soil)	Earth's atmosphere (layers, composition, temperature,	Earth processes and history (weather and climate, physical cycle, plate tectonics, fossils)	Earth in the solar system and the universe (interactions between earth, sun, and moon; relationship to planets and stars)
	r	r	r	r
	r	r	r	r
		r	r	r
	s	s	s	s
			r	
	s	s	s	s
	s	s	s	s
		r		r
	s	r	s	s
Ital				
	s	r	s	r
			r	
				r
			r	
	s	s		s
		r		r
	r	r	r	r

r s r 100 s 100 r	r s r s r	r s r s r r	r r r s s s r r	r r r s r s r r r	r s r s r r

Australia	r 91 (2.4)	r 80 (3.2)	r 71 (3.2)	r 76 (3.3)	r 39 (4.1)	r 48 (4.4)	r 72 (3.2)	r 45 (4.0)
Belgium (Flemish)	s 58 (5.3)	s 8 (2.9)	s 35 (4.7)	s 54 (5.4)	s 5 (2.1)	s 31 (4.0)	s 38 (4.3)	s 33 (4.5)
Estrali .)	r 97 (1.7)	r 89 (2.9)	r 98 (1.0)	r 97 (1.3)	r 87 (3.3)	r 84 (6.9)	r 97 (1.4)	r 96 (1.9)
	r 97 (1.3)	s 44 (3.4)	r 82 (2.6)	r 91 (2.1)	s 35 (3.8)	s 50 (4.0)	s 48 (3.3)	s 56 (3.1)
	96 (1.7)	85 (3.0)	92 (2.2)	96 (1.4)	r 52 (4.3)	r 61 (4.8)	r 57 (4.1)	52 (3.7)
	98 (1.0)	98 (1.0)	47 (4.3)	93 (2.3)	79 (3.1)	89 (2.6)	20 (3.2)	29 (3.5)
	r 100 (0.0)	r 28 (5.4)	r 96 (2.5)	r 100 (0.0)	s 11 (3.9)	s 88 (3.4)	s 20 (4.5)	s 12 (3.9)
	96 (2.1)	96 (2.0)	94 (2.4)	98 (1.3)	10 (3.1)	81 (4.1)	71 (4.8)	100 (0.2)
	s 97 (1.4)	s 66 (4.1)	s 96 (1.7)	s 92 (2.8)	s 82 (3.6)	s 98 (1.1)	s 97 (1.8)	s 98 (1.1)
	80 (3.4)	83 (3.0)	14 (2.8)	49 (4.0)	44 (3.7)	17 (3.2)	35 (4.1)	51 (3.6)
	r 87 (3.4)	r 34 (4.9)	87 (3.4)	84 (3.2)	r 58 (4.6)	r 50 (5.2)	83 (3.5)	r 41 (4.9)
	98 (1.2)	92 (2.3)	100 (0.2)	97 (1.5)	87 (3.1)	58 (4.0)	97 (1.5)	98 (1.2)
	93 (2.2)	79 (3.7)	85 (3.4)	91 (2.5)	90 (2.4)	90 (2.4)	60 (4.5)	85 (3.6)
	100 (0.0)	99 (0.9)	100 (0.0)	96 (1.2)	r 48 (4.8)	97 (1.5)	97 (1.2)	69 (3.8)
	94 (1.9)	89 (2.6)	r 40 (4.7)	r 35 (4.0)	r 7 (2.6)	r 11 (3.2)	r 76 (4.1)	r 19 (3.8)
	98 (1.2)	89 (2.6)	77 (3.1)	95 (1.5)	44 (4.0)	38 (4.0)	55 (3.9)	85 (2.9)
	100 (0.0)	43 (4.1)	15 (3.5)	99 (0.9)	99 (1.3)	99 (1.3)	90 (2.6)	20 (3.1)
	99 (0.8)	99 (0.8)	92 (2.2)	94 (2.4)	97 (1.4)	98 (1.1)	88 (2.9)	99 (0.8)
	95 (1.9)	66 (4.1)	63 (4.3)	85 (3.1)	33 (3.9)	41 (4.0)	96 (1.7)	87 (2.6)
	98 (1.2)	55 (4.4)	71 (4.1)	77 (3.9)	83 (3.4)	90 (2.2)	8 (2.5)	71 (4.5)
	– –	– –	– –	– –	– –	– –	– –	– –
	r 98 (1.2)	r 95 (2.1)	r 98 (1.3)	97 (1.5)	r 19 (3.8)	92 (2.3)	98 (1.1)	97 (0.9)
	83 (3.4)	29 (4.1)	81 (3.6)	80 (3.4)	87 (2.6)	89 (2.6)	36 (4.3)	76 (3.5)
	– –	– –	– –	– –	– –	– –	– –	– –
	– –	– –	– –	– –	– –	– –	– –	– –
	100 (0.0)	r 100 (0.0)	100 (0.0)	100 (0.0)	100 (0.0)	100 (0.0)	100 (0.0)	100 (0.0)
	94 (1.9)	74 (3.6)	78 (3.4)	78 (3.3)	24 (3.3)	69 (4.0)	34 (4.0)	51 (4.2)
	95 (1.8)	77 (3.5)	94 (2.0)	89 (2.6)	58 (4.7)	70 (4.4)	63 (4.6)	85 (2.8)
	100 (0.0)	91 (2.5)	96 (1.8)	99 (0.7)	16 (3.5)	98 (1.2)	98 (1.5)	98 (1.1)
	– –	– –	– –	– –	– –	– –	– –	– –
	96 (1.8)	s 80 (4.5)	97 (1.6)	99 (0.9)	85 (3.4)	99 (0.8)	92 (2.6)	r 82 (4.2)
	88 (2.8)	r 48 (4.5)	75 (3.7)	r 56 (4.9)	r 27 (4.3)	r 35 (4.4)	89 (2.5)	r 39 (5.2)
	r 76 (4.2)	r 76 (4.1)	r 53 (4.9)	r 60 (4.6)	r 34 (4.2)	r 27 (4.4)	r 49 (5.0)	r 26 (4.4)
	s 9 (3.1)	s 3 (1.8)	s 7 (2.6)	s 15 (4.0)	s 6 (2.5)	s 9 (3.1)	s 12 (3.6)	s 13 (3.4)
	99 (0.5)	96 (1.9)	98 (1.4)	100 (0.0)	r 46 (4.5)	93 (2.4)	96 (1.8)	99 (0.6)
	r 93 (1.7)	r 86 (2.6)	r 76 (3.4)	r 82 (3.0)	r 65 (3.8)	r 67 (3.3)	r 70 (3.2)	r 75 (3.4)
	91 (0.4)	71 (0.6)	75 (0.5)	83 (0.5)	52 (0.6)	68 (0.6)	67 (0.6)	65 (0.6)

Australia	98 (1.1)			r 42 (3.8)
Belgium (Flemish)	s 13 (			s 4 (1.9)
Bulgaria			(0.5)	r 87 (2.8)
Cana			4 (4.2)	s 36 (3.6)
			86 (3.0)	r 83 (3.2)
			100 (0.0)	84 (2.9)
			68 (4.4)	r 53 (4.9)
			92 (3.0)	53 (5.3)
			s 94 (2.1)	s 73 (4.7)
			79 (2.7)	51 (3.6)
			r 57 (5.0)	r 71 (4.8)
		.0)	97 (1.4)	99 (1.0)
		x	x x	x x
		97 (1.6)	97 (1.1)	66 (4.8)
		94 (2.2)	62 (4.1)	r 29 (4.0)
		91 (2.0)	78 (3.6)	58 (4.0)
		75 (3.6)	96 (1.7)	46 (4.2)
		99 (0.9)	98 (1.1)	62 (4.5)
		97 (1.4)	91 (2.3)	51 (3.8)
		99 (0.9)	89 (2.6)	54 (4.8)
		– –	– –	– –
	(1.0)	99 (0.9)	99 (0.7)	87 (3.0)
	2 (3.2)	71 (3.7)	57 (4.4)	39 (4.3)
	– –	– –	– –	– –
	– –	– –	– –	– –
	99 (1.0)	r 99 (0.9)	r 99 (0.9)	r 99 (0.8)
	96 (1.5)	89 (2.6)	61 (4.1)	35 (3.6)
	92 (2.2)	87 (2.7)	83 (3.2)	72 (3.8)
a	100 (0.0)	99 (0.7)	84 (4.0)	36 (4.9)
ion	– –	– –	– –	– –
apore	98 (1.3)	93 (2.5)	r 89 (2.9)	x x
h Africa	96 (1.8)	72 (3.5)	65 (4.0)	r 43 (4.5)
Thailand	86 (3.6)	86 (3.5)	r 51 (4.8)	r 52 (4.3)
Tunisia	s 9 (3.1)	s 1 (0.9)	s 3 (1.8)	s 1 (1.1)
Turke	97 (1.5)	96 (1.9)	94 (2.1)	95 (1.8)
United States	r 88 (2.2)	r 88 (2.6)	r 76 (3.4)	r 66 (3.9)
	90 (0.3)	84 (0.4)	76 (0.6)	58 (0.7)

Australia	r		r	45	(3.9)	r	40	(3.6)
Belgium (Flemish)	r		r	82	(3.7)	r	63	(4.3)
Bulgaria	s		s	89	(3.3)	s	84	(4.0)
Canada	s		s	90	(2.2)	s	83	(2.9)
Chile				97	(1.3)		90	(2.3)
Chinese Taipei	r		r	48	(4.4)	r	41	(4.7)
C prus	s		s	89	(3.7)	s	50	(5.0)
C ech Republic				92	(2.5)		82	(4.1)
England	s		s	71	(5.1)	s	71	(4.6)
Finland				77	(4.0)		55	(4.2)
Hong Kong, SAR			r	54	(5.3)	r	30	(4.7)
Hungar				99	(1.0)		89	(2.8)
Indonesia				85	(3.0)		79	(3.8)
Iran, Islamic Rep.				88	(2.9)		69	(3.8)
Israel	r		s	37	(4.5)	r	35	(4.4)
Ital				80	(2.8)		70	(3.4)
Japan				7	(2.4)		7	(2.4)
Jordan				81	(3.6)	r	72	(4.4)
Korea, Rep. of				58	(4.5)		49	(4.4)
Latvia (LSS)	r		r	87	(3.3)	r	75	(4.4)
Lithuania				–	–		–	–
Macedonia, Rep. of	r		r	89	(2.7)	r	84	(3.5)
Mala sia				75	(3.7)		77	(3.9)
Moldova				–	–		–	–
Morocco				–	–		–	–
Netherlands				98	(1.0)	r	98	(1.1)
New Zealand				61	(4.0)	r	40	(4.1)
Philippines				97	(1.4)		90	(2.3)
Romania							96	(2.2)
Russian Federation							–	–
Singapore			r			s	64	(5.0)
South Africa	s		s			s	59	(4.9)
Thailand							89	(2.3)
Tunisia	r		r			r	42	(4.8)
Turke							74	(3.5)
United States	r		r			s	81	(2.9)
							66	(0.7)

Australia	98 (0.7)	r 95 (1.2)	r 78 (3.5)	98 (1.2)	99 (0.5)	96 (2.0)
Belgium (Flemish)	r 86 (3.8)	r 46 (4.6)	r 64 (4.6)	r 66 (4.9)	r 91 (2.8)	r 90 (3.2)
Bulgaria	x x	x x	x x	x x	x x	x x
Canada	r 99 (0.5)	r 97 (1.7)	s 84 (2.8)	r 99 (0.8)	r 100 (0.2)	r 99 (0.7)
Chile	98 (1.2)	86 (3.1)	r 71 (3.6)	78 (3.2)	93 (2.0)	91 (1.9)
Chinese Taipei	85 (3.2)	71 (4.0)	83 (3.3)	90 (2.7)	68 (4.0)	69 (3.9)
C prus	r 100 (0.0)	r 93 (3.0)	r 85 (3.5)	r 93 (2.5)	s 88 (3.0)	r 92 (2.3)
C ech Republic	r 79 (4.4)	r 73 (4.9)	r 81 (4.4)	r 80 (4.8)	r 86 (3.7)	r 81 (4.8)
England	s 96 (1.6)	s 95 (1.9)	s 92 (2.2)	s 98 (0.9)	s 98 (0.8)	s 98 (0.9)
Finland	89 (2.8)	89 (2.5)	82 (2.9)	84 (2.7)	90 (2.6)	92 (2.2)
Hong Kong, SAR	85 (3.4)	68 (4.5)	63 (4.8)	88 (3.1)	81 (3.4)	r 80 (3.3)
Hungar	96 (1.7)	93 (1.9)	80 (3.5)	77 (3.7)	97 (1.7)	99 (0.7)
Indonesia	90 (2.8)	63 (4.1)	67 (4.6)	78 (4.2)	80 (3.8)	71 (4.0)
Iran, Islamic Rep.	r 64 (4.3)	77 (3.5)	r 54 (4.5)	83 (3.3)	r 57 (4.4)	r 60 (4.1)
Israel	r 91 (2.6)	91 (2.7)	r 55 (4.6)	r 84 (3.5)	82 (3.7)	88 (3.0)
Ital	100 (0.0)	94 (1.8)	84 (3.1)	84 (3.2)	95 (1.7)	94 (1.8)
Japan	90 (2.6)	96 (1.8)	77 (3.4)	99 (1.0)	97 (1.6)	95 (1.9)
Jordan	r 58 (4.7)	r 55 (4.8)	r 53 (5.0)	83 (3.2)	r 78 (4.0)	75 (4.2)
Korea, Rep. of	93 (2.1)	89 (2.6)	84 (3.1)	99 (0.7)	92 (2.1)	86 (2.9)
Latvia (LSS)	r 82 (3.8)	r 95 (2.1)	r 61 (5.3)	r 82 (3.9)	r 92 (2.9)	r 91 (2.8)
Lithuania	– –	– –	– –	– –	– –	– –
Macedonia, Rep. of	s 87 (3.9)	x x	x x	x x	s 84 (4.8)	s 85 (4.7)
Mala sia	87 (3.2)	76 (4.2)	68 (4.0)	95 (2.3)	83 (3.3)	83 (3.4)
Moldova	– –	– –	– –	– –	– –	– –
Morocco	– –	– –	– –	– –	– –	– –
Netherlands	92 (3.7)	96 (3.0)	99 (0.7)	100 (0.0)	100 (0.0)	100 (0.0)
New Zealand	99 (0.8)	96 (1.7)	85 (3.3)	97 (1.8)	99 (0.6)	99 (1.0)
Philippines	100 (0.4)	96 (1.7)	87 (2.9)	90 (2.7)	97 (1.4)	98 (1.1)
Romania	r 94 (2.5)	r 92 (3.0)	r 90 (3.0)	r 94 (2.3)	r 95 (2.2)	r 96 (2.1)
Russian Federation	– –	– –	– –	– –	– –	– –
Singapore	94 (2.2)	r 93 (2.6)	r 91 (3.0)	97 (1.7)	95 (2.1)	96 (1.9)
South Africa	r 66 (4.1)	r 65 (4.1)	r 53 (4.8)	r 73 (4.2)	r 68 (4.8)	r 69 (3.9)
Thailand	90 (2.2)	89 (2.4)	76 (4.0)	93 (2.0)	87 (3.1)	82 (3.2)
Tunisia	r 85 (3.4)	r 84 (3.5)	r 47 (5.2)	r 73 (4.1)	r 70 (3.8)	79 (3.7)
Turke	r 58 (4.3)	r 76 (3.4)	r 55 (4.0)	r 65 (4.4)	r 67 (4.6)	r 59 (4.7)
United States	r 99 (0.6)	r 97 (1.2)	r 89 (2.5)	r 95 (1.4)	r 97 (1.4)	r 98 (1.1)
_	88 (0.5)	84 (0.6)	75 (0.7)	87 (0.5)	87 (0.5)	87 (0.5)

SOURCE: IEA Third International

Can Meaningful Comparisons Between Intended and Implemented Curricula Be Made?

The TIMSS 1999 results indicate some discrepancies in a number of countries between the intended curriculum in science and the implemented curriculum as reported by teachers. There are many cases of topics intended to be taught to all, or almost all, students in a country for which teachers reported lower coverage. Interestingly, there are even more cases for which teachers reported greater topic coverage than would be expected from the intended curriculum. Such discrepancies are consistent with previous IEA studies.[2] However, considering the broad nature of the topic areas, care should be taken in interpreting the results. Further analysis will need to be done within each country to strengthen the match between the intended and implemented curricula.

2 Livingstone, I.D., (1986), *Second International Mathematics Study: Perceptions of the Intended and Implemented Mathematics Curriculum*, Washington, D.C., Center for Statistics, U.S. Department of Education.