

REFERENCE 3

e e
l t t.

R 3



Percentage of Students Whose Teachers Report Having the Major Area of Study

				Science Education	Mathematics or Mathematics Education	Education	Other
General/Integrated Science							
G	Australia						r
	Canada						r
	Chile						r
	Cyprus						r
	England	s	s	s	s	s	s
	Hong Kong, SAR						
	Iran, Islamic Rep.						
	Israel						r
	Italy						
	Japan	r	r	r	r	r	r
	Jordan						
	Korea, Rep. of						
	Malaysia						
	New Zealand						
	Philippines						
	Singapore						r
	South Africa						
	Thailand						
	Tunisia						
Turkey							
United States							r
International Avg.							
Earth Science							
M	Belgium (Flemish)						
	Bulgaria						
	Chinese Taipei						
	Czech Republic						
	Finland ^b						
	Hungary						
	Indonesia						
	Latvia (LSS)						
	Lithuania [†]						
	Macedonia, Rep. of						
	Moldova						
	Morocco						
	Netherlands						
	Romania						
	Russian Federation						
International Avg.							

	Percentage of Students Whose Teachers Report Having the Major Area of Study						
	Biology	Physics	Chemistry	Science Education	Mathematics or Mathematics Education	Education	Other
Biology							
Belgium (Flemish)	78 (4.3)	44 (4.9)	56 (4.7)	45 (4.6)	18 (3.7)	41 (4.9)	74 (4.6)
Bulgaria	93 (2.0)	3 (1.4)	30 (4.5)	--	0 (0.0)	16 (3.4)	7 (2.0)
Chinese Taipei ^a	--	--	--	--	--	--	--
Czech Republic	94 (2.5)	0 (0.0)	32 (4.5)	53 (5.3)	6 (2.3)	50 (4.8)	63 (5.4)
Finland ^b	68 (4.1)	0 (0.0)	2 (1.4)	5 (1.9)	0 (0.0)	8 (2.0)	42 (4.0)
Hungary	94 (1.8)	0 (0.4)	16 (2.6)	14 (2.8)	0 (0.0)	9 (2.3)	76 (3.8)
Indonesia	68 (4.8)	17 (3.4)	15 (3.4)	43 (4.6)	10 (2.6)	26 (4.4)	21 (3.5)
Latvia (LSS)	96 (2.2)	41 (5.7)	91 (3.0)	78 (4.0)	22 (4.7)	88 (2.9)	r 71 (5.1)
Lithuania [†]	93 (2.2)	--	--	--	--	--	--
Macedonia, Rep. of	92 (2.4)	8 (2.6)	68 (4.2)	53 (4.4)	9 (2.5)	49 (4.2)	26 (4.2)
Moldova	70 (2.7)	21 (3.1)	59 (4.2)	--	33 (3.0)	34 (3.8)	30 (3.6)
Morocco ^c	r 80 (3.1)	r 21 (2.7)	r 30 (3.2)	r 76 (2.6)	r 12 (1.9)	r 72 (3.1)	r 64 (3.1)
Netherlands	84 (4.1)	3 (1.3)	7 (3.0)	9 (3.6)	4 (2.2)	3 (2.1)	20 (5.9)
Romania	89 (3.4)	5 (1.9)	8 (2.5)	27 (4.0)	4 (1.9)	40 (4.5)	32 (4.7)
Russian Federation	88 (3.0)	10 (2.3)	53 (3.8)	75 (3.2)	8 (1.9)	77 (3.2)	65 (3.6)
International Avg.	85 (0.9)	13 (0.8)	36 (1.0)	43 (1.2)	10 (0.7)	39 (1.0)	45 (1.2)
Physics							
Belgium (Flemish)	49 (6.0)	66 (5.6)	62 (6.2)	51 (6.1)	50 (5.7)	45 (6.1)	63 (6.2)
Bulgaria	1 (0.9)	74 (6.4)	24 (6.6)	--	27 (4.3)	9 (2.4)	8 (2.5)
Chinese Taipei ^a	8 (2.4)	60 (4.3)	64 (4.2)	32 (4.1)	7 (2.2)	36 (4.0)	9 (2.5)
Czech Republic	1 (1.1)	88 (3.6)	14 (3.5)	46 (5.0)	61 (5.6)	41 (4.3)	35 (5.0)
Finland ^b	0 (0.0)	49 (3.7)	36 (4.2)	6 (1.6)	69 (3.6)	22 (3.3)	16 (1.5)
Hungary	3 (1.5)	92 (2.3)	9 (2.1)	12 (2.7)	80 (3.0)	7 (2.3)	35 (4.4)
Indonesia	21 (4.1)	56 (4.9)	15 (3.4)	52 (5.1)	16 (3.3)	18 (3.5)	15 (3.2)
Latvia (LSS)	6 (2.1)	87 (2.7)	16 (3.1)	50 (4.5)	85 (3.1)	85 (3.1)	r 65 (4.5)
Lithuania [†]	--	90 (2.5)	--	--	--	--	--
Macedonia, Rep. of	9 (2.5)	96 (1.1)	51 (4.1)	54 (4.0)	54 (4.0)	59 (4.5)	25 (3.9)
Moldova	28 (3.0)	71 (2.9)	17 (3.3)	x x	50 (3.7)	50 (4.5)	34 (4.1)
Morocco ^c	11 (2.7)	88 (2.6)	87 (3.0)	82 (3.2)	21 (3.3)	71 (2.9)	47 (3.9)
Netherlands ^d	14 (4.7)	39 (5.4)	28 (6.7)	15 (4.7)	32 (5.7)	13 (4.5)	23 (5.4)
Romania	1 (1.0)	76 (4.0)	43 (4.3)	18 (3.0)	10 (2.6)	37 (3.8)	16 (3.3)
Russian Federation	1 (0.8)	88 (3.0)	5 (2.1)	73 (3.9)	53 (4.1)	74 (4.2)	64 (3.4)
International Avg.	11 (0.8)	75 (1.0)	34 (1.2)	41 (1.2)	44 (1.1)	41 (1.0)	33 (1.1)
Chemistry							
Belgium (Flemish)	--	--	--	--	--	--	--
Bulgaria	30 (4.4)	15 (6.4)	89 (2.7)	--	10 (6.4)	21 (6.3)	13 (2.5)
Chinese Taipei	--	--	--	--	--	--	--
Czech Republic	39 (5.2)	9 (3.0)	91 (3.2)	44 (5.2)	22 (4.2)	40 (5.3)	46 (5.4)
Finland ^b	--	--	--	--	--	--	--
Hungary	27 (3.5)	12 (2.8)	90 (2.2)	18 (3.5)	56 (4.1)	13 (2.9)	32 (3.6)
Indonesia	--	--	--	--	--	--	--
Latvia (LSS)	78 (3.7)	40 (4.9)	93 (2.7)	73 (4.8)	30 (4.4)	87 (3.0)	r 79 (4.4)
Lithuania [†]	--	--	92 (2.5)	--	--	--	--
Macedonia, Rep. of	58 (4.5)	35 (3.8)	96 (1.7)	52 (3.9)	10 (2.6)	52 (4.0)	22 (3.4)
Moldova	62 (3.4)	40 (3.5)	69 (3.6)	--	20 (3.1)	38 (4.1)	29 (3.6)
Morocco	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
Romania	7 (2.3)	34 (4.5)	82 (3.1)	23 (3.5)	8 (2.4)	37 (4.4)	16 (3.4)
Russian Federation	62 (5.9)	14 (3.1)	81 (4.3)	69 (5.9)	14 (3.1)	71 (5.3)	63 (3.7)
International Avg.	45 (1.5)	25 (1.5)	87 (1.0)	46 (1.9)	21 (1.4)	45 (1.6)	37 (1.4)

SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1998-1999.

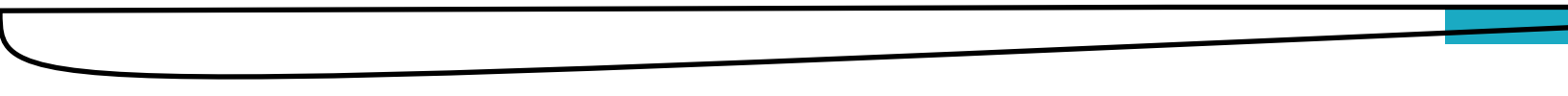
^a Chinese Taipei: Data for grade 8 physics/chemistry teachers are reported in the physics panel; data for grade 7 biology teachers are not available.

^b Finland: Data for biology and biology/geography teachers are reported in biology panel; data for physics and physics/chemistry teachers are reported in physics panel. Small number of separate chemistry and geography teachers are not reported.

^c Morocco: Data for biology/geology teachers are reported in biology panel; data for physics/chemistry teachers are reported in physics panel.

^d Netherlands: Data for physics/chemistry teachers are reported in physics panel.

	Percentage of Students Whose Teachers Report Feeling Very Well Prepared to Teach Topic ¹					
	Earth science-Earth's features and physical processes	Earth science-the solar system and the universe	Biology-structure and function of human systems	Biology-diversity, structure, and processes of plant and animal life	Chemistry-classification and structure of matter	Chemistry-chemical reactivity and transformation
Australia	38 (3.2)	44 (3.5)	76 (2.8)	68 (3.5)	62 (3.2)	54 (3.6)
Belgium (Flemish)	r 64 (4.5)	r 30 (4.9)	r 79 (2.9)	s 65 (3.9)	s 58 (5.7)	s 37 (5.9)
Bulgaria	s 44 (3.4)	s 40 (5.7)	s 64 (4.1)	s 60 (4.2)	s 53 (3.8)	s 52 (3.8)
Canada	r 41 (3.4)	r 30 (3.6)	r 59 (3.4)	r 60 (3.0)	s 48 (3.7)	s 36 (3.9)
Chile	13 (2.1)	19 (3.0)	46 (3.5)	44 (3.8)	24 (3.5)	20 (2.9)
Chinese Taipei	17 (3.9)	16 (3.6)	10 (3.6)	12 (4.0)	64 (4.3)	66 (4.4)
Cyprus	r 38 (4.0)	39 (3.2)	56 (2.6)	57 (2.5)	59 (2.9)	56 (2.6)
Czech Republic	70 (3.4)	68 (3.6)	77 (3.1)	74 (3.8)	69 (3.7)	68 (3.5)
England						
Finland	55 (3.8)	22 (3.0)	78 (3.5)	64 (3.8)	57 (3.5)	54 (3.5)
Hong Kong, SAR	8 (2.7)	9 (2.6)	44 (4.2)	38 (4.5)	35 (4.8)	36 (4.1)
Hungary	16 (2.3)	17 (2.6)	49 (3.3)	45 (3.1)	40 (2.9)	40 (3.1)
Indonesia	50 (4.4)	56 (4.3)	74 (3.5)	72 (3.5)	40 (5.7)	39 (6.4)
Iran, Islamic Rep.	37 (4.5)	11 (3.2)	66 (4.1)	44 (4.6)	45 (4.5)	44 (4.7)
Israel	r 16 (3.7)	r 15 (3.3)	85 (3.0)	85 (2.7)	79 (3.3)	64 (3.9)
Italy	29 (3.6)	33 (3.8)	67 (3.6)	63 (3.7)	49 (3.6)	36 (4.0)
Japan	12 (2.8)	11 (2.8)	19 (3.5)	16 (3.1)	25 (3.5)	31 (3.6)
Jordan	41 (4.9)	42 (4.8)	72 (4.0)	57 (4.6)	65 (4.1)	59 (4.2)
Korea, Rep. of	26 (3.7)	22 (3.3)	42 (3.6)	34 (3.7)	40 (4.0)	45 (3.6)
Latvia (LSS)	r 14 (2.4)	r 16 (2.9)	62 (3.3)	58 (3.7)	46 (3.6)	60 (3.5)
Lithuania ⁺						
Macedonia, Rep. of	r 65 (3.0)	s 65 (2.7)	r 73 (2.5)	r 74 (2.4)	r 74 (2.4)	r 74 (2.4)
Malaysia	16 (4.4)	16 (4.5)	33 (4.3)	34 (4.2)	22 (3.9)	14 (3.7)
Moldova	r 33 (2.8)	r 37 (2.6)	r 49 (3.4)	r 51 (3.1)	r 46 (3.0)	r 49 (2.9)
Morocco	53 (2.9)	32 (3.4)	r 82 (1.9)	r 78 (2.0)	r 66 (3.2)	r 66 (3.1)
Netherlands	r 54 (4.1)	r 43 (4.5)	r 59 (3.8)	r 56 (3.9)	r 41 (4.2)	r 35 (3.9)
New Zealand	44 (4.4)	43 (3.5)	74 (3.6)	70 (3.7)	74 (3.4)	62 (4.2)
Philippines	46 (4.2)	51 (4.4)	36 (4.3)	44 (4.2)	37 (4.5)	15 (3.5)
Romania	r 52 (2.9)	r 49 (3.2)	r 57 (3.6)	r 58 (3.5)	r 65 (2.9)	r 62 (3.0)
Russian Federation						
Singapore	13 (3.3)	11 (3.2)	56 (4.6)	52 (4.6)	63 (3.5)	57 (4.1)
South Africa	r 33 (5.9)	r 25 (5.1)	67 (4.1)	60 (3.7)	70 (4.3)	54 (4.6)
Thailand	26 (3.6)	33 (4.0)	45 (4.6)	30 (3.9)	19 (3.6)	15 (3.6)
Tunisia	22 (3.5)	11 (2.6)	81 (3.7)	64 (4.1)	8 (2.7)	8 (3.0)
Turkey	44 (4.1)	50 (3.5)	73 (3.9)	68 (4.2)	83 (2.6)	77 (3.1)
United States	r 61 (3.0)	r 56 (3.4)	r 65 (2.5)	r 62 (3.0)	r 58 (3.4)	r 42 (4.1)
International Avg.	36 (0.6)	32 (0.6)	60 (0.6)	55 (0.6)	51 (0.7)	46 (0.7)



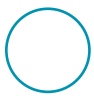


Exhibit R3.3

Percentage of Students Whose Schools Report That Shortages Affect Instructional Capacity Some or A Lot						
Countries with General/ Integrated Science		Countries with Separate Science Subjects				
		Earth Science	Biology	Physics	Chemistry	
Australia	5 (2.1)	Belgium (Flemish)	4 (1.5)	7 (3.3)	4 (1.6)	
Canada	19 (2.1)	Bulgaria	72 (4.3)	70 (4.3)	70 (4.6)	69 (4.5)
Chile	26 (3.5)	Czech Republic	12 (3.8)	9 (3.1)	9 (2.7)	6 (2.6)
Chinese Taipei ^a	21 (3.4)	Finland	5 (1.6)	7 (2.0)	3 (1.1)	4 (1.3)
Cyprus	15 (0.2)	Hungary	10 (2.4)	9 (2.3)	15 (2.8)	11 (2.3)
England ^r	5 (2.1)	Latvia (LSS)		31 (4.8)	39 (4.4)	30 (4.4)
Hong Kong, SAR	13 (2.7)	Lithuania		4 (1.7)	7 (2.1)	7 (1.9)
Indonesia ^b	39 (5.0)	Macedonia, Rep. of	13 (2.7)	14 (2.6)	12 (2.6)	13 (2.5)
Iran, Islamic Rep.	43 (4.0)	Moldova	66 (3.6)	65 (3.6)	72 (3.5)	69 (3.5)
Israel	42 (4.7)	Morocco ^c		45 (4.6)	45 (4.6)	
Italy	26 (3.6)	Netherlands ^r	5 (1.6)	12 (5.8)	24 (6.5)	22 (6.6)
Japan	17 (3.3)	Romania	19 (3.3)	11 (2.6)	9 (2.4)	12 (2.7)
Jordan	88 (2.7)	Russian Federation	42 (3.5)	40 (3.6)	39 (3.7)	40 (4.0)
Korea, Rep. of	32 (3.9)	Slovak Republic	24 (4.1)	8 (2.9)	13 (2.9)	11 (3.2)
Malaysia	51 (3.9)	Slovenia		54 (4.4)	55 (4.2)	56 (4.3)
New Zealand	13 (3.0)	International Avg.	25 (0.9)	26 (0.9)	28 (0.9)	27 (1.0)
Philippines	41 (4.2)					
Singapore	17 (3.2)					
South Africa	45 (3.4)					
Thailand	70 (4.1)					
Tunisia	85 (3.0)					
Turkey	81 (2.8)					
United States ^r	16 (2.5)					
International Avg.	35 (0.7)					





Think in a Sequential and Procedural Manner

Lithuania †
 Jordan
 Hungary
 Latvia (LSS)
 Bulgaria
 Romania
 Thailand
 Tunisia
 Chile
 Japan
 Cyprus
 South Africa
 Philippines
 Singapore
 Russian Federation
 Morocco
 Moldova
 Netherlands

International Avg.

Iran, Islamic Rep.
 Hong Kong, SAR
 United States †
 Belgium (Flemish)
 Czech Republic
 Australia
 England †
 Turkey
 Macedonia, Rep. of
 Chinese Taipei
 Canada †
 New Zealand
 Malaysia
 Indonesia
 Italy
 Korea, Rep. of
 Israel
 Finland

Be Able to Think Creatively

Cyprus
 Chile
 South Africa
 Philippines
 Chinese Taipei
 Macedonia, Rep. of
 Turkey
 Romania
 Latvia (LSS)
 Bulgaria
 Thailand
 Moldova
 Malaysia
 Lithuania †
 Korea, Rep. of
 Czech Republic
 Japan
 Hong Kong, SAR
 United States †
 Hungary
 Canada †
 Israel

International Avg.

Russian Federation
 Indonesia
 Singapore
 Iran, Islamic Rep.
 Finland
 Jordan
 Morocco
 Australia
 New Zealand
 Tunisia
 Italy
 Netherlands
 England †
 Belgium (Flemish)



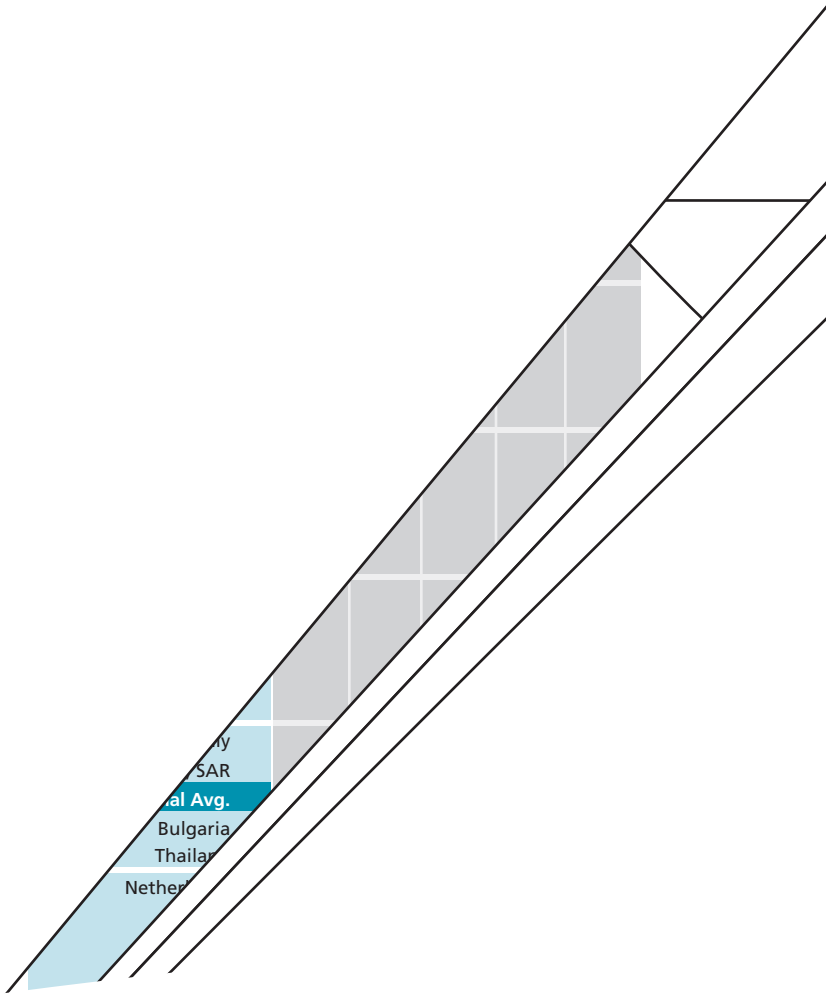


Exhibit R3.6

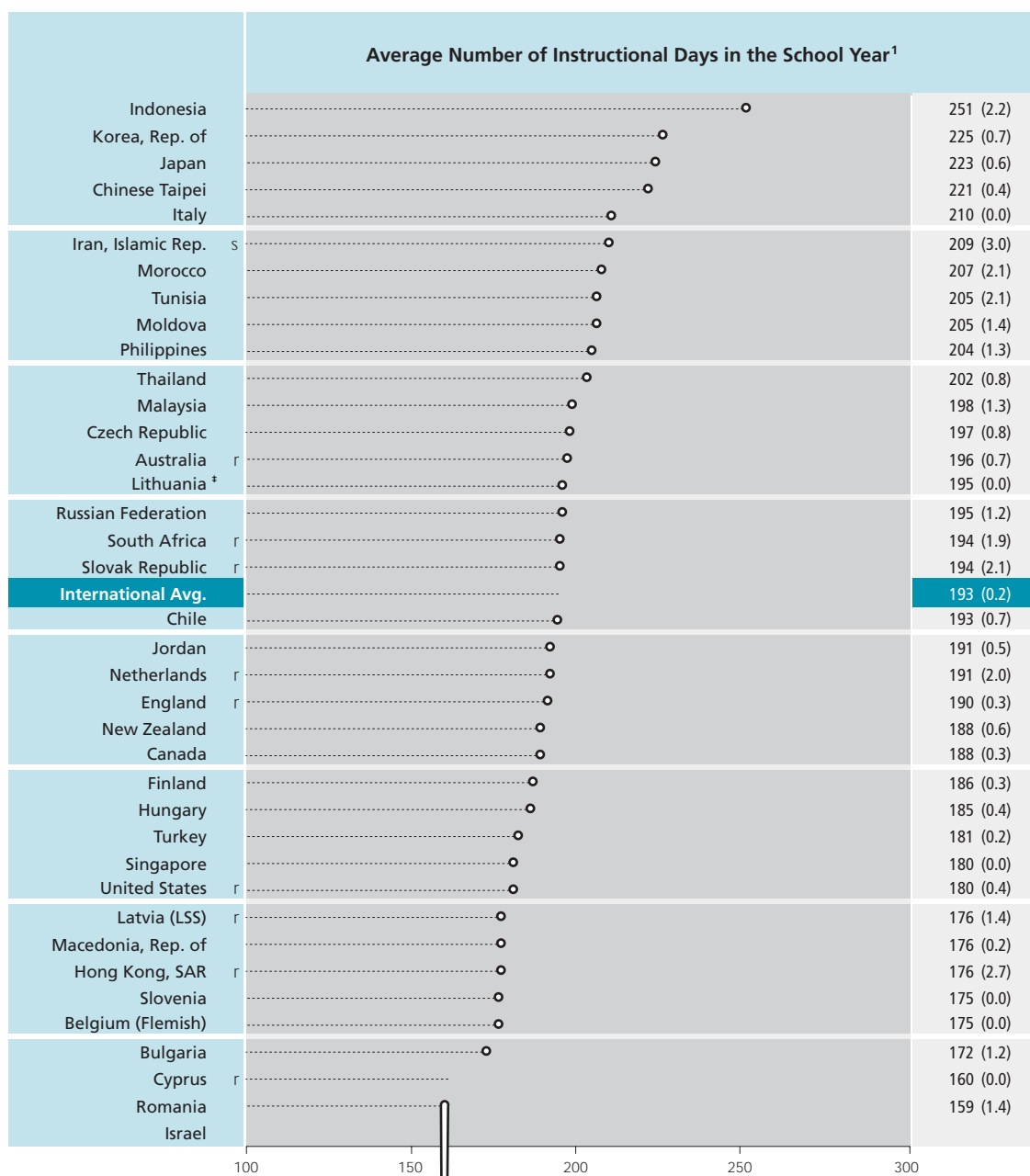


Exhibit R3.7



Background



Australia	65 (3.1)	22 (2.8)	9 (1.8)	68 (3.5)	26 (3.0)
Belgium (Flemish)	53 (3.4)	37 (2.6)	6 (1.5)	12 (2.0)	9 (1.7)
Bulgaria	r 81 (2.5)	r 55 (2.3)	r 9 (1.6)	r 14 (1.9)	r 61 (2.2)
Canada	r 85 (2.5)	r 35 (3.3)	r 17 (3.1)	r 78 (2.4)	r 36 (3.7)
Chile	67 (3.2)	33 (3.7)	18 (2.9)	68 (3.4)	45 (3.6)
Chinese Taipei	42 (3.6)	35 (3.7)	14 (2.9)	57 (4.4)	34 (3.7)
Cyprus	s 88 (2.5)	s 40 (4.2)	s 4 (1.9)	s 57 (4.1)	s 53 (4.9)
Czech Republic	89 (2.0)	17 (1.9)	10 (1.9)	32 (2.9)	32 (2.8)
England	s 64 (4.8)	s 24 (3.7)	s 3 (1.2)	s 67 (4.6)	s 21 (3.7)
Finland	59 (3.0)	30 (2.3)	20 (2.5)	42 (2.4)	40 (2.8)
Hong Kong, SAR	50 (4.6)	22 (4.0)	10 (2.6)	34 (4.2)	23 (3.5)
Hungary	81 (1.7)	49 (1.9)	16 (1.8)	30 (2.2)	46 (2.3)
Indonesia	47 (4.0)	39 (3.8)	39 (3.4)	52 (3.4)	64 (3.5)
Iran, Islamic Rep.	49 (4.3)	15 (2.9)	22 (3.2)	55 (4.0)	41 (4.4)
Israel	71 (3.7)	28 (3.8)	r 9 (2.0)	71 (3.3)	47 (3.6)
Italy	88 (2.4)	44 (3.6)	25 (3.4)	46 (4.1)	43 (4.1)
Japan	69 (4.1)	60 (4.0)	32 (4.0)	57 (4.0)	48 (4.2)
Jordan	73 (3.7)	28 (4.1)	7 (2.3)	61 (4.1)	67 (3.6)
Korea, Rep. of	58 (4.0)	47 (4.0)	16 (2.9)	50 (3.6)	17 (3.0)
Latvia (LSS)	r 60 (2.6)	r .1((4.4)	91.-r		

Background data provided by teachers.

Lithuania used the same cohort of students as other countries, but later in 1999, at the beginning of the new school year.

Science teacher background data available for Slovakia and Slovenia are not available.

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

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



Australia					
Belgium (Flemish)	53 (3.4) r 5 (5.9) ●	37 (2.6) r 3 (5.5) ●	6 (1.5) r 0 (2.6) ●	12 (2.0) r ●	9 (1.7) r -3 (3.4) ●
Canada	85 (2.5) r 7 (4.7) ●	35 (3.3) r 11 (5.6) ●	17 (3.1) r 12 (4.7) ●	78 (2.4) r ▲	36 (3.7) r 19 (4.9) ▲
Cyprus	88 (2.5) s 14 (5.9) ●	40 (4.2) s 4 (7.0) ●	4 (1.9) s -3 (3.8) ●	57 (4.4)85	-3 (3.8)

S. . . . etet j te



Exhibit R3.11

Australia	79 (1.1)	Belgium (Flemish)	13 (1.0)	71 (1.5)	81 (2.3)	
Canada	77 (1.2)	Bulgaria	22 (1.4)	34 (1.8)	48 (1.5)	57 (2.2)
Chile	58 (1.4)	Czech Republic	6 (0.8)	24 (1.8)	53 (2.3)	76 (1.9)
Chinese Taipei ^a	70 (1.3)	Finland				

Percentage of Students Reporting Almost Always or Pretty Often

Countries with General/Integrated Science		Countries with Separate Science Subjects							
		Earth Science		Biology		Physics		Chemistry	
	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999
Australia	79 (1.1)	3 (1.5)	Belgium (Flemish)	13 (1.0)	-5 (1.8)	71 (1.5)	81 (2.3)	-4 (3.5)	76 (1.9)
Canada	77 (1.2)	4 (1.8)	Czech Republic	6 (0.8)	2 (0.9)	24 (1.8)	53 (2.3)	-6 (3.3)	82 (1.7)
Cyprus	92 (0.6)	3 (0.9)	Hungary	12 (0.8)	3 (1.1)	26 (1.3)	70 (1.7)	2 (2.3)	61 (2.1)
England	91 (0.9)	1 (1.3)	Latvia (LSS)			29 (1.8)	49 (2.0)	-24 (2.6)	-17 (2.7)
Hong Kong, SAR	88 (0.9)	-3 (1.3)	Lithuania						
Iran, Islamic Rep.	59 (1.9)	-5 (3.0)	Netherlands	7 (0.9)	1 (1.1)	32 (2.8)	56 (2.7)	2 (3.6)	65 (1.8)
Israel [†]	81 (1.7)	8 (3.2)	Romania	27 (1.5)	-8 (2.1)	47 (1.5)	59 (1.7)	-1 (2.4)	75 (1.6)
Italy	29 (1.8)	-9 (2.8)	Russian Federation	17 (1.1)	1 (1.8)	37 (1.7)	69 (1.7)	-1 (2.3)	58 (2.0)
Japan	75 (1.5)	9 (2.2)	Slovak Republic	13 (0.8)	1 (1.1)	31 (1.8)	54 (1.9)	-4 (2.7)	73 (1.3)
Korea, Rep. of	53 (1.7)	11 (2.4)	Slovenia			41 (1.5)	57 (1.6)	-4 (2.4)	70 (0.7)
New Zealand	84 (0.9)	6 (1.5)	International Avg. §	13 (0.4)	0 (0.5)	38 (0.6)	61 (0.7)	-4 (0.9)	1 (0.9)
Singapore	88 (1.0)	1 (1.4)							
Thailand [†]	80 (1.2)	-4 (1.7)							
United States	71 (1.1)	2 (1.7)							
International Avg. §	74 (0.4)	2 (0.6)							

▲ 1999 significant | higher than 1995
 ● No significant difference between 1995 and 1999
 ▼ 1999 significant | lower than 1995

Significance is adjusted for multiple comparisons. SOURCE:

Background data are provided by TIMSS. Countries administered either a general/integrated science or separate subject area form of the TIMSS ionnaire. In countries that administered the separate subject area form, students were asked about each subject area separately. Percentages for separate science subject areas are based only on those students taking each subject. Countries that approved sampling procedures at the classroom level in 1995.

Background data for Bulgaria and South Africa are not available for 1995. () 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. Trend notes: Because coverage fell below 65% in 1995 and 1999, Latvia is an outlier in the beginning of the school year. In 1995, Latvia and Israel were unable to collect their international Desired Population; 1999 data are based on their comparable populations.

Background data for Bulgaria and South Africa are not available for 1995. () 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.

Australia	81 (1.3)
Canada	69 (1.4)
Chile	48 (1.3)
Chinese Taipei *	57 (1.6)
Cyprus	48 (1.7)
England	89 (1.1)
Hong Kong, SAR	77 (1.2)
Indonesia	

Belgium (Flemish)	8 (0.7)	36 (1.6)	61 (3.1)	
Bulgaria	18 (1.3)	19 (1.4)	30 (1.5)	32 (1.5)
Czech Republic	5 (0.5)	25 (2.0)	31 (2.2)	39 (2.4)
Finland	21 (1.1)	24 (1.4)	70 (1.3)	80 (1.0)
Hungary	8 (0.6)	11 (0.9)	21 (1.2)	20 (1.6)
Latvia (LSS)		22 (1.3)	30 (1.8)	34 (1.6)
Lithuania †				



Percentage of Students Reporting Almost Always or Pretty Often

Countries with General/Integrated Science		Countries with Separate Science Subjects							
		Earth Science		Biology		Physics		Chemistry	
	Percent of Students 1999	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference	Percent of Students 1999	1995-1999 Difference
Australia	81 (1.3)	8 (0.7)	-3 (1.3)	36 (1.6)	-7 (2.4)	61 (3.1)	-11 (4.2)	39 (2.4)	4 (3.3)
Canada	69 (1.4)	5 (0.5)	2 (0.7)	25 (2.0)	5 (2.5)	31 (2.2)	2 (3.0)	20 (1.6)	0 (2.3)
Cyprus	48 (1.7)	8 (0.6)	2 (0.9)	11 (0.9)	4 (1.0)	21 (1.2)	1 (1.6)	34 (1.6)	-16 (2.8)
England	89 (1.1)			22 (1.3)		30 (1.8)			
Hong Kong, SAR	77 (1.2)								
Iran, Islamic Rep.	34 (1.3)	5 (0.8)	-1 (1.1)	20 (2.2)	0 (3.4)	41 (2.9)	-8 (4.0)		
Israel †	56 (1.8)	23 (1.3)	-9 (1.9)	25 (1.4)	-9 (1.8)	33 (1.5)	-16 (2.2)	37 (1.7)	-13 (2.4)
Italy	17 (1.3)	13 (0.9)	0 (1.4)	20 (1.0)	3 (1.4)	41 (1.6)	-3 (2.3)	41 (1.8)	-5 (3.0)
Japan	79 (1.7)	8 (0.8)	-4 (1.1)	19 (1.3)	1 (1.7)	33 (1.7)	3 (2.3)	33 (1.7)	8 (2.2)
Korea, Rep. of	46 (1.5)			17 (1.1)	2 (1.7)	33 (1.4)	2 (2.1)	32 (1.8)	7 (2.6)
New Zealand	82 (1.0)	10 (0.3)	-1 (0.4)	22 (0.5)	-1 (0.7)	36 (0.7)	-4 (0.9)	34 (0.7)	-1 (1.0)
Singapore	65 (1.4)								
Thailand †	50 (1.3)								
United States	65 (1.5)								
International Avg. §	63 (0.4)	10 (0.3)	-1 (0.4)	22 (0.5)	-1 (0.7)	36 (0.7)	-4 (0.9)	34 (0.7)	-1 (1.0)

SOURCE: IEA Third International Mathematics and Science Study (TIMSS), 1998-1999.

▲ 1999 significant increase from 1995

● No significant difference between 1995 and 1999

▼ 1999 significant decrease from 1995

Significance tests adjusted for multiple comparisons

() 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.

Background data for Belgium and South Africa are not available for 1995.

Background data for Bulgaria and South Africa are not available for 1995.

Background data for Bulgaria and South Africa are not available for 1995.

* Countries administered either a general/integrated science or separate subject area form of the questionnaire. In countries that administered the separate subject area form, students were asked about each subject area separately. Percentages for separate science subject areas are based only on those students taking each subject.

† Countries that administered sampling procedures at the classroom level in 1995.

‡ Netherlands data in physics panel are only on physics/chemistry courses.

Percentage of Students Reporting Almost Always or Pretty Often

Countries with General/ Integrated Science		Countries with Separate Science Subjects			
		Earth Science	Biology	Physics	Chemistry
Australia		Belgium (Flemish)			
Canada		Bulgaria			
Chile		Czech Republic			
Chinese Taipei ^a		Finland			
Cyprus		Hungary			
England		Latvia (LSS)			
Hong Kong, SAR		Lithuania [†]			
Indonesia ^b		Macedonia, Rep. of			
Iran, Islamic Rep.		Moldova			
Israel		Morocco	S		
Italy		Netherlands ^c			
Japan		Romania			
Jordan		Russian Federation			
Korea, Rep. of		Slovak Republic			
Malaysia		Slovenia			
New Zealand		International Avg.			
Philippines					
Singapore					
South Africa					
Thailand					
Tunisia					
Turkey					
United States					
International Avg.					





	Sometimes or Always		Never
	Percent of Students	Average Achievement	Percent of Students
Australia	46 (3.4)	540 (5.1)	
Belgium (Flemish)	11 (2.5)	534 (10.5)	
Bulgaria	15 (2.0)	520 (10.0)	
Canada	56 (3.4)	537 (10.0)	
Chile	62 (3.8)		
Czechia	6 (2.1)		
Denmark	43 (4.0)		
Ecuador	12 (1.8)		
England	24 (1.0)		

Percentage of Students Reporting Almost Always or Pretty Often						
Countries with General/ Integrated Science		Countries with Separate Science Subjects				
		Earth Science	Biology	Physics	Chemistry	
Australia	52 (1.3)	Belgium (Flemish)	45 (1.9)	55 (1.5)	58 (2.4)	
Canada	62 (1.8)	Bulgaria	35 (1.9)	36 (2.2)	42 (1.9)	44 (2.2)
Chile	83 (0.9)	Czech Republic	37 (2.2)	40 (2.1)	38 (1.7)	45 (2.2)
Chinese Taipei ^a	74 (1.3)	Finland	33 (1.4)	34 (1.5)	29 (1.4)	31 (1.6)
Cyprus	83 (0.9)	Hungary	26 (1.2)	26 (1.2)	31 (1.5)	31 (1.3)
England	63 (1.7)	Latvia (LSS)		27 (1.5)	23 (1.3)	25 (1.5)
Hong Kong, SAR	36 (1.8)	Lithuania ⁺				
Indonesia ^b	59 (1.3)	Macedonia, Rep. of	38 (1.6)	40 (1.5)	45 (1.5)	43 (1.3)
Iran, Islamic Rep.	66 (1.6)	Moldova	66 (1.3)	69 (1.4)	70 (1.2)	73 (1.2)
Israel	56 (1.6)	Morocco		^s 68 (1.7)	^s 70 (1.1)	
Italy	35 (1.4)	Netherlands ^c	49 (2.7)	56 (3.1)	51 (2.7)	
Japan	29 (1.8)	Romania	77 (1.4)	78 (1.2)	73 (1.1)	76 (1.2)
Jordan	65 (1.3)	Russian Federation	65 (1.2)	66 (1.5)	75 (1.1)	77 (1.2)
Korea, Rep. of	27 (1.7)	Slovak Republic	38 (2.3)	41 (2.1)	47 (2.0)	62 (2.3)
Malaysia	41 (1.3)	Slovenia		57 (1.6)	59 (1.3)	61 (1.3)
New Zealand	57 (1.5)	International Avg.	46 (0.5)	49 (0.5)	51 (0.4)	52 (0.5)
Philippines	74 (1.0)					
Singapore	64 (1.3)					
South Africa	73 (1.1)					
Thailand	65 (1.1)					
Tunisia	63 (1.3)					
Turkey	26 (0.9)					
United States	77 (1.2)					
International Avg.	58 (0.3)					

