

Chapter 8



School Contexts for Science Learning and Instruction

Chapter 8 presents information about school contexts for science learning and instruction among TIMSS 2007 countries and benchmarking participants, including characteristics of the student population, the role of the school principal, encouragement of parental involvement, school resources to support science learning, the climate of the school, and school safety.

What Are the Characteristics of the Schools' Student Population?

To provide information about the student populations in schools, TIMSS asked school principals about the percentage of students in their schools from economically disadvantaged homes, the percentage of students having the language of the TIMSS test as their native language, and the incidence of school attendance problems.

Exhibit 8.1 presents principals' reports about the economic background of students in their schools. At fourth grade, according to school principals, about one-third of students (34%), on average across countries, attended schools with few (10% or less) economically disadvantaged students, 26 percent attended schools with between 11 and 25 percent disadvantaged students, 17 percent attended schools with 26 to 50 percent economically disadvantaged students, and 23 percent attended schools where the majority were economically disadvantaged students. There was considerable variation across countries, however. In eight countries, Austria, Chinese Taipei, Japan, Kazakhstan, Kuwait, the Netherlands, Singapore, and the Ukraine, the

majority of students (52 to 64%) attended schools with few disadvantaged students, whereas at the other extreme, more than half the students in Algeria, Colombia, El Salvador, Iran, Morocco, and Yemen attended schools where the majority of students came from disadvantaged homes. The percentage of students in schools with few disadvantaged students increased since 2003 in Armenia, Latvia, Lithuania, and the Russian Federation, and decreased in Chinese Taipei.

At fourth grade, there was a positive association between attending school with fewer students from economically disadvantaged homes and science achievement. Average achievement was highest among students attending schools with few disadvantaged students (495 points, on average) and lowest among those attending schools where the majority of students were from disadvantaged homes (445 points)—a 50 point gap.

At eighth grade, 22 percent of students, on average across countries, attended schools with few economically disadvantaged students, although in Chinese Taipei, Japan, Kuwait, Malta, Singapore, the Ukraine, and the Basque Country of Spain, more than half the students were in such schools. The percentage of students in these schools increased since 2003 in Armenia, Lithuania, Malaysia, and the Russian Federation, and decreased in Bahrain, Japan, Korea, Singapore, the United States, and the benchmarking participant, Quebec. In contrast to the situation of schools with few disadvantaged students, 33 percent of students, on average, attended schools where the majority of students were from disadvantaged homes. Countries where more than half the students attended majority-disadvantaged schools included Algeria, Colombia, Egypt, El Salvador, Ghana, Indonesia, Lebanon, Morocco, the Palestinian Authority, Thailand, Tunisia, and Turkey. Average science achievement was highest among students attending schools with few disadvantaged students (489 points, on average), and lowest among students in schools with a majority of disadvantaged students (444 points).

Schools with large percentages of students not having the language of instruction, as their native language face additional challenges. As shown in Exhibit 8.2, most students attend school where most of their schoolmates

are native speakers of the language of the test. On average across countries at the fourth grade, 73 percent of students attended schools where almost all the students (more than 90%) had the language of the test as their native language. Almost all of the students (at least 90%) in a number of countries—Armenia, Colombia, the Czech Republic, El Salvador, Georgia, Hong Kong SAR, Hungary, Japan, Kuwait, Lithuania, and Yemen—attended such schools. The countries with nearly half or more of students in schools where less than half the students were native speakers of the language of the test included Iran (46%), and, most notably, Singapore (75%) and the benchmarking participant Dubai (77%). In Singapore, students were tested in English because they learn English as their first language in school. However, their mother-tongue language often would be Mandarin, Malay, or Tamil. The benchmarking participant Dubai in the United Arab Emirates tested in both English and Arabic.

At the eighth grade, and similar to the fourth grade, almost three-quarters of students, on average, attended schools where almost all students had the language of the test as their native language. Seventeen countries had 90 percent or more of students in this category, including Hungary, Japan, and Korea, with 100 percent of students in such schools. In contrast, countries with more than half their students in schools where the language of the test was the native language of less than half the students included Botswana, Ghana, Lebanon, Malta, Singapore, and the benchmarking participant Dubai. Botswana, Ghana, Malta, and Singapore tested in English. Lebanon tested in French and English, and the benchmarking participant Dubai tested in English and Arabic.

At both fourth and eighth grades, average science achievement was highest among students attending schools with more than 90% of students having the language of the test as their native language and lowest among students attending schools with less than half the students who were native speakers of the language of the test (480 vs. 455 points, on average at fourth grade and 476 vs. 450 points at eighth grade).

Exhibit 8.1 Principals' Reports on the Percentages of Students in Their Schools Coming from Economically Disadvantaged Homes with Trends
TIMSS2007
 Science **4th** Grade

Country	Schools with Few (0–10%) Economically Disadvantaged Students			Schools with 11–25% Economically Disadvantaged Students			Schools with 26–50% Economically Disadvantaged Students		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	4 (1.8)	345 (18.5)	∅ ∅	14 (2.8)	371 (18.0)	∅ ∅	24 (3.6)	363 (8.3)	∅ ∅
Armenia	r 17 (3.0)	473 (10.3)	14 (3.4) ▲	32 (4.2)	486 (11.1)	11 (5.5) ▲	25 (4.0)	496 (12.3)	–3 (5.7)
Australia	34 (4.5)	544 (4.9)	0 (6.3)	30 (3.0)	528 (7.6)	1 (5.0)	22 (4.4)	521 (7.5)	1 (5.7)
Austria	54 (3.6)	533 (3.6)	∅ ∅	29 (3.4)	529 (3.6)	∅ ∅	11 (2.4)	514 (8.9)	∅ ∅
Chinese Taipei	63 (3.9)	565 (2.6)	–17 (5.2) ▼	27 (3.6)	542 (3.6)	12 (4.7) ●	7 (2.3)	546 (8.1)	4 (2.7)
Colombia	5 (2.2)	432 (30.4)	∅ ∅	6 (2.1)	435 (11.5)	∅ ∅	8 (2.3)	439 (20.0)	∅ ∅
Czech Republic	19 (3.9)	525 (7.2)	∅ ∅	41 (4.8)	523 (4.2)	∅ ∅	27 (3.6)	499 (5.8)	∅ ∅
Denmark	r 49 (5.5)	530 (3.9)	∅ ∅	36 (4.8)	512 (4.6)	∅ ∅	8 (2.8)	488 (10.1)	∅ ∅
El Salvador	7 (1.6)	442 (23.3)	∅ ∅	11 (2.2)	404 (15.7)	∅ ∅	13 (2.9)	379 (7.3)	∅ ∅
England	r 38 (4.0)	564 (4.7)	0 (5.9)	31 (3.5)	544 (4.3)	6 (5.7)	15 (3.3)	520 (6.6)	4 (4.5)
Georgia	12 (2.7)	429 (11.7)	∅ ∅	26 (4.2)	422 (4.6)	∅ ∅	25 (3.8)	410 (10.3)	∅ ∅
Germany	29 (3.2)	543 (3.1)	∅ ∅	38 (3.1)	540 (3.2)	∅ ∅	19 (2.2)	526 (4.2)	∅ ∅
Hong Kong SAR	26 (4.1)	553 (5.7)	3 (6.0)	23 (4.3)	556 (8.5)	–3 (5.5)	30 (4.5)	559 (6.2)	5 (6.7)
Hungary	12 (2.8)	569 (12.4)	–3 (4.4)	29 (3.9)	552 (6.2)	5 (5.7)	28 (3.7)	544 (5.7)	–3 (5.4)
Iran, Islamic Rep. of	15 (2.7)	492 (10.9)	–2 (4.4)	15 (3.0)	475 (10.5)	4 (4.4)	18 (2.7)	424 (7.9)	–5 (5.1)
Italy	38 (3.7)	541 (4.5)	–7 (5.5)	37 (3.4)	542 (4.5)	0 (5.1)	14 (2.5)	524 (8.8)	4 (3.5)
Japan	64 (3.8)	551 (2.1)	–10 (5.4)	24 (3.5)	542 (4.2)	3 (5.0)	10 (2.4)	539 (3.7)	6 (2.8) ●
Kazakhstan	52 (4.2)	528 (7.3)	∅ ∅	26 (4.6)	531 (10.4)	∅ ∅	18 (4.4)	542 (12.8)	∅ ∅
Kuwait	60 (4.3)	348 (7.0)	∅ ∅	20 (3.3)	345 (13.1)	∅ ∅	16 (3.2)	347 (15.9)	∅ ∅
Latvia	38 (3.4)	555 (3.6)	13 (5.5) ●	38 (4.1)	535 (2.7)	–2 (7.0)	16 (3.1)	543 (5.9)	–4 (5.7)
Lithuania	37 (3.2)	530 (3.3)	11 (5.0) ▲	37 (3.9)	509 (3.3)	4 (6.0)	22 (3.0)	502 (5.1)	–9 (4.8)
Morocco	r 7 (2.9)	421 (20.3)	4 (3.2)	4 (1.7)	317 (32.8)	0 (2.3)	13 (2.8)	290 (16.4)	–5 (4.5)
Netherlands	r 61 (4.0)	531 (3.0)	–2 (5.6)	16 (3.5)	516 (4.3)	–1 (5.0)	15 (3.8)	504 (5.8)	7 (4.5)
New Zealand	44 (2.6)	534 (3.1)	0 (4.1)	20 (2.6)	515 (4.8)	–3 (4.4)	13 (1.6)	487 (8.3)	1 (2.8)
Norway	--	--	--	--	--	--	--	--	--
Qatar	41 (0.2)	306 (3.3)	∅ ∅	28 (0.2)	298 (3.3)	∅ ∅	13 (0.1)	287 (5.3)	∅ ∅
Russian Federation	28 (3.6)	567 (7.4)	10 (4.4) ●	33 (3.0)	552 (7.4)	1 (4.7)	20 (2.6)	535 (9.6)	–6 (4.0)
Scotland	r 44 (4.3)	517 (3.2)	8 (6.2)	26 (4.4)	499 (5.3)	–5 (6.4)	16 (3.8)	484 (4.7)	–2 (5.7)
Singapore	60 (0.0)	600 (5.6)	–4 (3.7)	30 (0.0)	570 (6.8)	4 (3.2)	9 (0.0)	546 (12.7)	3 (1.7)
Slovak Republic	41 (3.7)	543 (3.9)	∅ ∅	34 (3.8)	529 (5.6)	∅ ∅	13 (2.7)	493 (20.8)	∅ ∅
Slovenia	22 (3.6)	529 (5.7)	–2 (5.3)	43 (4.7)	520 (3.2)	0 (6.6)	25 (3.7)	513 (3.5)	2 (5.5)
Sweden	r 49 (4.5)	537 (2.9)	∅ ∅	30 (4.3)	520 (5.8)	∅ ∅	15 (4.0)	504 (7.9)	∅ ∅
Tunisia	20 (3.5)	354 (15.5)	0 (4.7)	14 (2.9)	344 (17.0)	–2 (4.1)	23 (3.9)	333 (10.5)	7 (4.9)
Ukraine	64 (4.2)	483 (3.4)	∅ ∅	25 (3.6)	457 (7.0)	∅ ∅	6 (2.1)	454 (14.5)	∅ ∅
United States	19 (2.2)	581 (6.3)	0 (3.6)	21 (2.5)	564 (3.4)	–2 (3.6)	18 (2.9)	545 (4.6)	–2 (4.1)
Yemen	5 (1.9)	236 (27.6)	∅ ∅	10 (2.2)	210 (20.2)	∅ ∅	22 (3.7)	199 (16.7)	∅ ∅
International Avg.	34 (0.6)	495 (1.9)		26 (0.6)	481 (1.7)		17 (0.5)	468 (1.7)	
Benchmarking Participants									
Alberta, Canada	45 (4.5)	559 (4.9)	∅ ∅	32 (4.4)	537 (4.4)	∅ ∅	13 (3.2)	534 (6.3)	∅ ∅
British Columbia, Canada	46 (4.7)	545 (5.4)	∅ ∅	34 (4.0)	536 (4.5)	∅ ∅	15 (3.2)	522 (5.8)	∅ ∅
Dubai, UAE	s 45 (0.4)	479 (3.4)	∅ ∅	21 (0.2)	457 (8.2)	∅ ∅	16 (0.2)	415 (5.3)	∅ ∅
Massachusetts, US	46 (7.2)	589 (4.5)	∅ ∅	23 (7.5)	579 (6.0)	∅ ∅	14 (5.0)	564 (7.1)	∅ ∅
Minnesota, US	14 (6.5)	585 (4.2)	∅ ∅	36 (8.5)	571 (10.3)	∅ ∅	29 (8.5)	548 (6.9)	∅ ∅
Ontario, Canada	42 (5.1)	550 (4.9)	–7 (7.5)	29 (4.7)	534 (3.9)	9 (6.2)	10 (2.9)	516 (12.3)	–5 (4.8)
Quebec, Canada	47 (4.9)	522 (3.6)	7 (6.6)	26 (3.8)	519 (5.5)	–3 (5.3)	14 (2.9)	513 (8.4)	1 (4.3)

● 2007 percent significantly higher

▼ 2007 percent significantly lower

Background data provided by schools.

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

A dash (–) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (∅) indicates the country did not participate in the assessment.


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Exhibit 8.1 Principals' Reports on the Percentages of Students in Their Schools Coming from Economically Disadvantaged Homes with Trends (Continued)

TIMSS2007
Science **4**th
Grade

Country	Schools with More than 50% Economically Disadvantaged Students		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	58 (4.5)	342 (10.3)	0 0
Armenia	r 25 (3.6)	479 (12.6)	-22 (5.8) ▼
Australia	14 (3.1)	486 (10.5)	-2 (5.1)
Austria	6 (1.8)	470 (15.4)	0 0
Chinese Taipei	3 (1.7)	535 (10.6)	2 (1.9)
Colombia	82 (3.2)	389 (6.2)	0 0
Czech Republic	13 (3.2)	504 (7.6)	0 0
Denmark	r 7 (2.7)	482 (15.2)	0 0
El Salvador	70 (3.2)	384 (4.5)	0 0
England	r 16 (3.0)	499 (4.1)	-9 (5.2)
Georgia	36 (4.4)	418 (8.0)	0 0
Germany	14 (2.4)	463 (7.4)	0 0
Hong Kong SAR	21 (3.7)	540 (6.2)	-4 (5.7)
Hungary	31 (3.8)	500 (5.8)	2 (5.3)
Iran, Islamic Rep. of	52 (3.7)	411 (6.7)	2 (6.0)
Italy	11 (2.4)	508 (14.8)	3 (2.8)
Japan	1 (1.0)	~ ~	1 (1.0)
Kazakhstan	3 (1.3)	571 (12.4)	0 0
Kuwait	4 (1.8)	330 (34.9)	0 0
Latvia	9 (2.0)	521 (8.4)	-7 (4.7)
Lithuania	5 (1.5)	491 (11.5)	-6 (3.3)
Morocco	r 76 (3.6)	274 (7.0)	1 (5.3)
Netherlands	r 7 (2.1)	468 (11.3)	-3 (2.9)
New Zealand	23 (1.7)	444 (5.7)	2 (3.1)
Norway	--	--	--
Qatar	18 (0.1)	289 (4.0)	0 0
Russian Federation	19 (2.3)	530 (11.4)	-4 (4.3)
Scotland	r 14 (2.7)	456 (7.7)	-1 (4.4)
Singapore	1 (0.0)	~ ~	-3 (1.6) ▼
Slovak Republic	12 (2.1)	480 (17.8)	0 0
Slovenia	10 (2.7)	504 (5.3)	-1 (3.8)
Sweden	r 6 (2.4)	467 (10.5)	0 0
Tunisia	43 (3.9)	284 (8.8)	-5 (5.3)
Ukraine	4 (1.8)	470 (14.7)	0 0
United States	42 (2.8)	504 (4.0)	5 (3.8)
Yemen	63 (4.3)	190 (8.9)	0 0
International Avg.	23 (0.5)	445 (2.0)	
Benchmarking Participants			
Alberta, Canada	10 (2.7)	486 (11.7)	0 0
British Columbia, Canada	6 (2.0)	504 (9.9)	0 0
Dubai, UAE	s 19 (0.4)	434 (15.6)	0 0
Massachusetts, US	17 (4.4)	519 (7.8)	0 0
Minnesota, US	21 (7.0)	505 (15.1)	0 0
Ontario, Canada	19 (4.1)	505 (13.9)	2 (5.8)
Quebec, Canada	12 (3.1)	484 (3.8)	-4 (4.5)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

- 2007 percent significantly higher
- ▼ 2007 percent significantly lower



Exhibit 8.1 Principals' Reports on the Percentages of Students in Their Schools Coming from Economically Disadvantaged Homes with Trends (Continued)
TIMSS2007
 Science **8th** Grade

Country	Schools with Few (0–10%) Economically Disadvantaged Students			Schools with 11–25% Economically Disadvantaged Students			Schools with 26–50% Economically Disadvantaged Students		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	6 (1.9)	405 (5.9)	◊ ◊	22 (3.4)	407 (4.5)	◊ ◊	20 (3.2)	409 (5.1)	◊ ◊
Armenia	r 17 (3.3)	488 (11.3)	14 (3.6) ▲	31 (4.3)	480 (8.8)	10 (5.6)	26 (4.2)	497 (10.6)	–3 (6.0)
Australia	31 (3.3)	549 (8.4)	–1 (5.6)	33 (4.0)	509 (5.1)	–2 (5.8)	23 (4.3)	504 (6.7)	0 (5.4)
Bahrain	11 (0.2)	499 (5.9)	–5 (0.2) ▼	33 (0.3)	480 (2.8)	13 (0.3) ▲	31 (0.2)	460 (2.9)	–2 (0.3) ▼
Bosnia and Herzegovina	8 (2.2)	468 (11.6)	◊ ◊	18 (3.4)	465 (6.7)	◊ ◊	28 (4.1)	468 (6.3)	◊ ◊
Botswana	9 (2.2)	404 (15.2)	–7 (4.2)	22 (3.9)	380 (7.3)	1 (5.3)	21 (4.2)	342 (7.3)	–4 (5.7)
Bulgaria	19 (3.3)	502 (11.9)	– –	27 (3.9)	477 (7.9)	– –	20 (4.0)	460 (13.0)	– –
Chinese Taipei	59 (4.1)	571 (3.9)	–8 (5.4)	29 (3.8)	549 (6.3)	4 (5.2)	5 (1.9)	555 (9.6)	0 (2.6)
Colombia	6 (1.8)	419 (26.5)	◊ ◊	7 (3.0)	444 (10.2)	◊ ◊	14 (3.4)	428 (7.6)	◊ ◊
Cyprus	37 (0.2)	450 (2.8)	–1 (0.3)	32 (0.2)	454 (3.4)	–3 (0.4) ▼	22 (0.2)	446 (4.6)	7 (0.3) ▲
Czech Republic	24 (4.2)	552 (7.3)	◊ ◊	39 (4.7)	544 (4.9)	◊ ◊	27 (4.3)	530 (5.6)	◊ ◊
Egypt	10 (2.0)	430 (15.9)	–1 (3.2)	11 (2.7)	419 (11.6)	–13 (4.6) ▼	24 (3.4)	411 (6.2)	1 (4.9)
El Salvador	6 (1.5)	432 (10.0)	◊ ◊	8 (2.5)	387 (18.5)	◊ ◊	16 (3.2)	380 (7.3)	◊ ◊
England	s 38 (3.5)	570 (8.0)	5 (6.3)	27 (4.0)	522 (7.7)	–6 (7.2)	23 (3.8)	526 (10.9)	1 (7.3)
Georgia	11 (2.9)	431 (7.5)	◊ ◊	22 (4.3)	438 (10.3)	◊ ◊	30 (5.0)	409 (9.2)	◊ ◊
Ghana	8 (2.4)	336 (22.2)	4 (2.8)	7 (2.1)	304 (21.3)	–1 (3.3)	15 (2.9)	315 (18.3)	–3 (4.5)
Hong Kong SAR	12 (2.6)	566 (9.3)	–2 (4.3)	24 (3.6)	554 (8.6)	–3 (5.4)	24 (3.8)	516 (10.1)	0 (5.5)
Hungary	13 (2.9)	570 (8.9)	–2 (4.2)	26 (4.1)	548 (6.1)	3 (5.3)	31 (4.3)	534 (5.5)	–4 (6.1)
Indonesia	6 (1.9)	455 (24.6)	2 (2.7)	16 (2.8)	463 (11.9)	–1 (4.4)	22 (4.2)	450 (10.3)	–3 (5.4)
Iran, Islamic Rep. of	11 (2.4)	511 (9.5)	–4 (3.5)	16 (3.3)	460 (9.6)	4 (4.0)	23 (3.5)	468 (7.8)	–2 (4.9)
Israel	14 (2.8)	509 (10.1)	–1 (4.2)	25 (3.4)	493 (9.1)	–10 (5.1) ▼	32 (4.0)	461 (8.5)	6 (5.8)
Italy	40 (4.2)	510 (4.7)	–5 (5.4)	32 (4.0)	501 (4.7)	–1 (5.5)	19 (3.4)	481 (5.6)	7 (4.2)
Japan	57 (4.0)	562 (2.2)	–15 (5.4) ▼	33 (3.9)	550 (4.0)	10 (5.1) ▲	7 (2.4)	520 (11.1)	3 (2.9)
Jordan	11 (2.5)	504 (13.0)	–3 (4.0)	19 (3.5)	502 (8.8)	–3 (5.5)	28 (3.6)	477 (8.7)	4 (5.0)
Korea, Rep. of	24 (3.3)	569 (3.4)	–10 (4.9) ▼	34 (3.7)	553 (3.3)	–6 (5.5)	26 (3.5)	543 (3.6)	10 (4.6) ▲
Kuwait	r 52 (4.7)	423 (5.5)	◊ ◊	21 (3.6)	414 (8.1)	◊ ◊	17 (3.7)	417 (7.9)	◊ ◊
Lebanon	14 (3.0)	455 (15.5)	6 (4.0)	16 (3.2)	441 (12.9)	–1 (4.5)	15 (3.4)	413 (12.0)	0 (4.3)
Lithuania	r 33 (3.6)	540 (4.7)	13 (5.4) ▲	40 (3.6)	511 (3.5)	–1 (6.1)	22 (3.5)	503 (6.3)	–8 (5.6)
Malaysia	17 (3.5)	488 (11.7)	10 (4.2) ▲	25 (3.6)	482 (11.1)	13 (4.5) ▲	20 (3.1)	479 (14.6)	3 (4.6)
Malta	56 (0.2)	497 (1.6)	◊ ◊	20 (0.2)	434 (3.3)	◊ ◊	19 (0.2)	421 (3.0)	◊ ◊
Norway	– –	– –	– –	– –	– –	– –	– –	– –	– –
Oman	12 (2.7)	426 (14.6)	◊ ◊	30 (3.8)	412 (7.8)	◊ ◊	28 (3.7)	431 (7.4)	◊ ◊
Palestinian Nat'l Auth.	6 (1.9)	429 (25.5)	–1 (2.8)	20 (3.4)	426 (8.7)	9 (4.3) ▲	20 (3.2)	409 (9.4)	–9 (4.9)
Qatar	r 31 (0.2)	349 (2.7)	◊ ◊	41 (0.2)	281 (2.6)	◊ ◊	24 (0.1)	340 (2.8)	◊ ◊
Romania	14 (3.0)	492 (8.6)	2 (4.2)	16 (3.1)	484 (9.8)	–2 (4.5)	22 (3.9)	464 (8.0)	1 (4.9)
Russian Federation	30 (3.4)	544 (5.0)	11 (4.5) ▲	36 (3.5)	533 (5.6)	–1 (4.7)	22 (3.2)	518 (8.0)	–2 (4.2)
Saudi Arabia	27 (3.9)	416 (4.8)	– –	31 (4.2)	402 (5.6)	– –	25 (4.1)	394 (8.7)	– –
Scotland	s 36 (3.7)	520 (6.6)	8 (6.0)	38 (4.1)	487 (6.3)	–5 (7.0)	17 (3.6)	478 (10.3)	–6 (5.9)
Serbia	5 (1.9)	514 (8.2)	–5 (2.9)	22 (3.2)	481 (7.9)	–6 (5.1)	28 (4.2)	464 (6.9)	5 (5.8)
Singapore	52 (0.0)	593 (6.2)	–5 (0.0) ▼	30 (0.0)	544 (8.4)	3 (0.0) ▲	9 (0.0)	519 (17.4)	–1 (0.0)
Slovenia	22 (3.4)	546 (6.0)	–1 (5.2)	41 (4.5)	537 (3.5)	–1 (6.4)	25 (3.8)	537 (5.2)	2 (5.6)
Sweden	r 43 (4.7)	516 (4.5)	–3 (6.2)	41 (4.6)	504 (3.9)	9 (6.1)	11 (3.0)	507 (9.3)	–8 (4.8)
Syrian Arab Republic	12 (2.9)	451 (8.0)	◊ ◊	15 (2.7)	465 (8.9)	◊ ◊	25 (3.8)	465 (5.0)	◊ ◊
Thailand	5 (1.9)	507 (18.2)	◊ ◊	15 (2.8)	527 (14.7)	◊ ◊	20 (3.1)	481 (9.6)	◊ ◊
Tunisia	9 (2.6)	459 (6.8)	0 (3.7)	18 (3.1)	450 (5.0)	3 (4.1)	21 (3.5)	454 (4.6)	5 (4.6)
Turkey	6 (1.9)	520 (22.0)	◊ ◊	10 (2.5)	511 (10.9)	◊ ◊	18 (3.4)	470 (10.4)	◊ ◊
Ukraine	60 (4.1)	491 (4.2)	◊ ◊	28 (3.5)	479 (7.9)	◊ ◊	7 (2.1)	462 (7.9)	◊ ◊
United States	r 16 (2.5)	566 (3.6)	–11 (3.8) ▼	23 (2.8)	549 (4.8)	–1 (4.1)	26 (3.4)	521 (4.9)	1 (4.6)
‡ Morocco	0 (0.0)	~ ~	– –	6 (1.4)	437 (17.0)	– –	15 (4.6)	403 (9.7)	– –
International Avg.	22 (0.4)	489 (1.7)		24 (0.5)	472 (1.3)		21 (0.5)	461 (1.3)	

Benchmarking Participants

Basque Country, Spain	63 (5.3)	506 (3.6)	–1 (7.2)	15 (4.0)	494 (6.3)	–5 (5.5)	15 (3.9)	489 (6.9)	6 (5.0)
British Columbia, Canada	40 (4.4)	538 (5.1)	◊ ◊	33 (4.5)	521 (3.9)	◊ ◊	23 (4.0)	513 (7.3)	◊ ◊
Dubai, UAE	s 43 (0.9)	506 (5.8)	◊ ◊	19 (0.5)	478 (6.1)	◊ ◊	13 (0.4)	464 (10.6)	◊ ◊
Massachusetts, US	32 (3.5)	588 (6.8)	◊ ◊	37 (5.0)	564 (4.9)	◊ ◊	12 (5.1)	526 (22.4)	◊ ◊
Minnesota, US	15 (5.9)	566 (13.1)	◊ ◊	38 (7.9)	542 (7.3)	◊ ◊	29 (8.0)	531 (6.4)	◊ ◊
Ontario, Canada	42 (4.2)	537 (5.3)	1 (6.3)	36 (4.6)	520 (4.8)	7 (6.4)	17 (3.4)	529 (8.1)	4 (4.9)
Quebec, Canada	28 (3.7)	536 (5.7)	–15 (6.0) ▼	33 (3.8)	500 (6.2)	2 (6.2)	24 (3.9)	497 (6.0)	9 (4.9)

Background data provided by schools.

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A dash (–) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (◊) indicates the country did not participate in the assessment.


TIMSS & PIRLS
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 Lynch School of Education, Boston College

Exhibit 8.1 Principals' Reports on the Percentages of Students in Their Schools Coming from Economically Disadvantaged Homes with Trends (Continued)
TIMSS2007
 Science **8th** Grade

Country	Schools with More than 50% Economically Disadvantaged Students		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	52 (4.2)	409 (2.2)	0 0
Armenia	r 27 (3.9)	488 (9.4)	-20 (6.2) ▼
Australia	13 (2.6)	465 (12.0)	3 (3.5)
Bahrain	24 (0.2)	445 (2.3)	-7 (0.3) ▼
Bosnia and Herzegovina	46 (4.6)	462 (4.1)	0 0
Botswana	47 (4.6)	331 (3.7)	10 (6.5)
Bulgaria	34 (3.9)	449 (12.0)	--
Chinese Taipei	7 (2.8)	535 (20.5)	4 (3.2)
Colombia	73 (3.8)	406 (4.7)	0 0
Cyprus	9 (0.2)	460 (8.7)	-3 (0.3) ▼
Czech Republic	11 (2.6)	512 (5.2)	0 0
Egypt	55 (4.0)	398 (4.8)	13 (5.6) ▲
El Salvador	70 (3.7)	385 (3.7)	0 0
England	s 12 (2.6)	512 (14.0)	-1 (5.0)
Georgia	37 (5.3)	419 (6.7)	0 0
Ghana	71 (3.8)	296 (7.1)	0 (5.7)
Hong Kong SAR	40 (4.2)	507 (8.4)	5 (6.2)
Hungary	30 (3.8)	518 (6.2)	3 (5.4)
Indonesia	56 (3.9)	416 (5.2)	2 (5.7)
Iran, Islamic Rep. of	50 (3.8)	439 (4.1)	2 (5.6)
Israel	30 (3.8)	437 (10.1)	5 (5.0)
Italy	9 (2.2)	429 (10.9)	-1 (3.1)
Japan	2 (1.0)	~ ~	2 (1.0)
Jordan	42 (4.2)	470 (7.1)	2 (6.2)
Korea, Rep. of	16 (2.7)	545 (4.9)	6 (3.7)
Kuwait	r 11 (2.8)	399 (17.3)	0 0
Lebanon	56 (4.6)	385 (9.5)	-5 (6.1)
Lithuania	r 5 (1.9)	498 (13.7)	-3 (3.1)
Malaysia	38 (3.9)	451 (8.8)	-26 (5.6) ▼
Malta	6 (0.1)	307 (5.7)	0 0
Norway	--	--	--
Oman	30 (3.7)	422 (5.3)	0 0
Palestinian Nat'l Auth.	55 (4.0)	392 (4.8)	0 (5.5)
Qatar	r 4 (0.1)	345 (6.3)	0 0
Romania	49 (4.2)	444 (6.0)	-2 (6.0)
Russian Federation	12 (3.2)	505 (10.7)	-8 (4.3)
Saudi Arabia	18 (3.4)	391 (7.8)	--
Scotland	s 9 (2.2)	461 (10.0)	3 (3.5)
Serbia	45 (4.7)	462 (5.1)	6 (6.4)
Singapore	9 (0.0)	534 (14.7)	4 (0.0) ▲
Slovenia	11 (3.1)	528 (6.7)	0 (4.1)
Sweden	r 5 (1.8)	481 (10.9)	2 (2.1)
Syrian Arab Republic	48 (4.5)	440 (4.8)	0 0
Thailand	59 (3.6)	448 (5.6)	0 0
Tunisia	52 (4.0)	436 (2.8)	-7 (5.8)
Turkey	66 (3.9)	434 (4.1)	0 0
Ukraine	6 (1.8)	477 (21.7)	0 0
United States	r 35 (2.8)	480 (5.0)	11 (4.0) ▲
‡ Morocco	78 (4.8)	392 (3.6)	--
International Avg.	33 (0.5)	444 (1.3)	
Benchmarking Participants			
Basque Country, Spain	7 (2.1)	458 (15.7)	0 (3.2)
British Columbia, Canada	4 (1.9)	544 (30.7)	0 0
Dubai, UAE	s 24 (0.6)	465 (6.4)	0 0
Massachusetts, US	19 (3.3)	495 (17.2)	0 0
Minnesota, US	18 (5.6)	501 (15.5)	0 0
Ontario, Canada	5 (2.2)	497 (12.1)	-11 (4.0) ▼
Quebec, Canada	15 (3.2)	475 (9.7)	4 (4.1)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

- ▲ 2007 percent significantly higher
 ▼ 2007 percent significantly lower

Exhibit 8.2 Principals' Reports on the Percentages of Students Having the Language of the Test as Their Native Language with Trends
TIMSS2007
Science 4th Grade

Country	Schools with More than 90% of Students Having the Language of the Test as Native Language			Schools with 50–90% of Students Having the Language of the Test as Native Language			Schools with Less than 50% of Students Having the Language of the Test as Native Language		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	77 (4.5)	361 (5.5)	∅ ∅	12 (2.3)	347 (12.2)	∅ ∅	12 (4.4)	322 (43.2)	∅ ∅
Armenia	r 96 (1.3)	485 (5.9)	–1 (1.8)	3 (0.9)	449 (17.8)	2 (1.3)	1 (0.8)	~ ~	–1 (1.3)
Australia	62 (4.1)	527 (3.8)	–1 (6.0)	23 (4.2)	535 (7.1)	–5 (5.9)	15 (3.3)	514 (10.3)	6 (4.0)
Austria	44 (3.0)	534 (3.2)	∅ ∅	41 (3.6)	529 (3.1)	∅ ∅	15 (2.7)	493 (9.2)	∅ ∅
Chinese Taipei	39 (4.2)	560 (3.2)	5 (5.7)	34 (3.9)	559 (3.8)	–6 (5.3)	27 (3.9)	550 (3.5)	0 (5.1)
Colombia	96 (1.9)	403 (6.0)	∅ ∅	3 (1.8)	356 (27.7)	∅ ∅	1 (0.8)	~ ~	∅ ∅
Czech Republic	97 (1.4)	514 (3.1)	∅ ∅	2 (1.3)	~ ~	∅ ∅	1 (0.0)	~ ~	∅ ∅
Denmark	71 (4.3)	523 (3.0)	∅ ∅	25 (3.9)	509 (6.7)	∅ ∅	5 (1.9)	484 (17.9)	∅ ∅
El Salvador	98 (1.1)	390 (3.5)	∅ ∅	1 (0.9)	~ ~	∅ ∅	1 (0.6)	~ ~	∅ ∅
England	r 68 (3.9)	548 (3.6)	–6 (6.0)	17 (3.4)	531 (7.7)	4 (4.5)	15 (2.9)	524 (8.5)	2 (4.9)
Georgia	90 (2.5)	417 (4.7)	∅ ∅	10 (2.5)	420 (14.1)	∅ ∅	0 (0.0)	~ ~	∅ ∅
Germany	44 (2.9)	543 (3.0)	∅ ∅	45 (3.0)	530 (3.1)	∅ ∅	11 (1.8)	468 (8.2)	∅ ∅
Hong Kong SAR	96 (1.6)	554 (3.8)	–1 (2.6)	3 (1.3)	566 (12.2)	0 (2.4)	1 (0.0)	~ ~	1 (0.0)
Hungary	99 (0.8)	537 (3.3)	1 (1.3)	0 (0.0)	~ ~	–2 (1.1)	1 (0.0)	~ ~	1 (0.0)
Iran, Islamic Rep. of	43 (4.0)	468 (7.2)	–4 (6.7)	10 (2.5)	462 (9.8)	–4 (4.1)	46 (3.6)	400 (5.3)	8 (6.1)
Italy	66 (3.2)	535 (3.5)	–14 (4.4) ▼	33 (3.1)	540 (5.0)	17 (4.1) ▲	1 (0.8)	~ ~	–3 (1.8)
Japan	99 (0.7)	548 (2.0)	1 (1.4)	1 (0.0)	~ ~	1 (0.0)	0 (0.0)	~ ~	–2 (1.1)
Kazakhstan	53 (5.0)	521 (7.6)	∅ ∅	34 (4.9)	550 (7.3)	∅ ∅	12 (2.4)	534 (9.9)	∅ ∅
Kuwait	92 (2.1)	351 (4.7)	∅ ∅	7 (2.0)	318 (20.4)	∅ ∅	1 (0.0)	~ ~	∅ ∅
Latvia	72 (4.0)	546 (2.4)	–3 (6.1)	24 (3.9)	542 (4.2)	3 (6.0)	4 (1.5)	512 (18.8)	0 (2.2)
Lithuania	93 (2.0)	513 (2.4)	2 (3.2)	6 (1.8)	534 (10.4)	0 (2.8)	1 (0.7)	~ ~	–2 (1.9)
Morocco	r 68 (3.4)	297 (8.5)	6 (5.4)	16 (3.0)	317 (20.9)	8 (3.6) ▲	16 (3.0)	259 (15.9)	–13 (5.0) ▼
Netherlands	r 62 (4.1)	534 (3.3)	–4 (5.5)	28 (3.7)	508 (3.5)	7 (5.0)	11 (3.0)	497 (7.5)	–3 (4.0)
New Zealand	65 (3.0)	516 (3.2)	–2 (4.4)	26 (3.1)	491 (7.8)	–1 (4.4)	10 (1.6)	461 (10.3)	3 (2.5)
Norway	80 (3.8)	476 (3.9)	–1 (5.3)	17 (3.7)	477 (8.5)	–1 (5.2)	3 (1.6)	471 (11.3)	2 (1.8)
Qatar	76 (0.1)	295 (2.6)	∅ ∅	14 (0.1)	313 (4.3)	∅ ∅	10 (0.1)	244 (5.1)	∅ ∅
Russian Federation	70 (2.7)	550 (5.5)	–2 (4.7)	19 (2.7)	543 (9.3)	2 (3.8)	11 (1.6)	528 (21.0)	0 (3.0)
Scotland	87 (3.3)	502 (2.6)	–4 (4.4)	11 (3.0)	496 (10.5)	3 (3.9)	2 (1.3)	~ ~	0 (2.0)
Singapore	3 (0.0)	614 (23.6)	– –	22 (0.0)	616 (6.6)	– –	75 (0.0)	577 (5.1)	– –
Slovak Republic	89 (2.7)	535 (3.2)	∅ ∅	5 (1.8)	485 (25.3)	∅ ∅	5 (2.0)	420 (40.8)	∅ ∅
Slovenia	78 (3.7)	521 (2.4)	6 (5.2)	21 (3.6)	512 (3.9)	–6 (5.1)	1 (0.8)	~ ~	0 (1.1)
Sweden	61 (4.4)	531 (3.2)	∅ ∅	31 (4.0)	526 (3.9)	∅ ∅	8 (2.5)	476 (9.1)	∅ ∅
Tunisia	62 (4.1)	318 (8.4)	8 (6.0)	28 (4.1)	319 (11.9)	11 (5.3) ▲	10 (2.6)	296 (22.1)	–19 (4.6) ▼
Ukraine	58 (3.3)	468 (4.3)	∅ ∅	18 (3.1)	474 (6.1)	∅ ∅	23 (3.0)	488 (5.0)	∅ ∅
United States	62 (3.0)	551 (3.3)	–5 (4.3)	26 (2.9)	526 (7.0)	6 (3.9)	12 (2.0)	499 (10.7)	–1 (3.0)
Yemen	93 (2.3)	198 (7.6)	∅ ∅	5 (1.9)	221 (26.8)	∅ ∅	1 (0.1)	~ ~	∅ ∅
International Avg.	73 (0.5)	480 (1.0)		17 (0.5)	472 (2.2)		10 (0.3)	455 (3.6)	
Benchmarking Participants									
Alberta, Canada	62 (4.4)	546 (4.3)	∅ ∅	30 (4.1)	539 (6.3)	∅ ∅	7 (2.2)	524 (8.5)	∅ ∅
British Columbia, Canada	48 (4.8)	545 (3.6)	∅ ∅	31 (4.7)	536 (5.0)	∅ ∅	20 (3.6)	519 (9.0)	∅ ∅
Dubai, UAE	r 13 (0.2)	426 (5.1)	∅ ∅	10 (0.1)	498 (7.6)	∅ ∅	77 (0.2)	462 (4.1)	∅ ∅
Massachusetts, US	71 (4.6)	580 (4.0)	∅ ∅	22 (4.8)	560 (17.2)	∅ ∅	7 (3.8)	516 (7.2)	∅ ∅
Minnesota, US	62 (9.5)	568 (5.2)	∅ ∅	30 (8.7)	538 (13.4)	∅ ∅	8 (5.6)	493 (37.3)	∅ ∅
Ontario, Canada	58 (4.5)	535 (4.7)	6 (6.7)	31 (4.4)	536 (8.8)	–1 (6.4)	11 (2.7)	530 (10.0)	–5 (4.6)
Quebec, Canada	75 (3.6)	522 (2.7)	–10 (4.6) ▼	19 (3.0)	507 (6.3)	8 (4.1)	6 (1.9)	481 (7.9)	2 (2.3)

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Background data provided by schools.

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

A dash (–) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

A diamond (∅) indicates the country did not participate in the assessment.


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Exhibit 8.2 Principals' Reports on the Percentages of Students Having the Language of the Test as Their Native Language with Trends (Continued)

TIMSS2007
Science **8th** Grade

Country	Schools with More than 90% of Students Having the Language of the Test as Native Language			Schools with 50–90% of Students Having the Language of the Test as Native Language			Schools with Less than 50% of Students Having the Language of the Test as Native Language		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Algeria	87 (2.5)	408 (1.8)	0 0	8 (2.1)	415 (6.4)	0 0	5 (1.7)	399 (9.6)	0 0
Armenia	r 97 (0.8)	489 (5.9)	-1 (1.4)	3 (0.8)	451 (19.1)	2 (0.9) ▲	0 (0.0)	~ ~	-2 (1.1)
Australia	68 (3.1)	517 (4.7)	6 (5.8)	25 (3.4)	514 (7.6)	-1 (5.5)	7 (2.4)	486 (30.7)	-6 (4.6)
Bahrain	88 (0.1)	465 (1.6)	7 (0.2) ▲	7 (0.1)	481 (11.1)	-9 (0.2) ▼	5 (0.1)	497 (4.1)	2 (0.1) ▲
Bosnia and Herzegovina	97 (1.5)	464 (2.8)	0 0	3 (1.5)	500 (26.8)	0 0	0 (0.0)	~ ~	0 0
Botswana	r 2 (1.2)	~ ~	0 (1.9)	3 (1.4)	396 (47.7)	2 (1.8)	95 (1.8)	350 (3.3)	-2 (2.6)
Bulgaria	58 (4.6)	482 (7.0)	--	21 (3.9)	469 (15.6)	--	21 (3.7)	443 (11.4)	--
Chinese Taipei	40 (4.3)	564 (4.9)	-3 (6.1)	37 (4.5)	572 (5.5)	3 (6.1)	23 (3.9)	537 (7.3)	0 (5.2)
Colombia	99 (0.9)	418 (3.6)	0 0	1 (0.0)	~ ~	0 0	0 (0.0)	~ ~	0 0
Cyprus	89 (0.1)	451 (2.0)	-10 (0.1) ▼	10 (0.1)	451 (6.9)	10 (0.1) ▲	0 (0.0)	~ ~	-1 (0.1)
Czech Republic	98 (1.0)	539 (2.0)	0 0	2 (1.0)	~ ~	0 0	0 (0.0)	~ ~	0 0
Egypt	96 (1.2)	409 (3.8)	-4 (1.2) ▼	4 (1.2)	404 (15.2)	4 (1.2) ▲	0 (0.0)	~ ~	0 (0.0)
El Salvador	99 (0.6)	388 (3.0)	0 0	1 (0.7)	~ ~	0 0	0 (0.0)	~ ~	0 0
England	s 72 (4.1)	548 (5.9)	-10 (6.2)	22 (3.7)	531 (8.1)	7 (6.3)	6 (1.8)	519 (24.8)	3 (3.0)
Georgia	87 (4.2)	423 (4.7)	0 0	13 (4.2)	405 (14.5)	0 0	0 (0.0)	~ ~	0 0
Ghana	r 1 (1.0)	~ ~	1 (1.0)	1 (0.7)	~ ~	-1 (1.7)	98 (1.2)	302 (5.8)	0 (2.0)
Hong Kong SAR	89 (2.9)	534 (5.1)	-4 (3.7)	9 (2.6)	500 (22.4)	3 (3.4)	2 (1.3)	~ ~	1 (1.4)
Hungary	100 (0.0)	539 (3.1)	1 (0.8)	0 (0.0)	~ ~	-1 (0.8)	0 (0.0)	~ ~	0 (0.0)
Indonesia	31 (4.5)	442 (8.5)	15 (5.3) ▲	34 (4.4)	428 (8.4)	0 (6.1)	35 (4.8)	431 (7.3)	-16 (6.6) ▼
Iran, Islamic Rep. of	49 (3.7)	476 (5.3)	-3 (5.5)	12 (2.6)	471 (10.6)	0 (3.4)	38 (3.4)	434 (4.7)	4 (5.2)
Israel	77 (3.4)	471 (5.3)	1 (4.7)	20 (3.4)	471 (11.2)	-1 (4.7)	3 (1.5)	457 (43.4)	0 (2.0)
Italy	69 (3.0)	493 (3.7)	-8 (4.6)	27 (3.0)	505 (4.1)	10 (4.1) ▲	4 (1.6)	474 (21.5)	-2 (2.6)
Japan	100 (0.0)	554 (1.9)	0 (0.0)	0 (0.0)	~ ~	0 (0.0)	0 (0.0)	~ ~	0 (0.0)
Jordan	99 (0.7)	481 (4.0)	3 (1.4) ▲	1 (0.7)	~ ~	-2 (1.6)	0 (0.0)	~ ~	-1 (0.0)
Korea, Rep. of	100 (0.0)	553 (2.0)	1 (0.8)	0 (0.0)	~ ~	-1 (0.8)	0 (0.0)	~ ~	0 (0.0)
Kuwait	92 (2.2)	419 (3.3)	0 0	7 (2.0)	417 (11.7)	0 0	1 (0.8)	~ ~	0 0
Lebanon	r 12 (2.6)	425 (21.9)	0 (4.2)	5 (2.2)	402 (26.0)	-1 (3.2)	83 (3.3)	414 (7.7)	0 (5.0)
Lithuania	92 (1.8)	518 (2.6)	1 (3.0)	6 (1.8)	526 (7.3)	1 (2.6)	1 (1.1)	~ ~	-2 (1.8)
Malaysia	38 (3.2)	464 (11.2)	-6 (5.3)	34 (3.8)	488 (8.6)	5 (5.3)	28 (3.7)	461 (12.8)	1 (4.8)
Malta	11 (0.2)	483 (5.4)	0 0	5 (0.2)	447 (6.4)	0 0	84 (0.2)	456 (1.3)	0 0
Norway	82 (3.4)	488 (2.5)	-7 (4.2)	16 (3.4)	487 (4.8)	6 (4.2)	1 (0.9)	~ ~	1 (1.1)
Oman	96 (1.7)	422 (3.1)	0 0	4 (1.7)	421 (19.9)	0 0	0 (0.0)	~ ~	0 0
Palestinian Nat'l Auth.	99 (1.1)	404 (3.6)	-1 (1.1)	1 (1.1)	~ ~	1 (1.1)	0 (0.0)	~ ~	0 (0.0)
Qatar	88 (0.1)	328 (1.8)	0 0	5 (0.1)	284 (7.4)	0 0	7 (0.1)	349 (5.7)	0 0
Romania	86 (2.6)	461 (4.0)	-1 (3.6)	7 (1.8)	474 (15.1)	-1 (2.7)	7 (2.5)	465 (16.1)	2 (3.0)
Russian Federation	78 (3.6)	529 (4.1)	5 (5.8)	15 (2.7)	542 (8.8)	-3 (5.7)	7 (2.6)	505 (12.9)	-2 (3.7)
Saudi Arabia	90 (2.3)	403 (2.6)	--	9 (2.3)	408 (8.1)	--	1 (0.5)	~ ~	--
Scotland	s 95 (2.1)	497 (3.7)	3 (3.5)	5 (2.1)	470 (22.2)	-3 (3.5)	0 (0.0)	~ ~	0 (0.0)
Serbia	88 (2.9)	472 (3.3)	-5 (3.5)	10 (2.4)	464 (10.1)	3 (3.1)	2 (1.7)	~ ~	1 (1.8)
Singapore	7 (0.0)	633 (8.6)	--	18 (0.0)	607 (9.4)	--	74 (0.0)	550 (5.5)	--
Slovenia	76 (3.7)	539 (2.7)	7 (5.4)	23 (3.7)	536 (3.9)	-7 (5.3)	0 (0.0)	~ ~	0 (0.8)
Sweden	61 (4.3)	517 (2.9)	-1 (5.9)	33 (4.1)	506 (4.7)	0 (5.7)	6 (1.9)	473 (7.9)	1 (2.7)
Syrian Arab Republic	97 (1.1)	453 (3.0)	0 0	2 (1.1)	~ ~	0 0	1 (0.1)	~ ~	0 0
Thailand	85 (2.7)	476 (5.0)	0 0	6 (1.9)	439 (16.9)	0 0	9 (2.4)	447 (9.1)	0 0
Tunisia	85 (2.9)	445 (2.2)	4 (4.3)	12 (2.7)	446 (6.7)	5 (3.4)	3 (1.4)	431 (7.9)	-9 (2.8) ▼
Turkey	--	--	0 0	--	--	0 0	--	--	0 0
Ukraine	60 (2.9)	484 (4.8)	0 0	17 (2.8)	487 (8.5)	0 0	23 (2.9)	487 (5.8)	0 0
United States	68 (3.0)	531 (3.6)	-9 (4.3) ▼	22 (2.8)	504 (6.8)	6 (3.9)	9 (1.9)	486 (9.7)	4 (2.5)
‡ Morocco	65 (5.0)	399 (4.4)	--	18 (4.9)	417 (11.6)	--	16 (4.9)	398 (14.6)	--
International Avg.	74 (0.4)	476 (0.8)		11 (0.4)	467 (2.4)		15 (0.3)	450 (3.0)	

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Basque Country, Spain	39 (4.2)	499 (4.8)	-9 (5.6)	37 (5.2)	496 (4.7)	7 (6.9)	24 (4.3)	495 (5.0)	2 (5.4)
British Columbia, Canada	50 (4.2)	523 (3.5)	0 0	35 (4.1)	540 (5.4)	0 0	15 (3.2)	515 (10.5)	0 0
Dubai, UAE	s 21 (0.5)	431 (7.0)	0 0	11 (0.3)	523 (4.5)	0 0	68 (0.6)	500 (4.8)	0 0
Massachusetts, US	76 (5.3)	571 (5.0)	0 0	16 (5.6)	521 (19.2)	0 0	8 (2.7)	480 (18.3)	0 0
Minnesota, US	79 (7.2)	548 (5.1)	0 0	17 (7.2)	512 (9.7)	0 0	5 (1.1)	462 (26.7)	0 0
Ontario, Canada	62 (4.3)	530 (4.2)	5 (6.6)	26 (3.8)	532 (6.2)	-6 (6.2)	12 (2.9)	518 (7.7)	2 (4.1)
Quebec, Canada	71 (4.1)	510 (3.7)	-4 (5.5)	24 (4.0)	505 (12.1)	4 (5.3)	5 (1.7)	490 (7.3)	0 (2.5)

Background data provided by schools.

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A dash (-) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (◊) indicates the country did not participate in the assessment.

In many countries, there are schools that have high rates of absenteeism, which can disrupt continuity in the classroom and reduce time for learning. As previously shown in TIMSS, absenteeism is related to lower student achievement. To examine this issue, TIMSS developed an Index of Good Attendance at School (GAS) based on schools' responses to three questions about the seriousness of students' absenteeism, arriving late at school, and skipping class. As shown in Exhibit 8.3, schools at the high level of the index reported that all three behaviors never occur or are not a problem, while schools at the low level indicated that two or more of the behaviors were a serious problem or that one was a serious problem and the other two were minor problems. The medium category includes all other combinations of responses

Exhibit 8.3 presents, for each TIMSS participant at the fourth and eighth grades, the percentage of students at each of the three levels of the Index of Good Attendance at School, together with average science achievement. At the fourth grade, on average across countries, 43 percent of students were at the high level of the index, 50 at the medium level, and 7 percent at the low level. The countries with the highest percentages of students at the high index level (i.e., in schools with few attendance problems) included Chinese Taipei, Slovenia, the Czech Republic, Austria, the Netherlands, and Germany, with more than 60 percent of students at this level. Countries where absenteeism was reported to be more of a problem at the fourth grade included Morocco, Colombia, the United States, Yemen, El Salvador, Kuwait, and Qatar, with less than 30 percent of students at the high index level. Average science achievement was highest among students at the high index level (481 points), next among those at the medium level (474 points), and lowest among those at the low level (433 points).

Attendance problems appear to be more serious at the eighth grade than at the fourth, with an average of 21 percent of students at the high index level compared with 43 percent at fourth grade, and 20 percent at the low level compared with just 7 percent at fourth grade. Countries with the greatest percentages of students (40% or more) in schools with few attendance problems included Lebanon, Chinese Taipei, Oman, Korea, and Malta, while those with less than 10 percent of students in such schools included Norway, Indonesia, Kuwait, Morocco, Lithuania, Ghana, and Sweden. Similar to fourth grade, average science achievement was highest (481 points) among students attending schools with few attendance problems (the high level of the index), next among students at the medium level (465 points), and lowest among students at the low level of the attendance index (451 points), i.e., those attending schools where students arriving late, absenteeism, and skipping class may be serious problems.

Exhibit 8.4 presents trends in the Index of Good Attendance at School (GAS), with changes since 2003 in the percentages of students at the high level of the index for fourth grade and changes since 1999 and 2003 at the eighth grade. At fourth grade, only one country, the Russian Federation, showed an increase in the percentage of students at the high level since 2003, with three countries, Hong Kong SAR, Italy, and Hungary, with a decrease. At eighth grade, six countries showed an increase in the percentage of students at the high level of the attendance index since 1999 or 2003, or both. These were: Chinese Taipei, Korea, Israel, the Russian Federation, Malaysia, and Botswana. Eight countries had a decrease over that period, including Lebanon, Egypt, Singapore, Italy, Iran, Bahrain, Cyprus, and Norway.

Exhibit 8.3 Index of Good Attendance at School (GAS)

TIMSS2007
Science 4th Grade

Country	High GAS		Medium GAS		Low GAS	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Chinese Taipei	77 (3.9)	558 (2.4)	23 (3.9)	555 (5.1)	0 (0.0)	~ ~
Slovenia	72 (3.7)	518 (2.6)	28 (3.6)	520 (4.4)	1 (0.7)	~ ~
Czech Republic	71 (3.9)	517 (3.1)	28 (3.8)	510 (7.5)	1 (0.8)	~ ~
Austria	71 (3.0)	530 (2.6)	29 (3.0)	515 (5.3)	0 (0.0)	~ ~
Netherlands	r 66 (4.1)	528 (3.2)	33 (4.0)	510 (5.9)	1 (0.0)	~ ~
Germany	63 (3.5)	542 (2.1)	33 (3.5)	508 (5.0)	4 (1.2)	479 (15.7)
Singapore	57 (0.0)	589 (5.7)	42 (0.0)	585 (5.5)	0 (0.0)	~ ~
Sweden	56 (4.4)	531 (3.0)	42 (4.4)	519 (5.0)	1 (0.8)	~ ~
Latvia	53 (4.5)	545 (3.1)	46 (4.4)	541 (3.0)	1 (1.0)	~ ~
Scotland	51 (4.0)	513 (3.2)	45 (4.2)	492 (3.9)	4 (1.8)	440 (13.2)
Norway	51 (4.5)	479 (4.4)	48 (4.5)	472 (4.6)	1 (0.0)	~ ~
Hong Kong SAR	50 (4.5)	553 (4.2)	49 (4.4)	554 (5.2)	1 (0.0)	~ ~
Lithuania	49 (4.0)	510 (3.2)	46 (4.1)	517 (3.8)	4 (1.6)	533 (8.7)
Algeria	49 (4.6)	338 (10.4)	47 (4.5)	363 (8.2)	4 (1.7)	393 (22.8)
Japan	48 (3.6)	547 (2.8)	42 (3.6)	550 (2.8)	10 (2.1)	545 (5.3)
Denmark	47 (5.2)	523 (4.2)	45 (5.1)	515 (3.9)	7 (2.3)	494 (11.9)
Ukraine	46 (4.1)	480 (4.1)	51 (4.2)	468 (4.8)	3 (1.5)	474 (15.0)
Italy	42 (3.7)	537 (4.6)	48 (4.0)	534 (4.9)	9 (2.3)	535 (11.6)
Tunisia	42 (4.3)	314 (10.4)	47 (4.7)	329 (10.2)	11 (2.5)	256 (21.8)
Iran, Islamic Rep. of	39 (4.0)	449 (7.8)	60 (3.9)	427 (5.9)	1 (1.0)	~ ~
Russian Federation	39 (3.6)	551 (6.4)	58 (3.0)	543 (5.6)	3 (2.1)	546 (13.0)
Armenia	37 (3.9)	482 (8.9)	50 (4.0)	490 (9.4)	12 (2.4)	471 (16.2)
New Zealand	37 (3.4)	531 (3.5)	58 (3.5)	493 (3.8)	5 (1.4)	448 (14.5)
England	34 (4.4)	557 (5.3)	61 (4.4)	536 (3.5)	4 (1.8)	499 (11.8)
Kazakhstan	34 (4.4)	545 (7.5)	65 (4.4)	527 (8.0)	1 (0.8)	~ ~
Hungary	33 (4.1)	550 (6.1)	55 (4.7)	537 (5.3)	12 (3.3)	497 (9.2)
Slovak Republic	32 (3.6)	533 (4.7)	54 (4.3)	523 (7.6)	14 (2.7)	520 (10.3)
Australia	31 (4.3)	534 (4.9)	65 (4.1)	527 (4.0)	4 (1.4)	469 (13.2)
Georgia	30 (4.0)	418 (8.2)	62 (4.2)	418 (6.0)	8 (2.7)	422 (13.1)
Morocco	r 29 (4.1)	311 (11.0)	55 (4.4)	287 (7.5)	16 (3.0)	294 (19.8)
Colombia	28 (4.8)	417 (11.6)	40 (5.6)	400 (9.8)	33 (4.8)	390 (9.8)
United States	21 (3.0)	565 (5.5)	71 (3.4)	536 (3.8)	8 (1.8)	504 (8.3)
Yemen	21 (4.2)	172 (15.3)	64 (5.2)	205 (9.2)	15 (3.7)	181 (21.2)
El Salvador	11 (2.7)	416 (24.1)	67 (3.9)	392 (4.7)	22 (3.8)	374 (8.7)
Kuwait	11 (2.8)	341 (18.3)	63 (4.0)	360 (6.5)	26 (3.4)	323 (12.1)
Qatar	9 (0.1)	306 (4.9)	84 (0.1)	290 (2.7)	7 (0.1)	298 (6.1)
International Avg.	43 (0.6)	481 (1.6)	50 (0.7)	474 (1.4)	7 (0.3)	433 (3.0)
Benchmarking Participants						
Dubai, UAE	r 47 (0.4)	468 (3.8)	48 (0.4)	446 (6.2)	6 (0.2)	505 (8.9)
Minnesota, US	46 (8.9)	565 (13.5)	54 (8.9)	543 (6.2)	0 (0.0)	~ ~
Alberta, Canada	42 (4.5)	546 (4.3)	53 (4.4)	542 (5.6)	5 (1.8)	517 (11.2)
Ontario, Canada	42 (5.1)	543 (5.0)	51 (5.2)	537 (6.2)	8 (2.9)	490 (17.7)
Quebec, Canada	37 (4.1)	523 (4.4)	60 (4.1)	514 (3.7)	3 (1.3)	496 (8.1)
Massachusetts, US	37 (8.8)	572 (9.3)	61 (8.9)	573 (5.1)	3 (0.2)	511 (4.7)
British Columbia, Canada	27 (4.3)	552 (6.2)	67 (4.5)	532 (3.5)	6 (2.2)	517 (12.2)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Index based on principals' responses to three questions about the seriousness of attendance problems in the school: arriving late at school; absenteeism (i.e., unjustified absences); and skipping class. High level indicates that all three behaviors either never occur or are reported not to be a problem. Low level indicates that two or more behaviors are reported to be a serious problem, or two behaviors are reported to be minor problems and the third is reported to be a serious problem. Medium level includes all other possible combinations of responses.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

Exhibit 8.3 Index of Good Attendance at School (GAS) (Continued)

TIMSS2007
Science 8th Grade

Country	High GAS		Medium GAS		Low GAS	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Lebanon	52 (5.1)	420 (9.6)	42 (5.2)	410 (11.6)	5 (1.6)	405 (22.3)
Chinese Taipei	52 (4.0)	563 (5.2)	42 (4.0)	561 (4.9)	5 (1.9)	545 (7.1)
Oman	50 (4.3)	424 (5.0)	42 (4.8)	429 (5.9)	9 (2.6)	400 (17.7)
Korea, Rep. of	49 (4.3)	554 (2.8)	42 (4.4)	551 (3.1)	9 (1.8)	553 (7.1)
Malta	43 (0.2)	501 (1.5)	47 (0.2)	425 (2.0)	10 (0.2)	400 (5.3)
Czech Republic	36 (4.2)	554 (4.8)	53 (4.4)	532 (2.9)	11 (2.9)	523 (5.2)
Egypt	34 (4.0)	419 (5.7)	53 (4.1)	403 (6.2)	13 (2.7)	391 (8.1)
Armenia	30 (3.7)	489 (7.1)	56 (4.1)	489 (9.4)	14 (2.6)	481 (8.1)
Hong Kong SAR	30 (4.1)	559 (6.7)	60 (4.7)	522 (6.3)	10 (3.0)	470 (20.6)
Jordan	30 (3.8)	489 (8.7)	52 (4.3)	482 (6.1)	18 (3.3)	465 (12.2)
Singapore	30 (0.0)	609 (7.2)	66 (0.0)	553 (5.9)	4 (0.0)	498 (26.0)
Italy	28 (3.5)	500 (4.5)	56 (4.0)	494 (4.1)	15 (2.7)	491 (8.6)
Slovenia	28 (3.7)	533 (5.7)	54 (4.1)	541 (2.9)	19 (3.2)	535 (5.4)
Bosnia and Herzegovina	28 (3.6)	463 (4.9)	61 (4.2)	468 (3.8)	11 (2.7)	457 (11.8)
Hungary	26 (3.6)	549 (7.6)	55 (4.6)	541 (4.5)	19 (3.7)	520 (6.9)
Iran, Islamic Rep. of	25 (3.3)	469 (6.6)	72 (3.4)	455 (4.7)	3 (1.3)	462 (9.3)
Turkey	25 (3.8)	468 (8.7)	53 (5.1)	456 (6.3)	22 (3.5)	436 (9.1)
Algeria	23 (3.4)	410 (4.1)	56 (4.5)	406 (2.3)	21 (3.9)	415 (3.4)
England	23 (3.1)	583 (10.4)	65 (4.0)	536 (5.6)	12 (2.8)	505 (10.7)
Ukraine	23 (3.5)	493 (6.5)	65 (4.1)	487 (4.2)	12 (3.0)	461 (8.6)
Israel	21 (3.2)	471 (9.1)	55 (4.8)	471 (6.6)	24 (4.0)	468 (9.4)
Palestinian Nat'l Auth.	21 (3.3)	420 (7.8)	65 (4.0)	408 (5.1)	14 (2.5)	366 (11.5)
Romania	18 (2.7)	478 (10.6)	52 (3.8)	468 (6.0)	30 (4.1)	445 (7.0)
Australia	18 (2.8)	559 (9.8)	65 (3.7)	514 (4.6)	16 (2.7)	470 (8.5)
Bulgaria	18 (3.3)	500 (11.5)	43 (4.4)	477 (9.1)	40 (4.6)	452 (10.2)
Syrian Arab Republic	17 (3.6)	443 (8.3)	64 (4.9)	453 (4.1)	19 (3.3)	456 (5.8)
Russian Federation	17 (2.8)	549 (9.1)	63 (3.1)	529 (4.4)	20 (3.0)	513 (6.0)
Malaysia	17 (2.8)	503 (13.9)	68 (3.2)	467 (6.9)	15 (2.8)	451 (14.1)
Bahrain	17 (0.2)	491 (4.0)	64 (0.3)	465 (2.1)	20 (0.2)	451 (4.1)
Serbia	16 (3.6)	480 (6.1)	55 (4.4)	470 (3.8)	29 (3.6)	467 (7.0)
Colombia	15 (3.2)	438 (9.7)	38 (4.8)	421 (4.8)	47 (4.2)	406 (5.8)
United States	15 (2.5)	535 (6.2)	66 (3.6)	527 (4.3)	19 (2.8)	488 (6.8)
Scotland	15 (2.9)	525 (15.4)	78 (3.3)	493 (4.5)	7 (1.8)	471 (19.8)
Saudi Arabia	14 (3.1)	387 (9.9)	65 (3.8)	405 (3.6)	21 (3.1)	412 (6.6)
Thailand	14 (2.7)	484 (12.4)	68 (3.7)	469 (5.8)	18 (3.5)	472 (11.7)
Tunisia	14 (2.9)	446 (5.6)	63 (4.0)	446 (2.7)	23 (3.7)	443 (4.2)
Qatar	13 (0.1)	380 (4.3)	64 (0.2)	295 (2.2)	23 (0.2)	311 (2.8)
Botswana	13 (2.7)	378 (9.9)	61 (3.9)	359 (4.0)	27 (3.5)	329 (6.1)
Japan	11 (2.5)	558 (6.6)	49 (4.5)	563 (3.2)	40 (3.9)	541 (4.3)
El Salvador	11 (2.3)	403 (9.8)	67 (4.1)	388 (4.0)	22 (3.8)	377 (6.8)
Cyprus	11 (0.1)	450 (5.2)	73 (0.2)	452 (2.3)	16 (0.2)	448 (5.3)
Georgia	10 (3.1)	415 (14.5)	69 (4.9)	421 (5.9)	21 (4.2)	423 (8.6)
Norway	8 (2.1)	497 (7.6)	73 (4.0)	487 (2.6)	19 (3.6)	481 (5.0)
Indonesia	7 (2.2)	456 (14.1)	57 (4.8)	433 (5.3)	36 (4.3)	412 (7.7)
Kuwait	7 (2.7)	420 (11.6)	57 (4.8)	415 (4.7)	36 (4.3)	421 (6.7)
Lithuania	6 (2.0)	509 (10.4)	44 (4.3)	521 (4.0)	50 (4.4)	517 (4.0)
Ghana	5 (2.0)	357 (54.4)	71 (4.2)	307 (6.4)	24 (4.0)	280 (13.4)
Sweden	4 (1.6)	541 (15.1)	58 (4.0)	512 (3.3)	38 (3.9)	506 (4.4)
‡ Morocco	7 (2.5)	447 (19.1)	50 (6.5)	396 (5.3)	43 (6.3)	397 (5.5)
International Avg.	21 (0.4)	481 (1.7)	58 (0.6)	465 (0.9)	20 (0.5)	451 (1.5)
Benchmarking Participants						
Basque Country, Spain	28 (4.7)	501 (6.6)	63 (5.3)	501 (3.7)	9 (2.6)	475 (10.7)
Minnesota, US	27 (7.7)	534 (7.1)	71 (7.7)	543 (5.4)	2 (1.2)	~ ~
Dubai, UAE	24 (0.6)	506 (6.3)	65 (0.7)	479 (4.9)	11 (0.3)	510 (3.6)
Ontario, Canada	18 (3.7)	535 (7.0)	72 (4.3)	529 (3.6)	10 (2.9)	517 (14.1)
Quebec, Canada	17 (3.3)	545 (10.1)	59 (4.5)	506 (4.5)	25 (3.8)	487 (6.5)
Massachusetts, US	16 (5.5)	565 (17.5)	75 (6.6)	559 (6.5)	9 (4.5)	509 (20.7)
British Columbia, Canada	13 (3.6)	534 (8.7)	68 (4.4)	534 (3.5)	19 (3.4)	503 (7.7)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Index based on principals' responses to three questions about the seriousness of attendance problems in the school: arriving late at school; absenteeism (i.e., unjustified absences); and skipping class. High level indicates that all three behaviors either never occur or are reported not to be a problem. Low level indicates that two or more behaviors are reported to be a serious problem, or two behaviors are reported to be minor problems and the third is reported to be a serious problem. Medium level includes all other possible combinations of responses.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

Exhibit 8.4 High Index of Good Attendance at School (GAS) with Trends

TIMSS2007
Science 4th Grade

Country	High GAS	
	2007 Percent of Students	Difference in Percent from 2003
Chinese Taipei	77 (3.9)	-3 (5.2)
Slovenia	72 (3.7)	-9 (5.3)
Netherlands r	66 (4.1)	-4 (5.8)
Singapore	57 (0.0)	-8 (4.3)
Latvia	53 (4.5)	7 (6.9)
Scotland	51 (4.0)	-2 (6.7)
Norway	51 (4.5)	-1 (6.2)
Hong Kong SAR	50 (4.5)	-14 (6.8) ▼
Lithuania	49 (4.0)	4 (5.8)
Japan	48 (3.6)	-4 (5.2)
Italy	42 (3.7)	-30 (5.0) ▼
Tunisia	41 (4.3)	-5 (5.6)
Iran, Islamic Rep. of	39 (4.0)	-6 (6.1)
Russian Federation	39 (3.6)	10 (5.0) ▲
Armenia r	37 (3.9)	4 (5.7)
New Zealand	37 (3.4)	2 (4.6)
England r	34 (4.4)	-4 (6.6)
Hungary	33 (4.1)	-13 (5.8) ▼
Australia	31 (4.3)	-10 (6.1)
Morocco r	29 (4.1)	-11 (6.3)
United States	21 (3.0)	0 (4.1)
International Avg.	46 (0.9)	
Benchmarking Participants		
Ontario, Canada	42 (5.1)	6 (6.7)
Quebec, Canada	37 (4.1)	-6 (5.7)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

2007 percent significantly higher ▲

2007 percent significantly lower ▼

For a detailed definition of the GAS index, refer to Exhibit 8.3.
Trend notes: Data for Tunisia do not include private schools.

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

An "r" indicates data are available for at least 70 but less than 85% of the students.



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Exhibit 8.4 High Index of Good Attendance at School (GAS) with Trends (Continued)

TIMSS2007 Science 8th Grade

Country	High GAS		
	2007 Percent of Students	Difference in Percent from 2003	Difference in Percent from 1999
Lebanon	52 (5.1)	-14 (6.6) ▼	0 0
Chinese Taipei	52 (4.0)	1 (5.6)	24 (5.4) ▲
Korea, Rep. of	49 (4.3)	-2 (5.7)	18 (5.7) ▲
Czech Republic	36 (4.2)	0 0	-2 (7.1)
Egypt	34 (4.0)	-12 (5.9) ▼	0 0
Armenia	r 30 (3.7)	10 (5.2)	0 0
Hong Kong SAR	30 (4.1)	3 (5.8)	5 (5.6)
Jordan	30 (3.8)	-5 (5.6)	-10 (5.7)
Singapore	30 (0.0)	-12 (0.0) ▼	-2 (4.1)
Italy	28 (3.5)	-28 (5.0) ▼	-6 (4.7)
Slovenia	28 (3.7)	-3 (5.5)	--
Hungary	26 (3.6)	-4 (5.3)	3 (5.1)
Iran, Islamic Rep. of	25 (3.3)	-12 (5.1) ▼	-15 (5.7) ▼
England	s 23 (3.1)	7 (5.2)	--
Israel	r 21 (3.2)	9 (4.4) ▲	15 (3.9) ▲
Palestinian Nat'l Auth.	21 (3.3)	-9 (4.9)	0 0
Romania	18 (2.7)	-3 (4.6)	4 (4.2)
Australia	18 (2.8)	-8 (5.3)	--
Russian Federation	17 (2.8)	8 (3.8) ▲	7 (3.3) ▲
Malaysia	17 (2.8)	-1 (4.5)	11 (3.7) ▲
Bahrain	17 (0.2)	-9 (0.3) ▼	0 0
Serbia	16 (3.6)	0 (4.8)	0 0
United States	r 15 (2.5)	-3 (3.7)	-4 (3.9)
Scotland	s 15 (2.9)	0 (4.7)	0 0
Thailand	14 (2.7)	0 0	-4 (4.2)
Tunisia	14 (2.9)	-3 (4.3)	-2 (4.3)
Botswana	13 (2.7)	7 (3.3) ▲	0 0
Japan	11 (2.5)	-1 (3.4)	2 (3.3)
Cyprus	r 11 (0.1)	-11 (0.3) ▼	-8 (0.2) ▼
Indonesia	8 (2.7)	-1 (3.6)	-1 (3.7)
Norway	8 (2.1)	-12 (4.6) ▼	0 0
Lithuania	6 (2.0)	0 (2.9)	-6 (3.2)
Ghana	5 (2.0)	-3 (3.1)	0 0
Sweden	4 (1.6)	-3 (2.7)	0 0
International Avg.	22 (0.5)		
Benchmarking Participants			
Basque Country, Spain	28 (4.7)	3 (6.4)	0 0
Ontario, Canada	18 (3.7)	-5 (5.1)	-6 (5.6)
Quebec, Canada	17 (3.3)	0 (4.6)	10 (5.0)
Massachusetts, US	s 16 (5.5)	0 0	2 (7.5)
British Columbia, Canada	13 (3.6)	0 0	3 (5.4)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

2007 percent significantly higher ▲
 2007 percent significantly lower ▼

For a detailed definition of the GAS index, refer to Exhibit 8.3.

Trend notes: Data are not shown for Bulgaria, Morocco, Saudi Arabia, and Turkey, because comparable data from previous cycles are not available. Data for Indonesia do not include Islamic schools.

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

A dash (–) indicates comparable data are not available.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (0) indicates the country did not participate in the assessment.

What Is the Role of the School Principal?

To provide information about roles and responsibilities of school principals, TIMSS asked principals how they shared their time across the competing demands of school-related activities. More specifically, principals were asked what percentage of their time they devote to administrative duties (hiring, budgeting, scheduling, meetings, etc.), instructional leadership (developing curriculum and pedagogy), supervising and evaluating teachers and other staff, public relations and fundraising, teaching, and other activities. Exhibit 8.5 presents principals' reports of the percentage of their time they spend on these activities, together with changes in the percentages since 2003, for both fourth and eighth grades.

As shown in the exhibit, school principals at both grades reported spending most time, on average across countries, on administrative duties (about 30% of time), instructional leadership (about 20%), and staff supervision and evaluation (about 20%). They reported spending about 10 percent of time on public relations and fundraising, and on teaching, and less than 10 percent on other activities. At fourth grade, there appears to be a growth in the administrative burden, with principals reporting an increase in the percentage of time spent on such duties in 11 countries and one benchmarking entity. Several of these countries showed a corresponding decrease in the percentage of time devoted to instructional leadership. Also, in six countries and one benchmarking entity, principals reported a decrease in the percentage of time spent teaching. Principals in Germany (39%) and Austria (26%) reported the highest percentage of time spent on teaching, and the lowest on teacher supervision and evaluation (7% and 8%, respectively).

At eighth grade, the increase in time spent on administrative duties is even more evident, with increased percentages since 2003 in 18 countries and 3 benchmarking entities, and decreases in just 4 countries. Similar to the fourth grade, several of these countries had a decrease in percentage of time spent on instructional leadership: in total, 9 countries and one benchmarking entity had decreases, and just two countries showed increases. There also were increased percentages of time spent on teacher supervision and evaluation in 11 countries, with decreases in 6 countries.

Exhibit 8.5 Principals' Time Spent on Various School-related Activities with Trends

TIMSS2007
Science 4th Grade

Country	Percent of Time					
	Administrative Duties (e.g., Hiring, Budgeting, Scheduling, Meetings)		Instructional Leadership (e.g., Developing Curriculum and Pedagogy)		Supervising and Evaluating Teachers and Other Staff	
	2007	Difference from 2003	2007	Difference from 2003	2007	Difference from 2003
Algeria	28 (1.9)	0 0	21 (1.0)	0 0	25 (1.1)	0 0
Armenia	r 25 (1.1)	-3 (1.7)	r 23 (0.8)	3 (1.1) ▲	r 22 (1.0)	-1 (1.6)
Australia	47 (1.2)	2 (2.2)	19 (0.8)	1 (1.2)	13 (0.5)	2 (0.8) ▲
Austria	40 (1.3)	0 0	13 (0.6)	0 0	8 (0.4)	0 0
Chinese Taipei	32 (1.5)	4 (1.8) ▲	25 (0.9)	-3 (1.3) ▼	15 (0.6)	-2 (1.0) ▼
Colombia	32 (1.5)	0 0	28 (1.3)	0 0	16 (0.8)	0 0
Czech Republic	41 (1.2)	0 0	18 (0.7)	0 0	10 (0.5)	0 0
Denmark	45 (1.7)	0 0	15 (0.9)	0 0	17 (0.8)	0 0
El Salvador	28 (1.1)	0 0	23 (0.8)	0 0	18 (0.7)	0 0
England	r 39 (1.3)	-2 (2.2)	r 20 (0.8)	2 (1.4)	r 16 (0.7)	4 (1.0) ▲
Georgia	23 (0.9)	0 0	25 (0.9)	0 0	19 (0.7)	0 0
Germany	28 (1.0)	0 0	13 (0.5)	0 0	7 (0.3)	0 0
Hong Kong SAR	41 (1.4)	3 (1.9)	24 (1.0)	0 (1.3)	18 (0.7)	0 (1.0)
Hungary	30 (1.1)	4 (1.8) ▲	19 (0.6)	-2 (1.0) ▼	17 (0.7)	-1 (1.1)
Iran, Islamic Rep. of	20 (1.1)	2 (1.4)	25 (1.0)	-1 (1.6)	19 (0.7)	0 (0.9)
Italy	38 (1.1)	6 (1.5) ▲	27 (0.8)	-3 (1.1) ▼	16 (0.5)	-1 (0.8)
Japan	28 (1.0)	7 (1.3) ▲	23 (0.9)	-3 (1.2) ▼	22 (0.8)	2 (1.1)
Kazakhstan	21 (0.9)	0 0	23 (0.7)	0 0	26 (1.6)	0 0
Kuwait	s 19 (1.0)	0 0	s 12 (1.0)	0 0	s 42 (1.8)	0 0
Latvia	30 (1.1)	5 (1.7) ▲	22 (0.8)	-1 (1.1)	16 (0.6)	0 (0.9)
Lithuania	32 (1.1)	7 (1.6) ▲	22 (0.7)	-2 (1.1)	17 (0.6)	0 (0.9)
Morocco	r 27 (1.4)	1 (2.4)	r 17 (0.7)	-1 (1.2)	r 25 (1.0)	1 (1.7)
Netherlands	r 29 (1.4)	-2 (2.0)	r 28 (1.0)	3 (1.5) ▲	r 19 (0.8)	2 (1.4)
New Zealand	47 (1.1)	3 (1.8)	22 (0.7)	1 (1.2)	11 (0.5)	1 (0.7)
Norway	48 (1.3)	5 (2.0) ▲	26 (0.8)	1 (1.3)	10 (0.5)	0 (0.8)
Qatar	r 20 (0.0)	0 0	r 16 (0.0)	0 0	r 33 (0.1)	0 0
Russian Federation	21 (0.7)	-1 (1.1)	21 (0.6)	-1 (0.8)	25 (0.7)	4 (1.0) ▲
Scotland	38 (1.5)	5 (2.1) ▲	23 (1.1)	-1 (1.5)	13 (0.7)	-1 (1.1)
Singapore	37 (0.0)	10 (1.2) ▲	21 (0.0)	-2 (1.0) ▼	22 (0.0)	-3 (0.7) ▼
Slovak Republic	33 (1.1)	0 0	15 (0.5)	0 0	17 (0.6)	0 0
Slovenia	39 (1.3)	6 (1.7) ▲	28 (1.0)	-2 (1.4)	15 (0.5)	0 (0.8)
Sweden	41 (1.5)	0 0	25 (0.9)	0 0	23 (0.8)	0 0
Tunisia	26 (1.3)	-2 (1.9)	15 (0.9)	0 (1.2)	26 (1.3)	6 (1.6) ▲
Ukraine	18 (0.9)	0 0	21 (0.7)	0 0	25 (0.9)	0 0
United States	36 (1.3)	6 (1.8) ▲	26 (1.0)	0 (1.3)	23 (0.7)	-1 (1.1)
Yemen	19 (0.9)	0 0	13 (0.8)	0 0	31 (1.4)	0 0
International Avg.	32 (0.2)		21 (0.1)		19 (0.1)	

Benchmarking Participants

Alberta, Canada	42 (1.6)	0 0	20 (1.0)	0 0	14 (0.7)	0 0
British Columbia, Canada	45 (1.4)	0 0	18 (0.9)	0 0	13 (0.7)	0 0
Dubai, UAE	r 30 (0.1)	0 0	r 25 (0.1)	0 0	r 24 (0.0)	0 0
Massachusetts, US	43 (3.1)	0 0	21 (1.4)	0 0	23 (2.0)	0 0
Minnesota, US	37 (2.4)	0 0	24 (2.0)	0 0	19 (1.5)	0 0
Ontario, Canada	41 (1.9)	4 (2.5)	23 (1.2)	1 (2.0)	16 (1.0)	-1 (1.3)
Quebec, Canada	51 (1.2)	11 (2.1) ▲	21 (0.9)	-3 (1.5)	14 (0.8)	0 (1.0)

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

Background data provided by schools.

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

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s"

indicates data are available for at least 50 but less than 70% of the students.

A diamond (0) indicates the country did not participate in the assessment.

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Exhibit 8.5 Principals' Time Spent on Various School-related Activities with Trends (Continued)

TIMSS2007
Science **4th**
Grade

Country	Percent of Time					
	Public Relations and Fundraising		Teaching		Other	
	2007	Difference from 2003	2007	Difference from 2003	2007	Difference from 2003
Algeria	9 (0.7)	0 0	7 (1.0)	0 0	10 (0.8)	0 0
Armenia	r 12 (0.6)	0 (1.0)	r 10 (0.7)	0 (1.0)	r 7 (0.8)	1 (1.0)
Australia	9 (0.6)	0 (0.9)	6 (0.6)	-1 (1.3)	r 7 (0.9)	-4 (1.5)
Austria	8 (0.4)	0 0	26 (1.9)	0 0	5 (0.5)	0 0
Chinese Taipei	12 (0.7)	3 (0.9) ▲	8 (0.8)	-1 (1.0)	8 (0.7)	0 (1.0)
Colombia	10 (0.8)	0 0	8 (0.8)	0 0	6 (0.6)	0 0
Czech Republic	9 (0.5)	0 0	15 (0.7)	0 0	7 (0.5)	0 0
Denmark	13 (0.6)	0 0	5 (0.7)	0 0	6 (0.9)	0 0
El Salvador	8 (0.5)	0 0	20 (1.1)	0 0	4 (0.3)	0 0
England	r 9 (0.5)	0 (1.3)	r 10 (0.9)	-2 (1.6)	r 7 (0.7)	-1 (1.2)
Georgia	13 (0.6)	0 0	15 (0.9)	0 0	5 (0.4)	0 0
Germany	7 (0.4)	0 0	39 (1.1)	0 0	6 (0.5)	0 0
Hong Kong SAR	8 (0.5)	-1 (0.8)	4 (0.7)	1 (0.9)	6 (0.5)	-2 (0.9)
Hungary	14 (0.7)	-1 (1.0)	14 (0.6)	0 (0.9)	7 (0.7)	0 (0.9)
Iran, Islamic Rep. of	13 (0.6)	0 (0.9)	12 (1.1)	-1 (1.8)	11 (0.6)	1 (0.9)
Italy	15 (0.7)	-1 (0.9)	2 (0.5)	0 (0.6)	2 (0.3)	-1 (0.6)
Japan	12 (0.6)	-3 (0.9) ▼	8 (0.7)	-2 (1.0)	7 (0.6)	-1 (0.8)
Kazakhstan	11 (0.6)	0 0	12 (0.7)	0 0	8 (0.4)	0 0
Kuwait	s 10 (0.7)	0 0	s 8 (1.2)	0 0	s 10 (0.8)	0 0
Latvia	15 (0.8)	1 (1.4)	12 (0.8)	-2 (1.3)	5 (0.6)	-3 (1.2)
Lithuania	11 (0.5)	-1 (0.8)	11 (0.5)	-4 (1.6) ▼	7 (0.6)	-1 (0.9)
Morocco	r 15 (0.7)	1 (1.1)	r 7 (0.6)	-1 (0.9)	r 10 (0.5)	0 (0.9)
Netherlands	r 8 (0.7)	2 (0.8) ▲	r 5 (1.1)	-7 (1.8) ▼	r 12 (0.9)	3 (1.2) ▲
New Zealand	8 (0.4)	-1 (0.7)	7 (0.5)	-4 (0.8) ▼	5 (0.6)	0 (0.8)
Norway	3 (0.4)	-3 (0.8) ▼	7 (1.0)	-3 (1.3) ▼	7 (0.8)	0 (1.0)
Qatar	r 10 (0.0)	0 0	r 11 (0.0)	0 0	r 10 (0.0)	0 0
Russian Federation	12 (0.4)	-1 (0.7) ▼	12 (0.6)	-2 (1.0) ▼	9 (0.5)	0 (0.7)
Scotland	10 (0.5)	-2 (0.9)	11 (1.1)	-1 (2.2)	r 6 (0.8)	-1 (1.1)
Singapore	11 (0.0)	-1 (0.6)	2 (0.0)	-2 (0.3) ▼	7 (0.0)	-2 (0.8) ▼
Slovak Republic	13 (0.5)	0 0	16 (0.8)	0 0	6 (0.4)	0 0
Slovenia	8 (0.4)	-2 (0.7) ▼	4 (0.4)	-1 (0.6)	5 (0.5)	-2 (1.0) ▼
Sweden	1 (0.3)	0 0	2 (0.5)	0 0	s 11 (1.3)	0 0
Tunisia	10 (0.5)	-2 (0.7) ▼	15 (1.0)	-2 (1.9)	9 (0.6)	0 (0.8)
Ukraine	12 (0.7)	0 0	15 (0.7)	0 0	8 (0.6)	0 0
United States	7 (0.3)	-2 (0.5) ▼	4 (0.4)	0 (0.6)	r 5 (0.7)	-2 (1.0) ▼
Yemen	10 (0.6)	0 0	16 (0.9)	0 0	11 (0.6)	0 0
International Avg.	10 (0.1)		11 (0.1)		7 (0.1)	
Benchmarking Participants						
Alberta, Canada	6 (0.4)	0 0	14 (1.3)	0 0	4 (0.6)	0 0
British Columbia, Canada	8 (0.5)	0 0	11 (1.0)	0 0	5 (0.8)	0 0
Dubai, UAE	r 8 (0.0)	0 0	r 4 (0.0)	0 0	s 11 (0.1)	0 0
Massachusetts, US	6 (0.6)	0 0	2 (0.5)	0 0	5 (2.3)	0 0
Minnesota, US	10 (1.6)	0 0	5 (1.1)	0 0	r 6 (1.3)	0 0
Ontario, Canada	9 (0.6)	-1 (1.0)	2 (0.4)	-3 (1.2) ▼	8 (1.6)	0 (2.1)
Quebec, Canada	7 (0.5)	0 (0.7)	2 (0.6)	-2 (1.1)	6 (0.7)	-6 (1.5) ▼

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Exhibit 8.5 Principals' Time Spent on Various School-related Activities with Trends (Continued)
TIMSS2007
 Science **8th** Grade

Country	Percent of Time					
	Administrative Duties (e.g., Hiring, Budgeting, Scheduling, Meetings)		Instructional Leadership (e.g., Developing Curriculum and Pedagogy)		Supervising and Evaluating Teachers and Other Staff	
	2007	Difference from 2003	2007	Difference from 2003	2007	Difference from 2003
Algeria	30 (1.3)	∅ ∅	22 (1.1)	∅ ∅	23 (1.0)	∅ ∅
Armenia	r 24 (1.2)	-4 (1.8) ▼	r 24 (0.8)	3 (1.1) ▲	r 23 (1.0)	1 (1.7)
Australia	51 (1.3)	8 (2.1) ▲	16 (0.8)	-2 (1.2)	13 (0.7)	-2 (1.3)
Bahrain	29 (0.1)	8 (0.1) ▲	14 (0.0)	-10 (0.1) ▼	31 (0.1)	2 (0.1) ▲
Bosnia and Herzegovina	22 (1.0)	∅ ∅	24 (0.8)	∅ ∅	20 (0.8)	∅ ∅
Botswana	r 32 (1.4)	1 (2.0) r	r 20 (1.0)	-1 (1.4) r	r 26 (1.2)	0 (1.7)
Bulgaria	33 (1.4)	--	19 (0.8)	--	22 (1.1)	--
Chinese Taipei	34 (1.4)	6 (1.9) ▲	25 (1.0)	0 (1.4)	17 (0.8)	-2 (1.1) ▼
Colombia	35 (1.3)	∅ ∅	28 (0.9)	∅ ∅	17 (0.7)	∅ ∅
Cyprus	35 (0.1)	-7 (0.1) ▼	17 (0.1)	0 (0.1)	16 (0.0)	2 (0.1) ▲
Czech Republic	42 (1.3)	∅ ∅	19 (0.8)	∅ ∅	10 (0.5)	∅ ∅
Egypt	19 (0.8)	-1 (1.4)	14 (0.8)	-3 (1.0) ▼	32 (1.1)	7 (1.7) ▲
El Salvador	32 (1.1)	∅ ∅	23 (0.7)	∅ ∅	19 (0.7)	∅ ∅
England	s 36 (1.5)	3 (2.9) s	s 18 (0.9)	-2 (2.5) s	s 17 (0.8)	1 (1.7)
Georgia	23 (1.2)	∅ ∅	25 (1.0)	∅ ∅	19 (0.7)	∅ ∅
Ghana	24 (1.0)	4 (1.4) ▲	16 (0.6)	-1 (0.9)	27 (1.1)	-2 (2.0)
Hong Kong SAR	43 (1.3)	3 (1.8)	20 (0.6)	0 (1.0)	18 (0.7)	-3 (1.1) ▼
Hungary	31 (1.2)	4 (1.9) ▲	20 (0.7)	-1 (1.0)	16 (0.8)	-2 (1.1)
Indonesia	21 (0.9)	0 (1.2)	25 (0.9)	-2 (1.3)	25 (1.2)	4 (1.5) ▲
Iran, Islamic Rep. of	22 (0.9)	4 (1.1) ▲	25 (0.9)	-2 (1.4)	19 (0.6)	-4 (1.1) ▼
Israel	29 (1.2)	5 (1.6) ▲	23 (0.8)	-1 (1.3)	18 (0.6)	-1 (0.9)
Italy	35 (1.1)	6 (1.5) ▲	28 (0.7)	-2 (1.1) ▼	16 (0.6)	-1 (0.8)
Japan	29 (1.1)	6 (1.4) ▲	23 (0.7)	-3 (1.1) ▼	22 (0.7)	2 (1.0)
Jordan	21 (0.9)	-4 (1.4) ▼	17 (0.7)	-5 (1.1) ▼	30 (0.9)	7 (1.3) ▲
Korea, Rep. of	26 (1.2)	5 (1.7) ▲	26 (0.9)	-1 (1.5)	17 (0.8)	3 (1.0) ▲
Kuwait	r 23 (1.1)	∅ ∅ r	r 12 (0.9)	∅ ∅ r	r 38 (1.6)	∅ ∅
Lebanon	29 (1.7)	3 (2.2)	24 (0.9)	-1 (1.4)	23 (1.1)	0 (1.5)
Lithuania	31 (1.1)	4 (1.7) ▲	22 (0.7)	-3 (1.1) ▼	17 (0.7)	0 (0.8)
Malaysia	36 (1.1)	2 (1.6)	25 (1.0)	-1 (1.4)	17 (0.6)	0 (0.9)
Malta	45 (0.1)	∅ ∅	19 (0.0)	∅ ∅	18 (0.0)	∅ ∅
Norway	52 (1.3)	9 (2.0) ▲	25 (0.9)	0 (1.3)	10 (0.6)	0 (0.7)
Oman	19 (0.9)	∅ ∅	17 (0.7)	∅ ∅	33 (1.0)	∅ ∅
Palestinian Nat'l Auth.	22 (0.9)	-3 (1.6)	20 (0.7)	2 (0.9) ▲	29 (1.0)	4 (1.4) ▲
Qatar	r 19 (0.0)	∅ ∅ r	r 16 (0.0)	∅ ∅ r	r 32 (0.1)	∅ ∅
Romania	23 (1.0)	4 (1.4) ▲	19 (0.8)	-3 (1.2) ▼	20 (0.9)	3 (1.2) ▲
Russian Federation	22 (0.8)	-3 (1.1) ▼	22 (0.6)	1 (0.8)	24 (0.7)	5 (0.9) ▲
Saudi Arabia	21 (1.0)	--	11 (0.7)	--	35 (1.3)	--
Scotland	s 39 (1.6)	6 (2.5) ▲ s	s 21 (1.0)	-1 (1.7) s	s 14 (0.7)	-3 (1.2) ▼
Serbia	24 (1.0)	8 (1.3) ▲	23 (0.9)	-3 (1.3) ▼	19 (0.6)	5 (0.8) ▲
Singapore	38 (0.0)	11 (0.0) ▲	21 (0.0)	0 (0.0)	22 (0.0)	-6 (0.0) ▼
Slovenia	40 (1.3)	7 (1.7) ▲	27 (1.1)	-2 (1.5)	15 (0.5)	0 (0.7)
Sweden	42 (1.4)	3 (2.0)	23 (0.9)	2 (1.2)	21 (0.7)	-1 (1.3)
Syrian Arab Republic	23 (0.9)	∅ ∅	13 (0.9)	∅ ∅	30 (1.5)	∅ ∅
Thailand	34 (1.2)	∅ ∅	26 (1.0)	∅ ∅	15 (0.7)	∅ ∅
Tunisia	34 (1.2)	2 (1.7)	10 (0.7)	-2 (1.0) ▼	33 (1.2)	11 (1.4) ▲
Turkey	27 (1.4)	∅ ∅	17 (0.8)	∅ ∅	20 (0.9)	∅ ∅
Ukraine	19 (0.9)	∅ ∅	21 (0.7)	∅ ∅	25 (1.0)	∅ ∅
United States	r 39 (1.3)	8 (1.7) ▲ r	r 24 (1.0)	0 (1.2) r	r 21 (0.7)	-2 (1.0) ▼
‡ Morocco	34 (2.2)	--	12 (1.1)	--	19 (1.2)	--
International Avg.	30 (0.2)		21 (0.1)		22 (0.1)	

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Basque Country, Spain	32 (1.5)	5 (2.1) ▲	23 (0.8)	-3 (1.4) ▼	12 (0.9)	0 (1.1)
British Columbia, Canada	50 (1.6)	∅ ∅	19 (0.8)	∅ ∅	14 (0.9)	∅ ∅
Dubai, UAE	s 29 (0.2)	∅ ∅ s	s 22 (0.1)	∅ ∅ s	s 25 (0.1)	∅ ∅
Massachusetts, US	43 (2.3)	∅ ∅	22 (1.3)	∅ ∅	23 (1.5)	∅ ∅
Minnesota, US	50 (3.0)	∅ ∅	18 (1.8)	∅ ∅	16 (1.8)	∅ ∅
Ontario, Canada	42 (1.5)	5 (2.3) ▲	22 (1.3)	2 (1.7)	17 (1.1)	-1 (1.5)
Quebec, Canada	45 (1.7)	7 (2.8) ▲	22 (1.0)	-1 (1.6)	15 (0.7)	0 (1.2)

Background data provided by schools.

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A dash (-) indicates comparable data are not available.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (∅) indicates the country did not participate in the assessment.



Exhibit 8.5 Principals' Time Spent on Various School-related Activities with Trends (Continued)

TIMSS2007
Science **8th** Grade

Country	Percent of Time					
	Public Relations and Fundraising		Teaching		Other	
	2007	Difference from 2003	2007	Difference from 2003	2007	Difference from 2003
Algeria	9 (0.5)	0 (0)	10 (0.9)	0 (0)	8 (0.4)	0 (0)
Armenia	r 12 (0.6)	-1 (1.1)	r 10 (0.7)	0 (1.0)	r 7 (0.6)	1 (0.9)
Australia	11 (0.6)	-1 (0.9)	4 (0.6)	0 (0.8)	s 9 (0.9)	0 (1.3)
Bahrain	8 (0.0)	-2 (0.0) ▼	5 (0.0)	1 (0.0) ▲	12 (0.0)	1 (0.0) ▲
Bosnia and Herzegovina	14 (0.6)	0 (0)	11 (0.5)	0 (0)	8 (0.6)	0 (0)
Botswana	r 11 (0.5)	0 (0.7)	r 5 (0.7)	1 (0.9)	r 7 (0.8)	-1 (1.1)
Bulgaria	10 (0.4)	-	9 (0.5)	-	7 (0.6)	-
Chinese Taipei	9 (0.6)	0 (0.8)	8 (1.0)	-4 (1.5) ▼	7 (0.6)	1 (0.7)
Colombia	9 (0.6)	0 (0)	6 (0.6)	0 (0)	6 (0.8)	0 (0)
Cyprus	13 (0.0)	3 (0.1) ▲	8 (0.0)	-1 (0.0) ▼	11 (0.0)	3 (0.1) ▲
Czech Republic	10 (0.6)	0 (0)	13 (0.6)	0 (0)	7 (0.6)	0 (0)
Egypt	12 (0.5)	-2 (0.7) ▼	13 (1.1)	0 (1.4)	10 (0.7)	-1 (0.9)
El Salvador	9 (0.5)	0 (0)	13 (1.1)	0 (0)	4 (0.4)	0 (0)
England	s 11 (0.5)	-2 (1.5)	s 7 (0.6)	-1 (1.9)	s 13 (1.1)	1 (2.4)
Georgia	13 (0.6)	0 (0)	15 (1.3)	0 (0)	5 (0.5)	0 (0)
Ghana	8 (0.4)	0 (0.5)	20 (1.7)	-1 (2.4)	5 (0.3)	0 (0.5)
Hong Kong SAR	10 (0.5)	0 (0.7)	4 (0.8)	1 (1.1)	r 7 (1.1)	0 (1.3)
Hungary	13 (0.8)	-1 (1.0)	14 (0.6)	0 (0.8)	7 (0.6)	0 (0.8)
Indonesia	11 (0.5)	0 (0.7)	11 (0.8)	-1 (1.0)	6 (0.4)	-1 (0.6)
Iran, Islamic Rep. of	15 (0.7)	0 (0.9)	6 (0.6)	0 (0.8)	13 (0.8)	2 (1.0)
Israel	10 (0.6)	0 (0.8)	14 (0.6)	0 (0.8)	7 (0.7)	-4 (1.3) ▼
Italy	15 (0.7)	-2 (1.0)	6 (0.7)	4 (0.7) ▲	0 (0.1)	-4 (0.7) ▼
Japan	12 (0.6)	-2 (0.9) ▼	7 (0.7)	-1 (1.0)	7 (0.6)	-2 (0.8) ▼
Jordan	11 (0.5)	-2 (0.8) ▼	11 (0.9)	3 (1.3) ▲	10 (0.5)	0 (0.7)
Korea, Rep. of	10 (0.5)	1 (0.9)	12 (1.0)	-9 (1.7) ▼	8 (0.5)	1 (0.7)
Kuwait	r 8 (0.6)	0 (0)	r 7 (1.1)	0 (0)	r 11 (0.6)	0 (0)
Lebanon	r 15 (1.0)	1 (1.2)	r 5 (1.0)	-1 (1.4)	r 5 (0.7)	-1 (1.0)
Lithuania	11 (0.5)	0 (0.7)	12 (0.5)	-1 (0.7)	8 (0.8)	0 (1.1)
Malaysia	7 (0.3)	-1 (0.5) ▼	11 (0.7)	1 (1.0)	5 (0.4)	-1 (0.7)
Malta	10 (0.0)	0 (0)	1 (0.0)	0 (0)	r 8 (0.0)	0 (0)
Norway	3 (0.4)	-3 (0.8) ▼	4 (0.6)	-3 (1.0) ▼	6 (0.7)	-3 (1.1) ▼
Oman	11 (0.5)	0 (0)	7 (0.9)	0 (0)	13 (0.7)	0 (0)
Palestinian Nat'l Auth.	11 (0.5)	-2 (0.7) ▼	6 (0.7)	-1 (1.0)	11 (0.6)	0 (0.8)
Qatar	r 9 (0.0)	0 (0)	r 13 (0.0)	0 (0)	r 11 (0.0)	0 (0)
Romania	10 (0.5)	-1 (0.7)	22 (1.7)	-3 (2.3)	6 (0.5)	0 (0.7)
Russian Federation	13 (0.6)	-1 (0.9)	12 (0.5)	-1 (0.8)	8 (0.4)	-1 (0.6)
Saudi Arabia	13 (0.7)	-	9 (1.3)	-	11 (0.9)	-
Scotland	s 11 (0.6)	-1 (1.0)	s 4 (0.7)	0 (0.8)	s 12 (1.3)	-2 (2.2)
Serbia	19 (0.8)	1 (1.3)	6 (0.6)	-11 (1.2) ▼	9 (0.6)	0 (0.8)
Singapore	10 (0.0)	-1 (0.0) ▼	2 (0.0)	-1 (1.0) ▼	6 (0.0)	-3 (0.0) ▼
Slovenia	8 (0.4)	-2 (0.6) ▼	4 (0.4)	0 (0.6)	5 (0.4)	-2 (0.8) ▼
Sweden	1 (0.2)	-1 (0.3) ▼	2 (0.4)	-1 (0.6)	s 15 (1.2)	-5 (2.0) ▼
Syrian Arab Republic	9 (0.5)	0 (0)	17 (1.0)	0 (0)	8 (0.5)	0 (0)
Thailand	10 (0.5)	0 (0)	10 (1.2)	0 (0)	5 (0.5)	0 (0)
Tunisia	9 (0.5)	-8 (0.9) ▼	5 (0.8)	-2 (1.1)	10 (0.5)	0 (0.7)
Turkey	18 (1.0)	0 (0)	12 (0.6)	0 (0)	7 (0.7)	0 (0)
Ukraine	12 (0.5)	0 (0)	14 (0.5)	0 (0)	8 (0.5)	0 (0)
United States	r 7 (0.4)	-2 (0.7) ▼	r 3 (0.4)	-1 (0.7)	s 8 (1.0)	-2 (1.5)
‡ Morocco	15 (1.2)	-	7 (1.8)	-	13 (2.0)	-
International Avg.	11 (0.1)		9 (0.1)		8 (0.1)	

Benchmarking Participants

Basque Country, Spain	11 (0.8)	-2 (1.2)	16 (1.1)	-1 (1.6)	7 (0.9)	1 (1.1)
British Columbia, Canada	7 (0.5)	0 (0)	4 (0.7)	0 (0)	6 (0.9)	0 (0)
Dubai, UAE	s 8 (0.0)	0 (0)	s 6 (0.1)	0 (0)	s 10 (0.1)	0 (0)
Massachusetts, US	7 (0.7)	0 (0)	2 (0.6)	0 (0)	r 5 (1.0)	0 (0)
Minnesota, US	7 (0.8)	0 (0)	2 (0.6)	0 (0)	r 10 (2.6)	0 (0)
Ontario, Canada	10 (0.8)	-1 (1.0)	3 (0.5)	-2 (1.0) ▼	7 (1.4)	-2 (2.2)
Quebec, Canada	8 (0.6)	2 (0.8) ▲	1 (0.4)	0 (0.5)	10 (1.5)	-8 (2.7) ▼

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Do Schools Encourage Home Involvement?

Parental support for and involvement in school activities is an essential aspect of school life in many countries, and is often seen as an important way to strengthen the link between home and school, and ultimately foster an enhanced educational experience. Exhibit 8.6 presents information supplied by TIMSS National Research Coordinators on whether there is a national policy on parental involvement in schools. It also shows the percentages of students, according to principals' reports, that their school does ask parents to be involved in school-related activities. Five specific activities are shown: attend special events (such as science fairs, concerts, sporting events), raise funds for the school, volunteer for school projects, programs, and trips, ensure that students complete their homework, and serve on school committees.

As shown in Exhibit 8.6, the majority of TIMSS participants at both grade levels have established policies of encouraging parental involvement in schools. Even where no written policy exists, there sometimes was an informal understanding that parental involvement should be encouraged. Almost universally, schools ask parents to ensure that their child completes his or her homework and to attend special events. At both grades, almost all students (90 percent or more) were in schools where these were the expectations. In almost every country and benchmarking entity also, most students attended schools that expected parents to volunteer for school projects, 84 percent at fourth grade and 75 percent at eighth grade, and serve on school committees, 71 and 67 percent, respectively. There was more variability among participants in expectations for parental involvement in fundraising for schools. For example, at fourth grade, more than 90 percent of students in Australia, England, New Zealand, Scotland, the Ukraine, the United States, and the states of Massachusetts and Minnesota were in schools where parents were asked to raise funds, but 10 percent or less in Japan, Kuwait, Norway, and Sweden. Similar variability was shown at eighth grade.

Exhibit 8.6 Schools' Encouragement of Parental Involvement

TIMSS2007
Science 4th Grade

Country	Have Policy to Encourage Parental Involvement in Schools	Percentages of Students Whose Schools Reported That They Ask Parents to Be Involved in the School-related Activity				
		Attend Special Events (e.g., Science Fair, Concert, Sporting Events)	Raise Funds for the School	Volunteer for School Projects, Programs, and Trips	Ensure That Their Child Completes His/Her Homework	Serve on School Committees (e.g., Select School Personnel, Review School Finances)
Algeria	●	82 (3.4)	41 (4.8)	58 (4.3)	88 (2.6)	31 (4.2)
Armenia	○	90 (2.8)	52 (4.1)	85 (3.2)	90 (2.7)	90 (2.6)
Australia	○	100 (0.5)	97 (1.3)	98 (1.0)	96 (1.8)	96 (1.6)
Austria	●	91 (1.8)	56 (3.6)	98 (0.9)	93 (2.0)	100 (0.0)
Chinese Taipei	●	95 (1.9)	38 (4.3)	88 (2.9)	99 (0.7)	92 (2.3)
Colombia	●	91 (3.1)	41 (5.2)	93 (2.4)	99 (1.3)	69 (4.2)
Czech Republic	○	62 (4.3)	41 (4.2)	80 (3.3)	96 (1.6)	61 (4.5)
Denmark	●	88 (3.7)	11 (3.1)	13 (3.0)	100 (0.0)	93 (2.7)
El Salvador	●	86 (3.3)	46 (4.6)	87 (3.2)	97 (1.5)	81 (3.6)
England	○	100 (0.5)	98 (1.5)	93 (2.0)	99 (1.0)	84 (3.1)
Georgia	●	87 (3.4)	61 (4.6)	93 (2.4)	95 (1.8)	82 (3.7)
Germany	●	98 (0.7)	68 (3.0)	99 (0.6)	95 (1.5)	97 (1.0)
Hong Kong SAR	●	94 (2.2)	78 (3.9)	97 (1.5)	95 (1.8)	63 (4.1)
Hungary	○	78 (3.9)	73 (4.0)	92 (2.6)	93 (2.3)	64 (4.4)
Iran, Islamic Rep. of	●	77 (3.2)	69 (3.4)	82 (2.8)	94 (1.8)	70 (3.5)
Italy	●	99 (0.8)	37 (3.8)	51 (4.1)	96 (1.5)	51 (3.9)
Japan	●	98 (1.2)	2 (1.3)	92 (2.3)	87 (2.7)	23 (3.6)
Kazakhstan	●	97 (1.4)	60 (5.4)	83 (4.5)	99 (0.9)	82 (4.1)
Kuwait	●	87 (3.1)	4 (1.7)	70 (4.1)	89 (2.6)	24 (3.5)
Latvia	○	97 (1.5)	48 (4.0)	81 (3.4)	82 (2.9)	71 (3.7)
Lithuania	●	99 (0.8)	74 (3.3)	96 (1.7)	96 (1.6)	88 (2.5)
Morocco	●	89 (2.5)	46 (4.0)	70 (3.5)	96 (1.5)	31 (3.6)
Netherlands	●	r 87 (3.5)	r 33 (3.9)	r 94 (2.9)	r 96 (2.5)	r 90 (3.2)
New Zealand	●	100 (0.0)	96 (1.3)	100 (0.0)	94 (1.5)	94 (1.6)
Norway	●	96 (1.7)	10 (2.7)	97 (1.1)	97 (1.6)	89 (2.4)
Qatar	○	94 (0.1)	26 (0.2)	75 (0.1)	91 (0.1)	25 (0.2)
Russian Federation	○	99 (0.6)	67 (3.1)	96 (1.4)	99 (0.7)	91 (2.5)
Scotland	●	100 (0.0)	100 (0.0)	98 (1.4)	100 (0.0)	95 (1.8)
Singapore	●	99 (0.0)	69 (0.0)	99 (0.0)	99 (0.0)	67 (0.0)
Slovak Republic	●	57 (3.9)	66 (3.4)	83 (3.2)	91 (2.3)	82 (3.2)
Slovenia	●	98 (1.3)	41 (4.3)	73 (4.2)	98 (1.2)	39 (4.2)
Sweden	●	91 (2.1)	3 (1.2)	86 (3.1)	99 (0.6)	65 (3.9)
Tunisia	○	70 (3.9)	62 (4.2)	74 (3.6)	94 (2.1)	44 (3.9)
Ukraine	●	97 (1.3)	95 (1.9)	90 (2.4)	96 (1.8)	89 (2.4)
United States	●	100 (0.3)	94 (1.6)	98 (0.9)	100 (0.4)	89 (2.1)
Yemen	●	65 (4.3)	45 (4.9)	67 (4.4)	93 (2.1)	50 (4.8)
International Avg.		90 (0.4)	54 (0.6)	84 (0.5)	95 (0.3)	71 (0.5)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Alberta, Canada	○	96 (1.6)	77 (3.6)	94 (2.0)	99 (1.0)	66 (3.9)
British Columbia, Canada	●	94 (2.3)	88 (3.1)	92 (2.7)	99 (0.9)	75 (4.3)
Dubai, UAE	○	r 96 (0.1)	r 38 (0.4)	r 61 (0.4)	r 100 (0.0)	r 27 (0.3)
Massachusetts, US	●	100 (0.0)	97 (2.2)	100 (0.0)	100 (0.0)	94 (4.0)
Minnesota, US	○	100 (0.0)	93 (3.9)	100 (0.3)	100 (0.3)	84 (7.0)
Ontario, Canada	●	95 (2.2)	88 (3.6)	96 (2.1)	96 (2.5)	69 (5.1)
Quebec, Canada	●	99 (0.9)	88 (2.6)	97 (2.4)	99 (0.8)	75 (3.7)

● Yes ○ No

Background data provided by National Research Coordinators and by schools.
 () Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.

An "r" indicates data are available for at least 70 but less than 85% of the students.
 Note: In some countries, schools are not permitted to ask parents to raise funds or serve on school committees.

Exhibit 8.6 Schools' Encouragement of Parental Involvement (Continued)

TIMSS2007
Science 8th Grade

Country	Have Policy to Encourage Parental Involvement in Schools	Percentages of Students Whose Schools Reported That They Ask Parents to Be Involved in the School-related Activity				
		Attend Special Events (e.g., Science Fair, Concert, Sporting Events)	Raise Funds for the School	Volunteer for School Projects, Programs, and Trips	Ensure That Their Child Completes His/Her Homework	Serve on School Committees (e.g., Select School Personnel, Review School Finances)
Algeria	●	84 (3.5)	37 (3.8)	56 (4.3)	85 (3.1)	48 (4.0)
Armenia	○	91 (2.5)	53 (4.0)	84 (3.5)	91 (2.7)	90 (2.8)
Australia	○	96 (1.8)	71 (4.0)	77 (3.1)	97 (1.3)	97 (1.2)
Bahrain	●	92 (0.1)	31 (0.2)	64 (0.2)	97 (0.2)	32 (0.3)
Bosnia and Herzegovina	●	84 (2.9)	52 (3.7)	92 (2.3)	92 (2.3)	91 (2.1)
Botswana	○	82 (3.3)	99 (0.7)	76 (3.6)	88 (2.9)	89 (2.3)
Bulgaria	○	95 (1.7)	57 (4.0)	66 (4.4)	81 (3.4)	59 (4.8)
Chinese Taipei	●	90 (2.4)	38 (3.9)	77 (3.7)	98 (1.2)	83 (3.1)
Colombia	●	93 (2.2)	31 (4.5)	90 (2.9)	98 (1.5)	63 (4.4)
Cyprus	●	93 (0.1)	74 (0.2)	51 (0.3)	95 (0.1)	79 (0.2)
Czech Republic	○	58 (3.8)	40 (3.7)	76 (3.9)	95 (1.9)	70 (4.1)
Egypt	○	94 (2.0)	56 (4.2)	81 (3.1)	94 (1.7)	65 (4.1)
El Salvador	●	94 (1.9)	44 (4.6)	89 (2.8)	93 (2.2)	81 (3.4)
England	○	99 (1.1)	67 (4.3)	61 (4.5)	99 (1.0)	71 (4.2)
Georgia	●	89 (2.7)	64 (5.1)	89 (2.8)	99 (0.8)	90 (2.3)
Ghana	●	82 (3.3)	66 (4.2)	62 (4.0)	79 (3.2)	95 (1.8)
Hong Kong SAR	●	92 (2.6)	66 (4.6)	83 (3.6)	91 (2.7)	60 (4.0)
Hungary	○	75 (3.7)	77 (3.0)	91 (2.8)	94 (2.2)	62 (4.5)
Indonesia	●	77 (3.7)	71 (4.0)	54 (4.3)	97 (1.6)	80 (3.4)
Iran, Islamic Rep. of	●	72 (3.4)	70 (3.4)	77 (3.5)	89 (2.3)	63 (3.8)
Israel	●	91 (2.5)	33 (4.2)	83 (3.0)	86 (3.0)	56 (4.4)
Italy	●	96 (1.5)	27 (3.3)	47 (3.8)	96 (1.5)	51 (4.3)
Japan	●	100 (0.0)	13 (3.0)	74 (3.9)	78 (3.6)	29 (3.8)
Jordan	●	96 (1.7)	33 (3.5)	78 (3.6)	95 (1.8)	46 (4.0)
Korea, Rep. of	●	93 (2.2)	11 (2.2)	51 (3.9)	60 (4.0)	92 (2.0)
Kuwait	●	79 (3.2)	9 (2.5)	65 (4.2)	90 (2.4)	28 (4.5)
Lebanon	●	79 (4.0)	46 (4.9)	52 (3.8)	91 (2.8)	73 (4.6)
Lithuania	●	99 (0.7)	74 (3.6)	98 (1.1)	97 (1.3)	85 (2.7)
Malaysia	●	98 (1.2)	85 (3.0)	77 (3.5)	92 (2.5)	57 (3.8)
Malta	●	99 (0.0)	74 (0.2)	58 (0.2)	100 (0.0)	75 (0.2)
Norway	●	90 (2.6)	18 (3.8)	90 (3.0)	92 (2.5)	91 (2.4)
Oman	●	98 (1.1)	24 (3.8)	85 (2.9)	94 (1.8)	21 (3.6)
Palestinian Nat'l Auth.	○	100 (0.0)	38 (3.8)	80 (3.2)	99 (0.9)	19 (3.3)
Qatar	○	91 (0.1)	28 (0.1)	75 (0.1)	94 (0.1)	30 (0.1)
Romania	○	78 (3.6)	49 (4.2)	85 (2.7)	99 (1.0)	68 (4.5)
Russian Federation	○	98 (1.1)	69 (3.9)	95 (1.8)	88 (2.9)	92 (2.0)
Saudi Arabia	●	96 (1.6)	16 (3.3)	44 (4.2)	97 (1.4)	93 (1.9)
Scotland	●	99 (0.9)	79 (4.1)	53 (5.0)	99 (1.0)	85 (3.8)
Serbia	○	77 (4.2)	72 (3.9)	83 (3.2)	97 (1.5)	96 (1.6)
Singapore	●	98 (0.0)	69 (0.0)	96 (0.0)	91 (0.0)	63 (0.0)
Slovenia	●	98 (1.2)	44 (4.4)	70 (4.2)	96 (1.7)	38 (4.1)
Sweden	●	85 (3.1)	10 (2.4)	74 (3.6)	96 (1.5)	68 (4.2)
Syrian Arab Republic	●	91 (2.6)	14 (2.9)	80 (3.4)	98 (1.2)	52 (4.6)
Thailand	●	95 (1.8)	92 (2.1)	78 (3.2)	89 (2.6)	77 (3.3)
Tunisia	○	79 (3.2)	36 (4.1)	60 (3.5)	97 (1.4)	21 (3.7)
Turkey	●	80 (3.2)	81 (3.1)	80 (3.3)	59 (4.5)	62 (4.1)
Ukraine	●	97 (1.5)	91 (2.6)	86 (2.7)	93 (2.3)	90 (2.6)
United States	●	99 (0.8)	82 (2.6)	97 (1.3)	98 (0.9)	89 (2.5)
‡ Morocco	●	95 (1.9)	35 (4.0)	87 (2.3)	69 (4.0)	65 (5.6)
International Avg.		90 (0.3)	51 (0.5)	75 (0.5)	91 (0.3)	67 (0.5)
Benchmarking Participants						
Basque Country, Spain	●	85 (2.6)	34 (5.0)	79 (4.3)	92 (2.6)	95 (2.1)
British Columbia, Canada	●	94 (2.1)	57 (4.4)	78 (3.3)	94 (1.7)	83 (3.6)
Dubai, UAE	○	r 100 (0.0)	r 35 (0.7)	s 66 (0.7)	r 100 (0.0)	r 24 (0.8)
Massachusetts, US	●	99 (1.2)	93 (3.5)	94 (3.8)	98 (2.4)	93 (3.8)
Minnesota, US	○	98 (1.8)	71 (7.0)	99 (0.7)	99 (0.6)	84 (4.9)
Ontario, Canada	●	92 (2.8)	82 (3.9)	91 (2.7)	99 (0.8)	62 (4.9)
Quebec, Canada	●	97 (1.4)	66 (4.8)	59 (4.6)	97 (1.3)	73 (4.3)

● Yes ○ No

Background data provided by National Research Coordinators and by schools.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

An "r" indicates data are available for at least 70 but less than 85% of the students.

An "s" indicates data are available for at least 50 but less than 70% of the students.

Note: In some countries, schools are not permitted to ask parents to raise funds or serve on school committees.


TIMSS & PIRLS
 International Study Center
 Lynch School of Education, Boston College

What School Resources Are Available to Support School Learning?

To provide information about the level of school resources available to schools for science instruction and in particular about the impact of shortages of important resources, TIMSS created an index based on principals' responses to questions about shortages affecting schools' general capacity to provide instruction, and to provide science instruction in particular. To create the Index of Availability of School Resources for Science Instruction (ASRSI), principals were asked how much shortages or inadequacies in five areas affected their school's general capacity to provide instruction: instructional materials (textbooks, for example); budget for supplies (paper, pencils, etc.); school buildings and grounds; heating/cooling and lighting systems; and instructional space (classrooms, for example). They also responded to six questions about shortages affecting science instruction: science laboratory equipment and supplies; computers for science instruction; computer software for science instruction; calculators for science instruction; library materials relevant to science instruction; and audio-visual resources. Responses were coded on a four-point scale: 1 = *none*, 2 = *a little*, 3 = *some*, and 4 = *a lot*, and averages calculated across the five general questions and the six science instruction questions for each principal. Students were assigned to one of three levels of the Index of Availability of School Resources for Science Instruction on the basis of their school principals' average responses. The high level of the index indicates that both averages were lower than 2, and the low level that both averages were at least 3. The medium level includes all other possible combinations.

Exhibit 8.7 displays the percentage of students at the high, medium, and low levels of the index for each TIMSS participant, at both fourth and eighth grades, together with average science achievement.

At fourth grade, 31 percent of students, internationally, were at the high level of the index, where principals reported that resource shortages essentially were not a problem. A further 59 percent of students were at the medium level and just 10 percent at the low index level. There was considerable variation across countries, however, with the majority of students

in Singapore (83%), Austria (71%), the Czech Republic (64%), Japan (53%), and England (50%), as well as the benchmarking participants Dubai (82%) and Alberta (50%) at the high level, for example, and less than 10 percent in Morocco, the Ukraine, Colombia, Iran, Yemen, Georgia, Tunisia, and Algeria. Average science achievement was highest among students at the high index level (483 points), next at the medium level (477 points), and lowest at the low level of the index (442 points).

At eighth grade, the situation was similar, with 27 percent of students at the high level, 62 percent at the medium level, and 11 percent at the low level. Again there were large differences between countries, with the majority of students at the high index level in Singapore (90%), Hong Kong SAR (71%), the Czech Republic (65%), Slovenia (58%), Australia (57%), Scotland (52%), and in benchmarking participants Dubai (80%), the Basque Country (71%), Quebec (54%), and British Columbia (53%). In contrast, there was less than 10 percent in Kuwait, Saudi Arabia, Turkey, Tunisia, Georgia, Indonesia, the Ukraine, Botswana, Bosnia and Herzegovina, and Morocco. Students at the high level of the index had highest average science achievement (479 points), followed by students at the medium level (463 points) and then by students at the low level (447 points).

For countries that participated in previous cycles of TIMSS, Exhibit 8.8 presents changes in the percentage of students at the high level of the Index of Availability of School Resources for Science Instruction (ASRSI). At fourth grade, changes are shown since 1995 and 2003 for participants in those assessments. TIMSS participants showing an increase since 1995 in percentage of students at the high level included Singapore, the Czech Republic, Japan, England, Hungary (also since 2003), Slovenia, Hong Kong SAR, the United States, New Zealand, Australia, Latvia, and among benchmarking participants, Alberta, Ontario, and Minnesota. No country had a significant decrease. At the eighth grade, Exhibit 8.8 presents changes in percentages from three earlier cycles of TIMSS—1995, 1999, and 2003. Almost all participants showed an increase in 2007 compared to at least one of the previous assessments, and only three countries showed a decrease—

Israel, Italy, and Indonesia. Singapore has a small decrease from 2003, but that was outweighed by a larger increase from 1995 and 1999.

Because of its importance as a resource for science instruction, TIMSS asked schools whether they were equipped with a science laboratory. Exhibit 8.9 summarizes schools' responses, showing for each participant the percentage of students in schools with and without science laboratories, together with average science achievement. It is clear from the exhibit that science laboratories are more common in schools serving eighth grade students than in schools for fourth grade students. On average at the fourth grade, 31 percent of students attended a school with a science laboratory, compared with 76 percent at the eighth grade. There was considerable variation between countries at the fourth grade in the percentage of students in laboratory-equipped schools. More than 90 percent of students were in such schools in Kuwait, Japan, Singapore, Qatar, and the benchmarking participant Dubai, while there were 12 countries and one benchmarking participant with less than 10 percent of students in schools with science laboratories. At eighth grade, there were 23 countries and 4 benchmarking participants with 90 percent or more of students in laboratory-equipped schools, and only three countries with 10 percent or less.

Exhibit 8.7 Index of Availability of School Resources for Science Instruction (ASRSI)
TIMSS2007
Science 4th Grade

Country	High ASRSI		Medium ASRSI		Low ASRSI	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Singapore	83 (0.0)	586 (4.6)	16 (0.0)	597 (9.2)	1 (0.0)	~ ~
Austria	71 (3.3)	526 (3.3)	28 (3.3)	522 (5.9)	0 (0.0)	~ ~
Czech Republic	64 (4.2)	514 (3.9)	36 (4.2)	516 (4.7)	0 (0.0)	~ ~
Japan	53 (4.0)	547 (2.8)	45 (4.2)	548 (2.4)	3 (1.4)	566 (12.8)
England	50 (4.4)	547 (4.6)	49 (4.3)	536 (4.3)	1 (1.1)	~ ~
Germany	48 (3.7)	535 (3.1)	50 (3.7)	523 (3.7)	2 (1.1)	~ ~
Denmark	47 (5.4)	523 (4.2)	52 (5.5)	512 (4.5)	1 (0.0)	~ ~
Hungary	46 (4.4)	531 (6.1)	49 (4.5)	540 (4.9)	5 (1.8)	547 (10.8)
Slovenia	46 (4.0)	516 (3.5)	53 (4.1)	520 (2.5)	1 (0.9)	~ ~
Scotland	44 (4.5)	502 (4.5)	53 (4.5)	499 (3.7)	3 (1.5)	510 (13.2)
Hong Kong SAR	43 (4.6)	556 (4.8)	56 (4.5)	553 (4.9)	1 (0.8)	~ ~
United States	42 (3.6)	550 (4.2)	55 (3.5)	533 (3.9)	3 (1.0)	502 (20.4)
New Zealand	40 (3.1)	501 (5.1)	58 (3.2)	509 (3.2)	2 (1.1)	~ ~
Australia	39 (4.1)	534 (4.7)	61 (4.2)	522 (5.4)	0 (0.4)	~ ~
Chinese Taipei	36 (4.4)	562 (3.9)	59 (4.2)	555 (2.5)	4 (1.8)	543 (9.7)
Russian Federation	36 (4.1)	553 (8.1)	61 (4.1)	545 (4.7)	3 (1.2)	493 (26.8)
Kazakhstan	33 (5.0)	534 (8.0)	59 (4.8)	532 (8.5)	8 (2.2)	532 (10.2)
Sweden	30 (3.8)	535 (3.3)	65 (4.0)	521 (4.0)	4 (1.8)	511 (14.9)
Qatar	29 (0.2)	267 (3.5)	68 (0.2)	302 (2.6)	2 (0.1)	~ ~
Kuwait	27 (3.9)	355 (10.0)	70 (4.2)	345 (6.6)	3 (1.6)	379 (32.4)
Lithuania	25 (3.6)	510 (5.0)	73 (3.7)	516 (2.8)	2 (1.0)	~ ~
Norway	23 (3.6)	481 (5.1)	74 (3.8)	475 (4.2)	3 (1.4)	452 (15.5)
Netherlands	22 (3.8)	524 (5.7)	75 (4.0)	522 (3.7)	3 (1.5)	500 (15.2)
Slovak Republic	21 (3.1)	530 (9.9)	72 (3.4)	525 (5.5)	6 (2.0)	510 (11.8)
Italy	18 (2.9)	541 (6.6)	75 (3.4)	535 (4.0)	6 (2.0)	521 (8.4)
Latvia	14 (3.1)	526 (7.1)	84 (3.3)	545 (2.4)	2 (1.2)	~ ~
El Salvador	13 (1.9)	451 (13.2)	62 (4.2)	384 (4.6)	26 (4.0)	373 (9.5)
Armenia	12 (2.1)	453 (8.4)	76 (3.2)	491 (7.3)	12 (2.6)	473 (14.3)
Morocco	9 (3.3)	371 (32.1)	48 (4.4)	296 (8.7)	43 (3.5)	273 (10.3)
Ukraine	9 (2.4)	478 (6.6)	82 (3.1)	474 (3.4)	8 (2.2)	465 (18.0)
Colombia	9 (3.2)	475 (20.2)	48 (4.8)	416 (7.2)	43 (4.5)	370 (9.7)
Iran, Islamic Rep. of	8 (2.1)	443 (23.7)	75 (3.5)	441 (4.6)	17 (3.1)	407 (10.4)
Yemen	8 (2.0)	207 (15.2)	37 (3.8)	205 (10.1)	55 (4.0)	190 (10.6)
Georgia	7 (2.7)	411 (13.5)	77 (4.1)	418 (4.8)	15 (3.3)	424 (15.2)
Tunisia	6 (2.1)	340 (28.5)	64 (4.2)	324 (7.8)	30 (4.0)	301 (12.0)
Algeria	5 (1.7)	363 (24.0)	74 (4.9)	358 (5.8)	21 (4.7)	329 (24.2)
International Avg.	31 (0.6)	483 (2.1)	59 (0.7)	477 (1.3)	10 (0.4)	442 (3.4)
Benchmarking Participants						
Dubai, UAE	82 (0.2)	467 (3.5)	17 (0.2)	424 (5.5)	1 (0.1)	~ ~
Alberta, Canada	50 (4.7)	541 (4.7)	48 (4.6)	544 (5.4)	2 (1.0)	~ ~
Quebec, Canada	49 (4.6)	517 (4.1)	51 (4.6)	517 (3.9)	0 (0.1)	~ ~
Minnesota, US	38 (6.9)	550 (16.4)	61 (7.2)	554 (6.6)	1 (1.6)	~ ~
British Columbia, Canada	37 (4.8)	541 (4.8)	62 (4.8)	535 (4.0)	1 (0.7)	~ ~
Massachusetts, US	37 (5.5)	575 (10.9)	60 (6.0)	572 (5.6)	3 (2.3)	534 (40.3)
Ontario, Canada	28 (4.2)	544 (6.3)	70 (4.4)	535 (4.9)	2 (1.4)	~ ~

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Index based on principals' average response to five questions about shortages that affect general capacity to provide instruction: instructional materials (e.g., textbook); budget for supplies (e.g., paper, pencils); school buildings and grounds; heating/cooling and lighting systems; and instructional space (e.g., classrooms); and the average response to five questions about shortages that affect science instruction: computers for science instruction; computer software for science instruction; calculators for science instruction; library materials relevant to science instruction; and audio-visual resources for science instruction. Average is computed based on a 4-point scale: 1 = none; 2 = a little; 3 = some;

and 4 = a lot. High level indicates that both shortages are on average lower than 2. Low level indicates that both shortages are on average greater than or equal to 3. Medium level includes all other possible combinations of responses.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.



Exhibit 8.7 Index of Availability of School Resources for Science Instruction (ASRSI) (Continued)
TIMSS2007
Science 8th Grade

Country	High ASRSI		Medium ASRSI		Low ASRSI	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Singapore	90 (0.0)	567 (4.9)	10 (0.0)	570 (13.9)	0 (0.0)	~ ~
Hong Kong SAR	71 (3.7)	528 (6.0)	29 (3.7)	526 (9.4)	0 (0.0)	~ ~
Czech Republic	65 (4.0)	538 (2.6)	35 (4.0)	540 (3.7)	0 (0.0)	~ ~
Slovenia	58 (4.2)	538 (2.8)	39 (4.3)	537 (4.2)	2 (1.3)	~ ~
Australia	57 (3.4)	531 (6.1)	41 (3.4)	493 (5.5)	2 (0.8)	~ ~
Scotland	52 (4.5)	496 (5.4)	46 (4.5)	493 (6.1)	3 (1.6)	521 (28.9)
Malta	49 (0.3)	474 (2.0)	50 (0.3)	439 (1.9)	2 (0.1)	~ ~
Sweden	49 (4.1)	508 (3.8)	50 (4.0)	514 (3.6)	1 (1.1)	~ ~
Hungary	48 (4.6)	538 (5.4)	48 (4.6)	542 (4.8)	4 (1.7)	527 (8.6)
United States	45 (3.6)	530 (4.1)	50 (3.5)	513 (4.6)	4 (1.5)	505 (14.9)
Japan	45 (4.1)	559 (4.1)	53 (4.3)	551 (3.1)	2 (1.2)	~ ~
Malaysia	44 (4.2)	479 (8.3)	44 (4.5)	457 (8.4)	12 (2.5)	491 (14.8)
Chinese Taipei	39 (4.0)	561 (6.1)	55 (4.2)	560 (5.1)	5 (2.4)	569 (12.7)
Israel	39 (4.2)	486 (8.4)	57 (4.4)	460 (6.0)	4 (1.2)	456 (10.7)
Lebanon	34 (4.2)	448 (12.2)	59 (4.2)	395 (7.9)	7 (3.2)	365 (36.7)
England	32 (3.6)	542 (8.9)	63 (3.9)	542 (5.7)	5 (1.7)	542 (18.3)
Qatar	31 (0.2)	308 (2.8)	66 (0.1)	322 (1.8)	3 (0.0)	366 (7.5)
Cyprus	28 (0.2)	450 (3.5)	59 (0.2)	453 (2.4)	14 (0.2)	447 (4.9)
Egypt	25 (3.4)	418 (8.6)	70 (3.7)	405 (4.7)	5 (1.8)	398 (22.9)
Korea, Rep. of	25 (3.8)	552 (4.2)	73 (3.8)	553 (2.3)	2 (0.7)	~ ~
Russian Federation	25 (3.0)	546 (7.0)	69 (3.1)	525 (4.5)	6 (1.8)	512 (12.7)
Jordan	24 (3.0)	496 (6.9)	69 (3.6)	476 (5.4)	7 (2.0)	490 (19.3)
Lithuania	23 (3.8)	513 (5.7)	74 (3.7)	520 (3.2)	2 (1.3)	~ ~
Bahrain	23 (0.2)	495 (3.0)	73 (0.2)	460 (2.0)	4 (0.1)	446 (7.1)
Norway	22 (3.8)	497 (4.2)	72 (4.0)	483 (2.6)	6 (1.8)	497 (11.8)
Palestinian Nat'l Auth.	19 (3.0)	416 (7.6)	68 (3.7)	404 (4.4)	12 (2.5)	385 (15.2)
Romania	19 (3.6)	470 (12.6)	74 (4.0)	463 (4.7)	7 (2.3)	442 (20.1)
Italy	19 (3.2)	500 (4.9)	79 (3.3)	493 (3.6)	3 (1.3)	518 (9.1)
Bulgaria	18 (3.5)	482 (13.6)	74 (4.0)	465 (7.2)	8 (2.9)	502 (18.5)
Algeria	17 (2.8)	405 (4.3)	76 (3.4)	408 (2.3)	7 (2.2)	413 (7.9)
Oman	15 (3.2)	432 (6.7)	62 (4.3)	421 (4.9)	23 (3.7)	418 (9.4)
Thailand	15 (2.5)	510 (10.0)	64 (4.0)	463 (5.7)	21 (3.3)	466 (11.1)
Colombia	15 (3.0)	433 (13.7)	52 (4.8)	424 (4.1)	33 (4.3)	396 (6.4)
Serbia	14 (2.9)	499 (8.4)	69 (3.7)	468 (3.8)	17 (2.8)	453 (9.5)
El Salvador	13 (2.8)	429 (9.4)	66 (4.0)	383 (4.1)	21 (3.5)	373 (5.5)
Armenia	13 (2.3)	464 (8.0)	76 (3.0)	493 (7.2)	11 (2.4)	480 (7.1)
Syrian Arab Republic	12 (2.8)	456 (8.5)	83 (3.2)	451 (3.6)	5 (1.8)	445 (16.1)
Ghana	10 (2.6)	253 (18.6)	78 (3.7)	307 (5.9)	12 (2.7)	314 (16.0)
Iran, Islamic Rep. of	10 (2.0)	516 (12.5)	71 (3.2)	454 (3.5)	19 (2.9)	448 (10.2)
Kuwait	9 (2.8)	428 (11.2)	84 (3.5)	415 (3.5)	7 (2.4)	424 (10.8)
Saudi Arabia	8 (2.1)	398 (13.5)	77 (3.8)	405 (3.1)	15 (3.6)	392 (9.6)
Turkey	7 (2.3)	513 (14.0)	63 (4.5)	452 (5.0)	30 (4.0)	444 (7.7)
Tunisia	6 (2.0)	451 (6.3)	74 (3.6)	444 (2.5)	19 (3.2)	444 (5.2)
Georgia	6 (1.8)	440 (13.9)	81 (4.6)	419 (5.4)	14 (4.1)	425 (13.5)
Indonesia	5 (1.7)	472 (14.9)	59 (4.4)	429 (4.7)	36 (4.1)	418 (7.0)
Ukraine	5 (1.9)	479 (21.0)	82 (3.5)	485 (3.9)	13 (3.1)	487 (7.7)
Botswana	4 (1.6)	406 (23.6)	64 (3.7)	352 (4.3)	32 (3.8)	349 (5.4)
Bosnia and Herzegovina	4 (1.6)	505 (17.1)	74 (3.4)	466 (3.4)	23 (3.2)	458 (6.9)
‡ Morocco	4 (1.3)	493 (8.5)	47 (6.1)	398 (4.9)	49 (6.0)	396 (4.9)
International Avg.	27 (0.4)	479 (1.5)	62 (0.5)	463 (0.9)	11 (0.4)	447 (2.3)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Dubai, UAE	r	80 (0.4)	500 (4.1)	16 (0.3)	438 (5.8)	3 (0.1)	449 (4.6)
Basque Country, Spain		71 (4.5)	498 (4.1)	27 (4.6)	499 (3.6)	2 (1.2)	~ ~
Quebec, Canada		54 (5.0)	519 (5.8)	46 (5.0)	493 (4.4)	0 (0.0)	~ ~
British Columbia, Canada		53 (5.2)	525 (4.1)	45 (5.1)	529 (4.6)	3 (1.4)	543 (31.2)
Massachusetts, US		42 (7.2)	567 (9.7)	52 (8.0)	547 (9.8)	5 (3.7)	543 (8.2)
Ontario, Canada		37 (5.2)	530 (4.3)	58 (4.9)	525 (4.8)	5 (2.4)	554 (17.9)
Minnesota, US		35 (7.6)	542 (9.5)	61 (7.0)	538 (5.3)	4 (3.4)	504 (10.0)

Index based on principals' average response to five questions about shortages that affect general capacity to provide instruction: instructional materials (e.g., textbook); budget for supplies (e.g., paper, pencils); school buildings and grounds; heating/cooling and lighting systems; and instructional space (e.g., classrooms); and the average response to five questions about shortages that affect science instruction: computers for science instruction; computer software for science instruction; calculators for science instruction; library materials relevant to science instruction; and audio-visual resources for science instruction. Average is computed based on a 4-point scale: 1 = none; 2 = a little; 3 = some; and 4 = a lot. High level indicates that both shortages are on average lower than 2. Low

level indicates that both shortages are on average greater than or equal to 3. Medium level includes all other possible combinations of responses.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.



Exhibit 8.8 High Index of Availability of School Resources for Science Instruction (ASRSI) with Trends
TIMSS2007
 Science **4th** Grade

Country	High ASRSI			
	2007 Percent of Students	Difference in Percent from 2003	Difference in Percent from 1995	
Singapore	83 (0.0)	-1 (2.8)	36 (4.1)	▲
Austria	71 (3.3)	◊ ◊	7 (5.5)	
Czech Republic	64 (4.2)	◊ ◊	27 (6.1)	▲
Japan	53 (4.0)	5 (5.5)	28 (5.4)	▲
England	r 50 (4.4)	5 (6.6)	24 (6.3)	▲
Hungary	46 (4.4)	13 (5.9)	24 (5.7)	▲
Slovenia	r 46 (4.0)	-3 (5.7)	39 (4.8)	▲
Scotland	44 (4.5)	-7 (6.5)	--	
Hong Kong SAR	43 (4.6)	8 (6.4)	22 (6.3)	▲
United States	r 42 (3.6)	6 (5.0)	18 (4.8)	▲
New Zealand	40 (3.1)	-1 (4.5)	19 (4.9)	▲
Australia	39 (4.1)	1 (5.7)	15 (6.2)	▲
Chinese Taipei	36 (4.4)	16 (5.4)	◊ ◊	
Russian Federation	36 (4.1)	32 (4.3)	◊ ◊	
Lithuania	25 (3.6)	14 (4.2)	◊ ◊	
Norway	r 23 (3.6)	-4 (5.6)	6 (4.8)	
Netherlands	r 22 (3.8)	-7 (5.8)	-7 (5.9)	
Italy	18 (2.9)	-7 (4.4)	--	
Latvia	r 14 (3.1)	-6 (5.6)	13 (3.1)	▲
Armenia	r 12 (2.1)	6 (3.5)	◊ ◊	
Morocco	r 9 (3.3)	3 (4.3)	◊ ◊	
Iran, Islamic Rep. of	8 (2.1)	-4 (4.0)	4 (2.8)	
Tunisia	5 (2.0)	-2 (3.0)	◊ ◊	
International Avg.	36 (0.8)			
Benchmarking Participants				
Alberta, Canada	50 (4.7)	◊ ◊	42 (6.2)	▲
Quebec, Canada	49 (4.6)	13 (6.4)	4 (12.0)	▲
Minnesota, US	r 38 (6.9)	◊ ◊	30 (8.2)	▲
Ontario, Canada	28 (4.2)	3 (6.2)	14 (5.4)	▲

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

2007 percent significantly higher ▲

2007 percent significantly lower ▼

For a detailed definition of the ASRSI index, refer to Exhibit 8.7.

Trend notes: Data are not shown for Kuwait, because comparable data from previous cycles are not available. Data for Tunisia do not include private schools.

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

A dash (-) indicates comparable data are not available.

An "r" indicates data are available for at least 70 but less than 85% of the students.

A diamond (◊) indicates the country did not participate in the assessment.

Exhibit 8.8 High Index of Availability of School Resources for Science Instruction (ASRSI) with Trends (Continued)
TIMSS2007
 Science **8th**
 Grade

Country	High ASRSI			
	2007 Percent of Students	Difference in Percent from 2003	Difference in Percent from 1999	Difference in Percent from 1995
Singapore	90 (0.0)	-2 (0.0) ▼	34 (3.9) ▲	28 (4.8) ▲
Hong Kong SAR	71 (3.7)	5 (5.2)	52 (4.9) ▲	49 (6.5) ▲
Czech Republic	65 (4.0)	0 ◊	22 (5.9) ▲	35 (6.2) ▲
Slovenia	r 58 (4.2)	10 (5.7)	--	52 (4.9) ▲
Australia	r 57 (3.4)	3 (5.1)	--	16 (6.2) ▲
Scotland	s 52 (4.5)	16 (7.0) ▲	0 ◊	--
Sweden	49 (4.1)	10 (5.7)	0 ◊	15 (6.3) ▲
Hungary	48 (4.6)	22 (6.0) ▲	24 (5.8) ▲	27 (5.6) ▲
United States	r 45 (3.6)	-4 (5.2)	11 (4.9) ▲	29 (4.8) ▲
Japan	45 (4.1)	-4 (5.7)	14 (5.6) ▲	20 (5.3) ▲
Malaysia	44 (4.2)	26 (5.4) ▲	21 (5.6) ▲	0 ◊
Chinese Taipei	39 (4.0)	14 (5.6) ▲	34 (4.5) ▲	0 ◊
Israel	39 (4.2)	-15 (6.0) ▼	3 (5.9)	--
Lebanon	34 (4.2)	0 (5.6)	0 ◊	0 ◊
England	s 32 (3.6)	-3 (7.5)	5 (5.5)	8 (6.0)
Cyprus	r 28 (0.2)	12 (0.3) ▲	12 (0.2) ▲	5 (0.5) ▲
Egypt	25 (3.4)	-8 (5.5)	0 ◊	0 ◊
Korea, Rep. of	25 (3.8)	-5 (5.5)	18 (4.4) ▲	23 (4.0) ▲
Russian Federation	25 (3.0)	22 (3.2) ▲	23 (3.1) ▲	24 (3.0) ▲
Jordan	24 (3.0)	6 (4.7)	19 (3.6) ▲	0 ◊
Lithuania	23 (3.8)	13 (4.8) ▲	17 (4.3) ▲	22 (3.9) ▲
Bahrain	23 (0.2)	4 (0.3) ▲	0 ◊	0 ◊
Norway	r 22 (3.8)	0 (5.5)	0 ◊	-8 (5.5)
Palestinian Nat'l Auth.	19 (3.0)	8 (4.2)	0 ◊	0 ◊
Romania	19 (3.6)	13 (4.2) ▲	17 (3.8) ▲	16 (3.8) ▲
Italy	19 (3.2)	-12 (4.6) ▼	-4 (4.4)	--
Thailand	15 (2.5)	0 ◊	14 (2.7) ▲	--
Colombia	15 (3.0)	0 ◊	0 ◊	2 (4.4)
Serbia	14 (2.9)	10 (3.5) ▲	0 ◊	0 ◊
Armenia	r 13 (2.3)	8 (3.1) ▲	0 ◊	0 ◊
Ghana	10 (2.6)	-1 (4.0)	0 ◊	0 ◊
Iran, Islamic Rep. of	10 (2.0)	0 (3.2)	5 (2.7)	8 (2.2) ▲
Indonesia	7 (2.1)	-2 (3.2)	-14 (4.3) ▼	0 ◊
Tunisia	6 (2.0)	-6 (3.5)	2 (2.8)	0 ◊
Botswana	4 (1.6)	-3 (3.0)	0 ◊	0 ◊
International Avg.	32 (0.6)			
Benchmarking Participants				
Basque Country, Spain	71 (4.5)	10 (6.7)	0 ◊	0 ◊
Quebec, Canada	r 54 (5.0)	-2 (6.7)	-3 (7.9)	13 (8.2)
British Columbia, Canada	53 (5.2)	0 ◊	17 (8.1) ▲	0 ◊
Massachusetts, US	s 42 (7.2)	0 ◊	10 (9.8)	0 ◊
Ontario, Canada	37 (5.2)	13 (6.7)	20 (6.2) ▲	22 (6.5) ▲
Minnesota, US	35 (7.6)	0 ◊	0 ◊	23 (8.6) ▲

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

2007 percent significantly higher ▲

2007 percent significantly lower ▼

For a detailed definition of the ASRSI index, refer to Exhibit 8.7.

Trend notes: Data are not shown for Kuwait, Morocco, Saudi Arabia, and Turkey, because comparable data from previous cycles are not available. Data for Indonesia do not include Islamic schools.

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

A dash (–) indicates comparable data are not available.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (◊) indicates the country did not participate in the assessment.



Exhibit 8.9 Schools with Science Laboratory

TIMSS2007
Science 4th Grade

Country	Have Science Laboratory in the School		Do Not Have Science Laboratory in the School	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Kuwait	100 (0.0)	348 (4.4)	0 (0.0)	~ ~
Japan	98 (1.1)	548 (2.0)	2 (1.1)	~ ~
Singapore	98 (0.0)	587 (4.2)	2 (0.0)	~ ~
Qatar	92 (0.1)	292 (2.7)	8 (0.1)	326 (4.0)
Chinese Taipei	87 (2.8)	558 (2.1)	13 (2.8)	550 (6.2)
Denmark	75 (3.4)	515 (3.8)	25 (3.4)	523 (4.9)
Armenia	64 (4.2)	486 (7.9)	36 (4.2)	481 (7.8)
Georgia	43 (4.9)	418 (5.3)	57 (4.9)	418 (6.8)
Colombia	38 (3.6)	426 (9.1)	62 (3.6)	386 (6.7)
Czech Republic	37 (4.5)	510 (4.7)	63 (4.5)	519 (3.5)
Iran, Islamic Rep. of	35 (3.8)	469 (8.4)	65 (3.8)	418 (5.3)
Hungary	34 (4.0)	550 (6.7)	66 (4.0)	530 (4.7)
Sweden	33 (3.7)	530 (4.2)	67 (3.7)	523 (3.7)
Slovak Republic	32 (3.9)	526 (6.2)	68 (3.9)	526 (6.0)
Italy	29 (3.1)	533 (5.7)	71 (3.1)	536 (3.9)
Hong Kong SAR	25 (4.0)	555 (5.5)	75 (4.0)	553 (4.4)
United States	22 (2.5)	552 (6.6)	78 (2.5)	535 (3.2)
El Salvador	22 (3.0)	438 (7.4)	78 (3.0)	376 (4.1)
Latvia	20 (3.5)	544 (4.8)	80 (3.5)	543 (2.4)
Norway	18 (3.1)	477 (9.0)	82 (3.1)	476 (4.0)
Yemen	17 (3.1)	243 (12.0)	83 (3.1)	189 (8.0)
Kazakhstan	14 (3.8)	521 (24.9)	86 (3.8)	535 (4.6)
Australia	12 (2.2)	541 (5.0)	88 (2.2)	525 (3.9)
Ukraine	11 (2.7)	479 (12.0)	89 (2.7)	473 (3.3)
Scotland	9 (2.4)	527 (10.6)	91 (2.4)	498 (2.5)
Slovenia	9 (2.4)	496 (9.5)	91 (2.4)	521 (2.2)
Morocco	8 (2.5)	421 (19.2)	92 (2.5)	283 (5.9)
New Zealand	8 (1.9)	530 (8.4)	92 (1.9)	502 (2.8)
Germany	7 (1.9)	515 (9.5)	93 (1.9)	529 (2.8)
England	7 (1.4)	559 (9.3)	93 (1.4)	540 (3.0)
Russian Federation	6 (1.8)	540 (17.0)	94 (1.8)	547 (4.6)
Lithuania	3 (1.5)	480 (10.7)	97 (1.5)	516 (2.3)
Tunisia	2 (1.2)	~ ~	98 (1.2)	321 (6.3)
Austria	1 (0.8)	~ ~	99 (0.8)	526 (2.5)
Algeria	1 (0.6)	~ ~	99 (0.6)	352 (6.2)
Netherlands	0 (0.0)	~ ~	100 (0.0)	522 (2.9)
International Avg.	31 (0.5)	491 (1.9)	69 (0.5)	473 (1.2)
Benchmarking Participants				
Dubai, UAE	r 92 (0.1)	457 (3.6)	8 (0.1)	508 (5.1)
Alberta, Canada	34 (3.9)	541 (4.8)	66 (3.9)	543 (5.1)
Ontario, Canada	28 (4.2)	545 (4.6)	72 (4.2)	533 (4.3)
Massachusetts, US	21 (5.3)	545 (11.7)	79 (5.3)	578 (4.1)
Minnesota, US	12 (4.7)	537 (28.8)	88 (4.7)	555 (7.3)
Quebec, Canada	11 (2.7)	523 (4.9)	89 (2.7)	516 (3.0)
British Columbia, Canada	4 (2.0)	535 (41.9)	96 (2.0)	537 (2.8)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Background data provided by schools.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

Exhibit 8.9 Schools with Science Laboratory (Continued)

TIMSS2007
Science 8th Grade

Country	Have Science Laboratory in the School		Do Not Have Science Laboratory in the School	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Australia	100 (0.0)	516 (3.6)	0 (0.0)	~ ~
Chinese Taipei	100 (0.0)	561 (3.7)	0 (0.0)	~ ~
England	100 (0.0)	542 (4.4)	0 (0.0)	~ ~
Korea, Rep. of	100 (0.0)	553 (2.0)	0 (0.0)	~ ~
Malta	100 (0.0)	457 (1.4)	0 (0.0)	~ ~
Singapore	100 (0.0)	567 (4.7)	0 (0.0)	~ ~
Qatar	100 (0.0)	318 (1.7)	0 (0.0)	~ ~
Japan	99 (0.6)	554 (1.9)	1 (0.0)	~ ~
Hong Kong SAR	99 (0.9)	529 (5.0)	1 (0.0)	~ ~
Tunisia	98 (1.1)	445 (2.2)	2 (1.1)	~ ~
Kuwait	98 (0.9)	418 (3.0)	2 (0.9)	~ ~
Sweden	98 (0.5)	510 (2.6)	2 (0.5)	~ ~
Malaysia	98 (1.2)	469 (6.0)	2 (1.2)	~ ~
Bahrain	98 (0.1)	468 (1.7)	2 (0.1)	~ ~
Botswana	97 (1.5)	353 (3.1)	3 (1.5)	359 (25.3)
Cyprus	97 (0.1)	451 (2.1)	3 (0.1)	446 (10.0)
Thailand	96 (1.7)	470 (4.3)	4 (1.7)	501 (50.8)
Jordan	96 (1.4)	483 (3.9)	4 (1.4)	454 (19.8)
Scotland	96 (2.0)	496 (3.8)	4 (2.0)	488 (8.7)
Algeria	92 (2.4)	408 (1.9)	8 (2.4)	410 (4.4)
Egypt	92 (2.1)	408 (3.8)	8 (2.1)	408 (21.2)
Oman	91 (2.3)	426 (3.5)	9 (2.3)	387 (14.0)
Norway	90 (2.4)	487 (2.5)	10 (2.4)	487 (3.9)
Israel	88 (2.9)	473 (5.5)	12 (2.9)	448 (14.3)
Lebanon	87 (3.5)	417 (6.6)	13 (3.5)	387 (14.2)
Palestinian Nat'l Auth.	86 (2.9)	407 (4.0)	14 (2.9)	383 (11.0)
Saudi Arabia	84 (3.1)	403 (2.9)	16 (3.1)	399 (8.6)
Turkey	84 (2.6)	460 (4.0)	16 (2.6)	425 (9.4)
United States	80 (3.1)	522 (3.5)	20 (3.1)	513 (6.6)
Syrian Arab Republic	76 (3.6)	453 (3.4)	24 (3.6)	449 (6.9)
Iran, Islamic Rep. of	74 (3.0)	470 (4.3)	26 (3.0)	427 (6.0)
Russian Federation	71 (3.2)	531 (5.3)	29 (3.2)	527 (4.7)
Colombia	70 (4.6)	427 (4.2)	30 (4.6)	397 (5.4)
Armenia	69 (4.3)	489 (5.8)	31 (4.3)	485 (9.8)
Italy	69 (3.6)	498 (3.6)	31 (3.6)	489 (5.8)
Romania	66 (4.2)	468 (4.2)	34 (4.2)	452 (7.9)
Indonesia	62 (3.9)	439 (4.7)	38 (3.9)	408 (5.7)
Slovenia	56 (3.8)	537 (3.5)	44 (3.8)	539 (3.3)
Georgia	50 (5.2)	419 (6.8)	50 (5.2)	423 (5.7)
Czech Republic	47 (4.1)	544 (3.5)	53 (4.1)	534 (3.2)
Hungary	42 (3.9)	548 (4.9)	58 (3.9)	533 (4.0)
El Salvador	32 (3.8)	414 (5.1)	68 (3.8)	375 (3.6)
Serbia	30 (4.1)	485 (5.9)	70 (4.1)	464 (3.9)
Bosnia and Herzegovina	26 (3.6)	474 (6.6)	74 (3.6)	462 (3.3)
Ukraine	19 (3.6)	490 (9.3)	81 (3.6)	484 (3.9)
Bulgaria	9 (2.4)	464 (12.5)	91 (2.4)	471 (6.4)
Lithuania	4 (1.9)	519 (20.2)	96 (1.9)	519 (2.7)
Ghana	3 (1.3)	415 (16.3)	97 (1.3)	300 (5.4)
‡ Morocco	96 (2.3)	402 (2.6)	4 (2.3)	363 (10.6)
International Avg.	76 (0.4)	470 (0.9)	24 (0.4)	446 (2.2)
Benchmarking Participants				
Basque Country, Spain	100 (0.0)	498 (3.0)	0 (0.0)	~ ~
Quebec, Canada	100 (0.3)	507 (3.4)	0 (0.3)	~ ~
Dubai, UAE	r 99 (0.0)	488 (3.5)	1 (0.0)	~ ~
British Columbia, Canada	95 (1.8)	528 (3.0)	5 (1.8)	521 (11.7)
Minnesota, US	82 (7.3)	539 (5.0)	18 (7.3)	532 (16.0)
Massachusetts, US	81 (5.6)	560 (5.7)	19 (5.6)	540 (17.6)
Ontario, Canada	57 (4.9)	530 (4.3)	43 (4.9)	527 (4.6)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Background data provided by schools.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.



As another perspective on school resources for science instruction, Exhibit 8.10 presents teachers' reports on physical aspects of the school environment that impact their working conditions and capacity to provide effective science instruction. Teachers were asked to respond to four statements about problems in their schools: school buildings need significant repair, classrooms are overcrowded, teachers do not have adequate workspace outside their classroom, and materials are not available to conduct science experiments or investigations. For each teacher, an average was computed on a three-point scale: 1 = *not a problem*; 2 = *minor problem*; and 3 = *serious problem*. Students were assigned to the high level of the Index of Teachers' Adequate Working Conditions (TAWC) if their teacher's average response was equal to 1. Students were assigned to the medium level if their teacher's average response was greater than 1 but less than or equal to 2, and to the low level of the index if their teacher's average was greater than 2.

Exhibit 8.10 presents the percentage of students at each of the three levels of the Index of Teachers' Adequate Working Conditions, together with average science achievement, for all TIMSS 2007 participants at the fourth and eighth grades. The average percentage of students at each level of the index was similar at both grades—8 percent at the high level, 55 to 56 percent at the medium level, and 36 to 37 percent at the low level. At fourth grade, only Singapore (29%), Dubai (60%), and Minnesota (20%) had 20 percent or more students at the high level of the index, i.e., in schools where teachers reported few problems with working conditions. Likewise at eighth grade, only Singapore (23%), Slovenia (21%), Lebanon (20%), and Dubai (43%) had 20 percent or more students at the high level of the index. At both grades, students at the high level of the adequate working conditions index had higher average science achievement than students at the other levels.

Well-educated teachers who have kept abreast of pedagogical developments in their fields may be a school's most important educational resource. TIMSS asked principals to report on the percentage of teachers in their schools that had been involved in professional development opportunities in mathematics and science during the past two years.

More specifically, principals were asked about three areas of professional development in these subjects—improving content knowledge, improving teaching skills, and using information and communication technology for educational purposes. Schools were categorized into three groups on the basis of principals' responses: schools where most (76-100%) teachers had professional development, schools where some (26-75%) teachers had professional development, and schools where few (25% or less) teachers had professional development during the past two years.

Exhibit 8.10 Index of Teachers' Adequate Working Conditions (TAWC)

TIMSS2007
Science 4th Grade

Country	High TAWC		Medium TAWC		Low TAWC	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Singapore	29 (2.7)	582 (8.0)	61 (2.8)	586 (4.9)	10 (1.4)	604 (11.3)
England	16 (3.2)	545 (7.2)	68 (3.9)	542 (3.8)	15 (2.9)	537 (6.5)
Austria	16 (2.3)	521 (4.7)	66 (3.0)	525 (2.9)	18 (2.9)	532 (5.0)
United States	16 (2.0)	552 (4.6)	70 (2.5)	539 (2.9)	14 (1.7)	516 (8.7)
Czech Republic	16 (2.7)	508 (5.5)	77 (3.3)	516 (3.8)	8 (1.9)	525 (8.5)
Qatar	14 (0.1)	245 (4.6)	41 (0.2)	274 (3.3)	44 (0.2)	322 (3.3)
Chinese Taipei	14 (2.9)	554 (6.2)	54 (4.0)	557 (3.0)	32 (3.9)	558 (3.2)
Kuwait	12 (3.0)	374 (10.9)	49 (4.5)	351 (8.6)	39 (4.3)	336 (10.5)
New Zealand	11 (2.2)	511 (6.3)	76 (2.7)	505 (3.1)	13 (1.8)	497 (8.6)
Kazakhstan	10 (2.7)	537 (20.6)	59 (5.5)	534 (7.0)	30 (5.3)	528 (8.3)
Hungary	9 (2.4)	519 (13.7)	72 (3.7)	537 (4.2)	19 (3.1)	541 (7.9)
Scotland	9 (2.2)	493 (10.3)	68 (3.8)	503 (3.2)	24 (3.8)	498 (5.1)
Australia	8 (2.3)	549 (12.2)	63 (3.9)	527 (4.7)	28 (3.6)	518 (6.0)
Hong Kong SAR	8 (2.1)	557 (7.3)	62 (4.2)	557 (4.3)	30 (4.1)	557 (7.1)
Norway	7 (1.9)	505 (7.9)	62 (3.4)	474 (4.3)	31 (3.1)	474 (4.8)
Russian Federation	7 (2.5)	546 (18.3)	68 (3.0)	545 (6.2)	25 (4.0)	553 (4.4)
Slovenia	7 (1.4)	519 (5.8)	64 (3.0)	513 (2.4)	29 (2.9)	530 (3.3)
El Salvador	6 (1.9)	437 (28.4)	49 (3.9)	401 (5.2)	45 (4.1)	370 (6.6)
Denmark	6 (2.4)	527 (14.7)	61 (4.7)	521 (3.6)	33 (4.1)	514 (5.8)
Italy	6 (1.6)	539 (13.0)	45 (3.6)	541 (4.2)	50 (3.7)	530 (5.1)
Netherlands	6 (2.0)	528 (14.5)	65 (3.6)	523 (2.8)	29 (3.8)	518 (5.2)
Armenia	5 (1.3)	476 (10.9)	55 (3.7)	482 (7.7)	40 (3.6)	491 (10.9)
Algeria	5 (2.0)	369 (16.7)	17 (3.3)	344 (11.2)	78 (3.8)	353 (8.3)
Georgia	5 (2.0)	403 (16.8)	58 (4.8)	424 (6.3)	37 (5.0)	414 (7.1)
Iran, Islamic Rep. of	5 (1.9)	468 (20.8)	59 (4.1)	436 (6.4)	36 (4.0)	432 (7.2)
Sweden	5 (1.8)	538 (9.9)	62 (4.0)	525 (3.7)	34 (4.1)	524 (5.4)
Colombia	4 (1.6)	418 (36.3)	41 (5.1)	414 (10.3)	55 (5.3)	392 (7.8)
Germany	4 (1.4)	518 (11.4)	58 (3.9)	532 (3.2)	38 (3.8)	521 (4.2)
Slovak Republic	4 (1.4)	533 (13.7)	61 (3.6)	523 (6.1)	36 (3.4)	531 (7.1)
Ukraine	4 (1.5)	475 (15.6)	70 (3.6)	473 (3.5)	26 (3.5)	475 (6.8)
Tunisia	4 (1.4)	282 (55.8)	41 (4.2)	323 (9.2)	55 (4.0)	316 (8.3)
Japan	3 (1.3)	536 (21.8)	46 (4.2)	547 (2.7)	51 (4.0)	550 (2.3)
Latvia	3 (1.6)	538 (16.7)	59 (3.6)	538 (3.0)	38 (3.6)	550 (3.0)
Lithuania	3 (1.3)	461 (9.1)	58 (4.0)	516 (3.2)	40 (4.0)	516 (2.8)
Morocco	2 (1.5)	~ ~	17 (3.8)	327 (24.3)	80 (4.0)	286 (7.4)
Yemen	1 (0.9)	~ ~	16 (3.8)	201 (20.5)	83 (3.4)	201 (8.5)
International Avg.	8 (0.3)	490 (3.0)	56 (0.6)	477 (1.6)	36 (0.6)	475 (1.4)
Benchmarking Participants						
Dubai, UAE	60 (3.7)	464 (8.8)	29 (3.9)	446 (8.9)	11 (2.2)	391 (18.3)
Minnesota, US	20 (6.1)	558 (6.3)	70 (7.7)	549 (9.3)	10 (4.4)	564 (10.7)
Massachusetts, US	14 (2.9)	572 (11.8)	76 (5.2)	573 (4.8)	10 (4.4)	563 (7.1)
Alberta, Canada	13 (3.0)	560 (11.3)	73 (3.9)	542 (3.9)	14 (2.9)	526 (8.4)
Ontario, Canada	10 (3.6)	546 (10.5)	70 (4.6)	531 (4.6)	20 (4.3)	539 (10.8)
British Columbia, Canada	8 (2.2)	537 (7.6)	65 (4.4)	535 (3.5)	28 (4.1)	537 (7.2)
Quebec, Canada	4 (1.5)	524 (6.1)	76 (4.0)	519 (3.2)	20 (3.8)	515 (7.6)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Index based on teachers' responses to four statements about severity of problems in their schools: school building needs significant repair; classrooms are overcrowded; teachers do not have adequate workspace outside their classroom; and materials are not available to conduct science experiments or investigations. Average is computed based on a 3-point scale: 1 = not a problem; 2 = minor problem; and 3 = serious problem. High level indicates average is equal to 1. Medium level indicates that average value is greater than 1 and less than or equal to 2. Low level indicates average is greater than 2.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

An "s" indicates data are available for at least 50 but less than 70% of the students.

Exhibit 8.10 Index of Teachers' Adequate Working Conditions (TAWC) (Continued)

TIMSS2007
Science 8th Grade

Country	High TAWC		Medium TAWC		Low TAWC	
	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement	2007 Percent of Students	Average Achievement
Singapore	23 (2.0)	570 (9.6)	64 (2.2)	570 (5.1)	13 (1.5)	549 (16.1)
Slovenia	21 (2.9)	531 (6.2)	58 (3.0)	538 (2.5)	21 (2.7)	542 (3.1)
Lebanon	20 (2.5)	459 (10.4)	61 (3.6)	413 (7.2)	19 (3.2)	378 (15.5)
Hong Kong SAR	17 (3.5)	507 (13.7)	64 (4.3)	534 (6.3)	19 (3.4)	531 (11.9)
Czech Republic	16 (1.6)	536 (3.9)	76 (2.0)	538 (2.0)	8 (1.7)	549 (10.7)
United States	r 15 (1.9)	532 (6.3)	64 (2.7)	520 (3.8)	21 (2.4)	503 (8.7)
Chinese Taipei	15 (3.0)	566 (8.3)	60 (4.3)	555 (4.9)	25 (3.7)	571 (5.9)
Saudi Arabia	15 (3.4)	411 (7.8)	49 (4.4)	407 (4.0)	36 (4.0)	393 (5.3)
Qatar	13 (0.1)	307 (3.4)	60 (0.2)	308 (1.9)	27 (0.2)	345 (2.8)
Egypt	13 (2.6)	418 (14.3)	59 (3.9)	409 (5.1)	28 (3.4)	399 (6.7)
Australia	13 (2.2)	546 (12.5)	68 (3.3)	518 (4.6)	20 (2.9)	497 (7.0)
Hungary	12 (1.9)	520 (6.2)	68 (2.7)	539 (3.5)	20 (2.4)	549 (5.7)
Scotland	r 11 (1.6)	518 (5.8)	68 (2.5)	492 (4.5)	21 (2.6)	497 (6.3)
Kuwait	r 11 (3.0)	426 (13.9)	54 (4.9)	416 (4.4)	36 (4.5)	412 (7.4)
England	11 (2.1)	575 (12.8)	57 (3.2)	540 (5.7)	32 (3.0)	536 (6.9)
Malta	10 (0.1)	516 (3.4)	51 (0.3)	471 (1.8)	39 (0.3)	411 (2.1)
Cyprus	r 9 (0.5)	448 (2.9)	46 (1.3)	451 (2.5)	45 (1.2)	452 (2.6)
Tunisia	8 (2.6)	437 (8.4)	44 (3.9)	445 (3.0)	47 (4.1)	446 (2.7)
Japan	8 (2.4)	568 (12.4)	54 (4.1)	554 (3.7)	38 (3.8)	551 (3.5)
Sweden	8 (1.9)	516 (7.7)	63 (3.2)	510 (3.3)	29 (3.1)	509 (4.0)
Korea, Rep. of	8 (1.7)	546 (5.2)	67 (3.5)	554 (2.4)	25 (3.4)	554 (3.9)
Turkey	8 (2.5)	471 (18.1)	46 (4.6)	473 (6.0)	46 (4.2)	433 (5.3)
Romania	7 (1.2)	471 (7.8)	61 (2.5)	462 (4.9)	32 (2.6)	459 (4.7)
Norway	7 (2.1)	500 (11.2)	56 (4.0)	488 (2.4)	37 (4.0)	483 (3.5)
Thailand	7 (1.7)	526 (20.9)	73 (3.5)	465 (4.9)	20 (3.6)	473 (11.3)
Bahrain	7 (1.3)	473 (9.4)	66 (2.3)	476 (2.8)	28 (2.1)	447 (4.0)
Colombia	6 (1.9)	485 (13.2)	50 (4.3)	424 (4.3)	43 (4.0)	396 (5.1)
Oman	6 (1.8)	428 (8.0)	62 (3.3)	429 (3.9)	32 (3.3)	408 (5.4)
Armenia	6 (1.0)	476 (10.2)	54 (2.5)	492 (7.8)	40 (2.4)	484 (4.8)
Syrian Arab Republic	6 (1.8)	466 (9.3)	52 (3.9)	455 (4.2)	43 (3.7)	445 (4.1)
Iran, Islamic Rep. of	5 (1.6)	479 (13.7)	44 (3.6)	467 (5.5)	51 (3.7)	450 (5.0)
Malaysia	5 (1.8)	494 (24.0)	74 (3.4)	474 (6.3)	21 (3.1)	457 (14.7)
Jordan	5 (1.9)	470 (28.8)	58 (3.9)	489 (5.7)	38 (4.0)	471 (6.2)
Israel	5 (1.6)	483 (10.5)	55 (3.5)	472 (6.5)	40 (3.5)	460 (7.5)
Bulgaria	4 (0.7)	494 (14.5)	55 (3.3)	470 (7.2)	41 (3.3)	467 (7.7)
Russian Federation	4 (0.8)	559 (13.5)	71 (2.2)	532 (4.2)	26 (2.2)	520 (5.0)
Ukraine	4 (1.6)	532 (14.8)	68 (2.8)	485 (4.1)	28 (2.5)	482 (3.9)
Palestinian Nat'l Auth.	3 (1.1)	440 (21.8)	49 (4.1)	415 (5.5)	49 (4.1)	390 (5.7)
Lithuania	3 (0.8)	513 (9.2)	52 (2.5)	513 (3.1)	45 (2.6)	525 (3.2)
Bosnia and Herzegovina	3 (0.6)	476 (12.1)	36 (2.1)	468 (4.0)	61 (2.1)	465 (3.3)
El Salvador	2 (1.3)	~ ~	45 (4.0)	386 (5.2)	53 (3.9)	385 (4.8)
Italy	2 (1.0)	~ ~	53 (3.5)	495 (3.6)	45 (3.5)	498 (4.9)
Serbia	2 (0.6)	~ ~	49 (3.0)	476 (3.8)	49 (3.0)	464 (4.6)
Algeria	2 (1.0)	~ ~	44 (3.6)	410 (2.9)	54 (3.5)	407 (2.3)
Georgia	2 (0.8)	~ ~	52 (3.7)	424 (6.0)	46 (3.8)	418 (5.3)
Indonesia	1 (0.7)	~ ~	23 (3.1)	440 (7.1)	76 (3.2)	426 (3.8)
Botswana	1 (0.5)	~ ~	30 (3.8)	371 (6.8)	69 (3.8)	346 (4.0)
Ghana	0 (0.2)	~ ~	29 (3.6)	313 (11.4)	70 (3.5)	299 (6.9)
‡ Morocco	r 4 (1.6)	455 (17.6)	27 (3.4)	405 (6.3)	69 (3.8)	399 (3.5)
International Avg.	8 (0.3)	491 (2.0)	55 (0.5)	468 (0.9)	37 (0.5)	460 (1.1)
Benchmarking Participants						
Dubai, UAE	s 43 (3.2)	506 (4.5)	53 (3.6)	476 (5.0)	3 (1.1)	451 (19.1)
Basque Country, Spain	14 (3.6)	497 (7.5)	70 (4.6)	499 (4.0)	16 (3.4)	499 (6.6)
Massachusetts, US	13 (5.1)	557 (14.9)	69 (6.7)	555 (8.4)	18 (5.1)	548 (12.9)
British Columbia, Canada	13 (3.2)	523 (7.6)	71 (3.6)	529 (3.5)	16 (2.9)	514 (7.8)
Ontario, Canada	13 (3.2)	517 (17.5)	68 (4.3)	526 (4.0)	20 (3.7)	532 (7.9)
Minnesota, US	12 (5.4)	572 (10.0)	74 (8.0)	532 (6.1)	14 (6.4)	530 (15.5)
Quebec, Canada	5 (1.9)	517 (15.8)	80 (4.0)	514 (4.4)	15 (3.4)	501 (10.4)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Index based on teachers' responses to four statements about severity of problems in their schools: school building needs significant repair; classrooms are overcrowded; teachers do not have adequate workspace outside their classroom; and materials are not available to conduct science experiments or investigations. Average is computed based on a 3-point scale: 1 = not a problem; 2 = minor problem; and 3 = serious problem. High level indicates average is equal to 1. Medium level indicates that average value is greater than 1 and less than or equal to 2. Low level indicates average is greater than 2.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

An "s" indicates data are available for at least 50 but less than 70% of the students.



Exhibit 8.11 presents the percentage of students in each of the three school categories by area of professional development, for each TIMSS 2007 participant at fourth and eighth grades. At fourth grade, 26 percent of students, on average internationally, were in schools where most teachers (at least 76%) had professional development in improving content knowledge in mathematics and science, 30 percent in schools where teachers of most students had worked on improving teaching skills, and 25 percent where teachers of most students had professional development in using information and communication technology for educational purposes. Participants with most emphasis on professional development for improving content knowledge (more than 50 percent of students in schools where most teachers had this type of professional development) included Australia, England, New Zealand, and the U.S. states of Massachusetts and Minnesota. Similarly, most professional development emphasis on improving teaching skills was in Australia, England, New Zealand, Scotland, Singapore, the United States, and among benchmarking participants, Alberta, Ontario, Dubai, Massachusetts, and Minnesota, and on using information technology in Australia, England, New Zealand, Scotland, the Slovak Republic, and Massachusetts. Relatively few students (less than 15%) were in schools where most teachers had professional development in any of the areas in Algeria, Denmark, Italy, Morocco, and Yemen.

At eighth grade, the overall picture was similar to fourth grade, although with the level of professional development reported to be somewhat less. On average across countries, 21 percent of students were in schools where most teachers had professional development in improving content knowledge, 23 percent in schools where most teachers had professional development in improving teaching skills, and 20 percent in schools where most teachers had professional development in using information technology. Participants with the most emphasis on professional development for improving content knowledge at eighth grade included Lithuania (40%), Malaysia (41%), Singapore (48%), Slovenia (45%), and the United States (48%), as well as the benchmarking participants of Dubai (46%), Massachusetts (58%), and

Quebec (45%). The highest proportion of professional development emphasis on improving teaching skills was in England (43%), Lithuania (43%), Scotland (49%), Singapore (60%), the United States (53%), and benchmarking participants Dubai (57%), Massachusetts (57%), and Ontario (47%), and on using information technology in Bulgaria (44%), England (48%), Scotland (51%), Singapore (48%), the United States (43%), and the state of Massachusetts (41%).

Exhibit 8.11 Schools' Reports on Teachers' Mathematics and Science Professional Development in the Past 2 Years
TIMSS2007
Science 4th Grade

Country	Percentage of Students in Schools Where Most (76-100%) Teachers Had Professional Development in			Percentage of Students in Schools Where Some (26-75%) Teachers Had Professional Development in			Percentage of Students in Schools Where Few (25% or less) Teachers Had Professional Development in		
	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes
Algeria	6 (2.0)	9 (2.6)	1 (0.0)	70 (4.0)	70 (4.1)	19 (4.8)	24 (3.6)	21 (3.6)	81 (4.8)
Armenia	27 (4.2)	32 (4.4)	14 (2.9)	57 (4.1)	55 (4.4)	48 (4.5)	17 (3.6)	13 (3.1)	39 (4.3)
Australia	58 (4.0)	63 (3.8)	53 (4.8)	29 (3.9)	26 (3.4)	32 (4.7)	12 (2.1)	11 (2.6)	15 (3.0)
Austria	30 (2.9)	26 (2.9)	23 (3.0)	44 (3.1)	46 (3.5)	45 (3.8)	26 (2.9)	28 (3.2)	33 (3.6)
Chinese Taipei	19 (3.1)	22 (3.3)	23 (3.7)	60 (4.4)	64 (4.4)	60 (4.3)	21 (3.8)	14 (3.2)	17 (3.3)
Colombia	12 (2.9)	21 (3.8)	16 (3.9)	56 (5.5)	64 (4.3)	45 (5.3)	32 (5.3)	15 (3.2)	39 (4.6)
Czech Republic	31 (4.3)	26 (3.9)	43 (4.1)	37 (4.2)	43 (4.0)	38 (4.7)	32 (3.9)	30 (3.9)	19 (3.5)
Denmark	8 (2.7)	7 (2.4)	10 (2.7)	24 (4.4)	39 (4.4)	40 (4.7)	68 (4.8)	55 (4.5)	50 (4.4)
El Salvador	13 (2.7)	18 (3.2)	9 (2.1)	53 (4.3)	55 (4.4)	29 (3.5)	34 (3.8)	28 (3.6)	62 (4.0)
England	55 (4.6)	62 (4.4)	72 (4.1)	26 (4.3)	22 (3.8)	19 (3.4)	20 (3.3)	16 (3.3)	9 (2.7)
Georgia	26 (4.3)	23 (4.0)	10 (2.7)	47 (5.2)	54 (4.9)	39 (4.8)	27 (4.7)	24 (4.2)	50 (5.2)
Germany	14 (1.9)	13 (2.0)	11 (2.1)	50 (3.0)	49 (3.1)	34 (2.7)	36 (3.0)	38 (3.0)	55 (3.2)
Hong Kong SAR	23 (3.6)	27 (4.0)	30 (4.5)	66 (4.3)	63 (4.2)	54 (4.7)	11 (3.0)	10 (2.8)	16 (3.6)
Hungary	17 (3.7)	22 (4.0)	12 (3.0)	42 (4.1)	43 (4.1)	35 (4.0)	41 (4.0)	35 (3.7)	53 (4.2)
Iran, Islamic Rep. of	20 (3.2)	31 (3.9)	10 (2.2)	60 (3.7)	54 (4.1)	43 (3.6)	20 (2.9)	16 (2.9)	47 (4.0)
Italy	7 (2.0)	9 (2.3)	14 (2.8)	38 (3.9)	47 (4.2)	49 (4.0)	55 (4.1)	43 (4.4)	37 (3.8)
Japan	22 (3.3)	25 (3.5)	7 (1.9)	49 (4.3)	50 (4.1)	44 (4.0)	28 (3.4)	25 (3.7)	49 (4.0)
Kazakhstan	31 (4.2)	37 (4.5)	7 (2.1)	52 (4.3)	46 (3.3)	33 (4.6)	17 (4.2)	17 (4.2)	60 (4.5)
Kuwait	10 (2.6)	21 (3.6)	24 (3.7)	59 (4.5)	62 (4.5)	60 (4.6)	31 (4.2)	16 (3.6)	16 (3.5)
Latvia	30 (3.9)	31 (3.9)	14 (3.0)	33 (4.2)	39 (4.0)	38 (4.0)	37 (4.2)	30 (3.9)	48 (3.8)
Lithuania	43 (3.9)	42 (4.1)	34 (4.1)	39 (4.0)	42 (4.0)	33 (3.8)	18 (3.3)	16 (3.2)	33 (4.3)
Morocco	4 (1.4)	6 (2.6)	1 (0.8)	25 (3.6)	23 (3.9)	13 (2.6)	72 (3.4)	71 (3.4)	87 (2.7)
Netherlands	r 23 (3.9)	r 37 (4.2)	r 30 (3.9)	24 (4.3)	27 (4.2)	34 (4.7)	54 (4.2)	36 (4.0)	37 (4.2)
New Zealand	66 (3.8)	70 (3.4)	60 (3.4)	26 (3.3)	25 (3.3)	25 (3.2)	8 (2.0)	4 (1.3)	14 (2.6)
Norway	24 (3.4)	18 (3.4)	38 (4.2)	25 (3.7)	15 (3.1)	20 (3.8)	51 (4.4)	67 (4.3)	43 (4.4)
Qatar	r 17 (0.1)	r 24 (0.1)	r 10 (0.1)	50 (0.2)	53 (0.2)	57 (0.2)	33 (0.2)	23 (0.2)	32 (0.2)
Russian Federation	30 (2.9)	35 (3.6)	27 (4.0)	40 (4.1)	41 (4.4)	31 (3.3)	30 (4.0)	24 (3.7)	42 (3.8)
Scotland	47 (4.6)	65 (4.3)	69 (4.3)	29 (4.4)	18 (3.2)	24 (4.0)	24 (4.0)	17 (3.6)	7 (2.0)
Singapore	46 (0.0)	57 (0.0)	44 (0.0)	46 (0.0)	38 (0.0)	47 (0.0)	8 (0.0)	5 (0.0)	9 (0.0)
Slovak Republic	17 (3.0)	21 (3.2)	67 (3.4)	38 (3.9)	44 (4.1)	24 (3.2)	45 (3.9)	36 (4.0)	10 (2.3)
Slovenia	46 (4.4)	31 (4.0)	37 (4.7)	48 (4.1)	61 (4.4)	45 (4.5)	5 (2.0)	8 (2.3)	18 (3.3)
Sweden	25 (3.8)	21 (3.5)	15 (3.2)	33 (4.6)	31 (4.3)	31 (4.2)	42 (4.9)	48 (4.7)	53 (4.9)
Tunisia	17 (3.1)	20 (3.1)	7 (2.2)	54 (3.9)	58 (4.3)	29 (3.7)	29 (3.6)	23 (3.5)	64 (4.1)
Ukraine	34 (4.2)	38 (4.3)	20 (3.2)	32 (4.2)	37 (4.3)	29 (3.9)	34 (3.8)	25 (3.6)	52 (4.0)
United States	45 (3.0)	55 (3.2)	46 (3.4)	32 (2.8)	33 (3.4)	34 (3.0)	22 (2.5)	12 (2.1)	20 (2.3)
Yemen	0 (0.4)	5 (1.9)	2 (1.2)	45 (4.5)	47 (4.2)	4 (1.5)	55 (4.5)	48 (4.0)	95 (1.9)
International Avg.	26 (0.6)	30 (0.6)	25 (0.5)	43 (0.7)	44 (0.7)	36 (0.7)	31 (0.6)	26 (0.6)	39 (0.6)

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Alberta, Canada	42 (4.3)	56 (4.5)	46 (4.4)	30 (4.1)	24 (3.4)	31 (4.0)	27 (4.2)	19 (3.7)	23 (3.5)
British Columbia, Canada	41 (3.7)	43 (4.5)	32 (4.2)	44 (4.3)	45 (4.6)	42 (4.9)	16 (3.1)	12 (2.7)	26 (4.4)
Dubai, UAE	r 47 (0.4)	r 53 (0.4)	r 27 (0.3)	39 (0.4)	43 (0.4)	67 (0.3)	14 (0.2)	5 (0.1)	7 (0.2)
Massachusetts, US	60 (6.6)	58 (7.0)	51 (7.5)	29 (7.2)	34 (6.5)	32 (7.4)	10 (5.0)	8 (4.5)	17 (5.9)
Minnesota, US	67 (6.8)	63 (7.3)	27 (8.1)	15 (6.8)	18 (7.1)	45 (8.0)	17 (7.1)	18 (7.5)	28 (7.1)
Ontario, Canada	43 (4.1)	57 (4.8)	36 (5.0)	38 (4.9)	34 (4.4)	39 (5.2)	18 (4.3)	9 (2.5)	24 (4.5)
Quebec, Canada	33 (4.7)	23 (4.5)	15 (3.6)	23 (4.0)	30 (4.3)	33 (4.6)	43 (4.6)	46 (4.9)	52 (5.0)

Background data provided by schools.

An "r" indicates data are available for at least 70 but less than 85% of the students.

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

Exhibit 8.11 Schools' Reports on Teachers' Mathematics and Science Professional Development in the Past 2 Years (Continued)

TIMSS2007
Science **8th** Grade

Country	Percentage of Students in Schools Where Most (76-100%) Teachers Had Professional Development in			Percentage of Students in Schools Where Some (26-75%) Teachers Had Professional Development in			Percentage of Students in Schools Where Few (25% or less) Teachers Had Professional Development in		
	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes	Improving Content Knowledge	Improving Teaching Skills	Using Information and Communication Technology for Educational Purposes
Algeria	6 (2.2)	9 (2.5)	4 (1.8)	63 (4.2)	60 (4.2)	37 (4.1)	31 (4.1)	31 (4.2)	59 (4.0)
Armenia	21 (3.2)	26 (3.9)	11 (3.4)	61 (4.3)	62 (3.7)	53 (4.6)	18 (3.7)	11 (2.7)	36 (4.0)
Australia	29 (3.3)	28 (4.1)	39 (3.8)	53 (3.8)	59 (4.4)	47 (3.2)	19 (2.9)	13 (2.8)	14 (2.8)
Bahrain	24 (0.3)	33 (0.2)	31 (0.3)	48 (0.2)	46 (0.2)	53 (0.3)	28 (0.2)	21 (0.2)	16 (0.2)
Bosnia and Herzegovina	18 (3.1)	18 (3.4)	9 (2.2)	55 (3.8)	51 (4.3)	51 (3.7)	27 (3.4)	31 (3.7)	40 (3.7)
Botswana	13 (2.7)	14 (2.9)	10 (2.6)	42 (4.2)	41 (4.5)	41 (3.7)	45 (4.3)	45 (4.5)	49 (4.3)
Bulgaria	17 (3.0)	18 (3.9)	44 (4.5)	52 (4.5)	54 (4.3)	37 (4.2)	31 (4.1)	28 (3.9)	18 (2.6)
Chinese Taipei	21 (3.4)	21 (3.2)	17 (3.1)	62 (3.9)	60 (4.0)	58 (3.7)	17 (3.3)	19 (3.2)	25 (3.7)
Colombia	19 (5.2)	22 (5.1)	12 (2.3)	66 (5.2)	63 (5.1)	56 (4.5)	16 (2.8)	15 (2.7)	33 (4.0)
Cyprus	11 (0.2)	7 (0.2)	9 (0.2)	49 (0.3)	57 (0.3)	65 (0.3)	40 (0.2)	36 (0.2)	25 (0.2)
Czech Republic	15 (3.2)	11 (2.6)	34 (3.8)	54 (4.2)	59 (4.3)	47 (4.3)	31 (4.0)	30 (4.0)	19 (3.2)
Egypt	15 (2.4)	25 (3.3)	34 (3.6)	68 (3.7)	70 (3.7)	59 (3.9)	17 (2.8)	5 (1.6)	6 (2.0)
El Salvador	18 (3.3)	23 (3.7)	15 (2.8)	48 (4.3)	46 (4.1)	35 (3.8)	35 (3.8)	31 (3.6)	50 (3.8)
England	23 (3.5)	43 (4.1)	48 (4.4)	53 (4.3)	43 (4.6)	38 (4.5)	24 (3.4)	14 (3.2)	14 (3.2)
Georgia	18 (3.5)	19 (3.7)	5 (1.4)	63 (4.9)	65 (4.4)	58 (5.4)	19 (3.9)	17 (3.5)	36 (5.2)
Ghana	13 (3.2)	14 (3.1)	3 (1.7)	59 (4.4)	64 (4.2)	20 (3.6)	28 (3.9)	22 (3.7)	77 (3.7)
Hong Kong SAR	17 (3.5)	22 (4.0)	18 (3.9)	68 (4.4)	64 (4.7)	62 (4.8)	15 (3.3)	14 (3.1)	20 (4.0)
Hungary	13 (3.0)	17 (3.3)	7 (2.6)	44 (4.4)	42 (4.0)	48 (4.2)	43 (4.6)	41 (3.9)	45 (3.7)
Indonesia	38 (3.4)	34 (3.0)	9 (2.2)	52 (3.6)	57 (3.2)	56 (4.3)	10 (2.7)	9 (2.4)	34 (4.1)
Iran, Islamic Rep. of	16 (2.8)	18 (3.0)	14 (2.7)	62 (4.2)	65 (4.0)	40 (3.8)	22 (3.5)	17 (3.0)	46 (3.7)
Israel	24 (3.7)	24 (3.8)	11 (3.0)	63 (4.3)	62 (4.2)	54 (4.5)	14 (3.2)	14 (3.0)	35 (4.3)
Italy	9 (2.3)	9 (2.3)	11 (2.6)	38 (4.0)	49 (3.8)	50 (4.1)	53 (4.2)	42 (3.9)	40 (4.0)
Japan	23 (3.4)	27 (3.5)	11 (2.5)	50 (4.0)	44 (4.1)	39 (4.2)	27 (3.9)	29 (3.9)	50 (4.4)
Jordan	18 (2.9)	24 (3.1)	33 (3.8)	64 (3.6)	66 (3.8)	55 (4.4)	19 (3.2)	10 (2.4)	12 (2.7)
Korea, Rep. of	8 (2.4)	10 (2.2)	8 (2.2)	58 (4.0)	59 (4.3)	60 (4.1)	34 (4.0)	32 (3.9)	32 (4.0)
Kuwait	11 (3.3)	12 (3.0)	11 (2.6)	54 (4.8)	61 (4.4)	61 (4.0)	35 (4.4)	26 (3.9)	28 (3.9)
Lebanon	23 (3.5)	25 (4.0)	11 (2.9)	62 (4.1)	66 (4.6)	57 (5.0)	15 (3.2)	10 (2.6)	32 (4.4)
Lithuania	40 (4.1)	43 (4.1)	23 (3.9)	52 (4.4)	53 (4.2)	65 (4.7)	8 (2.5)	5 (1.8)	12 (3.0)
Malaysia	41 (4.2)	35 (4.2)	38 (4.3)	51 (4.1)	58 (4.2)	55 (4.5)	8 (2.1)	7 (2.2)	7 (2.2)
Malta	23 (0.2)	26 (0.2)	29 (0.2)	62 (0.2)	57 (0.2)	45 (0.2)	15 (0.2)	17 (0.2)	26 (0.2)
Norway	20 (3.8)	14 (3.3)	35 (4.3)	27 (4.8)	27 (4.5)	27 (4.3)	53 (5.0)	58 (5.1)	39 (4.4)
Oman	8 (2.6)	14 (3.5)	14 (3.2)	56 (3.9)	64 (3.6)	47 (4.4)	36 (3.6)	22 (3.4)	39 (4.6)
Palestinian Nat'l Auth.	6 (2.0)	8 (2.1)	5 (1.4)	61 (4.3)	69 (3.9)	53 (4.2)	33 (3.8)	24 (3.6)	42 (4.3)
Qatar	r 24 (0.1)	r 22 (0.1)	r 22 (0.1)	48 (0.2)	58 (0.2)	48 (0.2)	28 (0.1)	20 (0.1)	30 (0.2)
Romania	36 (4.3)	37 (4.3)	21 (3.5)	46 (4.1)	52 (4.7)	51 (4.2)	18 (3.7)	11 (2.9)	28 (3.8)
Russian Federation	30 (3.3)	30 (3.6)	20 (2.9)	47 (3.6)	48 (3.3)	44 (3.3)	23 (3.5)	22 (3.7)	36 (3.3)
Saudi Arabia	11 (3.0)	10 (2.3)	15 (3.6)	51 (4.1)	55 (4.4)	41 (4.2)	38 (4.0)	34 (4.0)	44 (4.7)
Scotland	r 33 (4.6)	r 49 (4.8)	r 51 (5.0)	50 (4.9)	40 (4.6)	37 (4.8)	17 (3.9)	11 (3.0)	12 (3.1)
Serbia	19 (3.6)	16 (3.4)	15 (3.0)	59 (4.0)	50 (4.5)	45 (4.0)	22 (3.2)	34 (4.0)	40 (4.0)
Singapore	48 (0.0)	60 (0.0)	48 (0.0)	43 (0.0)	38 (0.0)	49 (0.0)	9 (0.0)	2 (0.0)	3 (0.0)
Slovenia	45 (4.3)	31 (3.6)	34 (4.2)	46 (4.7)	60 (4.3)	50 (4.1)	8 (2.6)	9 (2.7)	16 (3.3)
Sweden	16 (3.4)	15 (2.6)	16 (3.5)	40 (4.4)	29 (4.1)	28 (3.6)	44 (4.2)	56 (4.1)	56 (4.1)
Syrian Arab Republic	5 (1.8)	5 (1.8)	8 (2.2)	50 (3.8)	60 (3.8)	39 (4.3)	45 (4.0)	34 (4.0)	53 (4.3)
Thailand	19 (3.1)	17 (3.0)	15 (3.1)	76 (3.3)	78 (3.2)	78 (3.6)	5 (1.8)	5 (1.8)	7 (2.1)
Tunisia	15 (3.1)	18 (3.4)	6 (2.2)	50 (3.9)	57 (3.7)	35 (3.9)	35 (4.1)	25 (3.2)	59 (4.0)
Turkey	13 (2.6)	15 (2.8)	17 (3.0)	74 (3.7)	70 (4.0)	73 (3.9)	13 (3.3)	15 (3.4)	10 (2.4)
Ukraine	34 (3.5)	33 (3.6)	16 (2.9)	41 (4.2)	45 (3.9)	38 (4.4)	25 (3.9)	21 (3.5)	46 (4.2)
United States	48 (4.0)	53 (3.7)	43 (3.6)	40 (4.0)	40 (3.5)	40 (3.4)	12 (2.4)	7 (2.1)	17 (2.5)
‡ Morocco	r 5 (1.7)	r 4 (0.8)	r 8 (4.0)	56 (5.0)	61 (5.7)	26 (3.9)	39 (4.9)	35 (5.7)	67 (5.5)
International Avg.	21 (0.4)	23 (0.5)	20 (0.4)	54 (0.6)	55 (0.6)	48 (0.6)	25 (0.5)	22 (0.5)	32 (0.5)
Benchmarking Participants									
Basque Country, Spain	12 (3.2)	11 (3.1)	16 (3.8)	36 (5.0)	35 (4.5)	41 (5.5)	53 (5.2)	53 (4.5)	42 (5.0)
British Columbia, Canada	28 (4.2)	31 (4.0)	30 (4.2)	54 (5.0)	55 (4.4)	49 (4.8)	18 (3.5)	14 (2.8)	21 (3.5)
Dubai, UAE	s 46 (0.7)	s 57 (0.6)	s 34 (0.6)	45 (0.6)	40 (0.6)	59 (0.6)	9 (0.3)	3 (0.1)	6 (0.2)
Massachusetts, US	58 (8.3)	57 (7.7)	41 (6.2)	36 (8.2)	43 (7.7)	38 (6.7)	7 (4.0)	0 (0.0)	21 (7.2)
Minnesota, US	37 (8.6)	32 (8.4)	37 (7.7)	47 (9.8)	60 (8.1)	47 (8.6)	16 (6.9)	8 (4.0)	16 (6.6)
Ontario, Canada	36 (4.5)	47 (4.6)	34 (4.3)	48 (4.3)	45 (4.9)	45 (4.3)	16 (3.2)	8 (2.8)	20 (3.8)
Quebec, Canada	45 (4.7)	25 (4.0)	17 (3.6)	40 (4.9)	49 (4.7)	40 (4.4)	14 (3.2)	27 (4.0)	42 (4.7)

Background data provided by schools.

An "r" indicates data are available for at least 70 but less than 85% of the students.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

An "s" indicates data are available for at least 50 but less than 70% of the students.

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

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

What Are the Perceptions of School Climate?

TIMSS asked both school principals and teachers to characterize the climate of their school in terms of an environment supportive of learning. The Index of Principals' Perception of School Climate (PPSC) was based on school principals' ratings of the following on a scale from *very high* to *very low*:

- ▶ Teachers' job satisfaction
- ▶ Teachers' understanding of the school's curricular goals
- ▶ Teachers' degree of success in implementing the school's curriculum
- ▶ Teachers' expectations for student achievement
- ▶ Parental support for student achievement
- ▶ Parental involvement in school activities
- ▶ Students' regard for school property
- ▶ Students' desire to do well in school.

Students were assigned to the high level of the index if they attended schools where the principal averaged *high* or *very high* on these aspects of school climate, and to the low level where the principal averaged *low* or *very low*. Students at the medium level had principals with other response combinations.

Exhibit 8.12 presents, for each TIMSS participant at fourth and eighth grade, the percentage of students at each level of the index, together with average science achievement and changes in percentages since 2003. At fourth grade, on average internationally, 22 percent of students were at the high level of the principals' perception of school climate index. That is, they attended schools where the principal rated the school climate positively. The majority of students (68%) were at the medium index level and just 10 percent at the low level. More than 40 percent of students were at the high level of the principals' perception index in Chinese Taipei, Australia, New Zealand, Scotland, the United States, and England, and six of the seven benchmarking participants—Massachusetts, Dubai, Alberta, Minnesota,

British Columbia, and Ontario. In contrast, less than 10 percent of students were at this index level in the Russian Federation, Tunisia, Algeria, Armenia, the Slovak Republic, the Ukraine, Latvia, Georgia, and the Czech Republic. The percentage of students at the high index level increased in Australia, Slovenia, Morocco, and the Russian Federation and decreased in Lithuania and Japan.

At eighth grade, 16 percent of students were at the high level of the principals' perception of school climate index, on average, with 68 percent at the medium level and 16 percent at the low level. There was only one country (Chinese Taipei) and three benchmarking participants where 40 percent or more of students were at the high level of the index. Sixteen countries had less than 10 percent at the low level.

At both fourth and eighth grades, average science achievement was highest among students at the high level of the principals' perception of school climate index (491 points and 484 points, respectively), next highest at the medium level (474 and 465 points, respectively), and lowest at the low level (444 and 445 points, respectively).

Exhibit 8.13 presents science¹ teachers' perceptions of their school climate, based on teachers' ratings of the same eight attributes as rated by the principals. The Index of Science Teachers' Perception of School Climate (TPSC) was calculated in the same way as the principals' index, and shows generally similar results. At the fourth grade, 17 percent of students, on average, were in schools where teachers had a positive view of the school climate and so were at the high level of the index. Two-thirds of students were at the medium level of the teachers' perception of social climate index, and 17 percent at the low level. Teacher perceptions of school climate were most favorable in Scotland, New Zealand, Australia, the United States, England, El Salvador, and in Dubai, Massachusetts, Alberta, and Minnesota, where 30 percent or more of students were at the high index level. However, there were 13 countries with less than 10 percent of the fourth grade students at the high level.

1 At fourth grade in most countries, the science teacher was the classroom teacher.

Exhibit 8.12 Index of Principals' Perception of School Climate (PPSC) with Trends

TIMSS2007
Science 4th Grade

Country	High PPSC			Medium PPSC			Low PPSC		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Chinese Taipei	64 (3.7)	558 (2.8)	7 (5.3)	35 (3.6)	557 (3.2)	-6 (5.3)	1 (0.7)	~ ~	-1 (1.1)
Australia	50 (4.2)	545 (4.6)	12 (6.2) ▲	47 (3.8)	512 (4.4)	-7 (6.4)	2 (1.2)	~ ~	-5 (3.8)
New Zealand	49 (3.2)	525 (4.0)	0 (4.6)	47 (3.0)	487 (4.5)	0 (4.4)	4 (1.2)	478 (11.6)	0 (1.9)
Scotland	48 (4.8)	505 (3.6)	-2 (6.9)	51 (4.8)	497 (4.3)	6 (6.8)	0 (0.5)	~ ~	-3 (1.8)
United States	48 (3.0)	559 (3.9)	0 (4.6)	46 (3.1)	525 (3.5)	1 (4.6)	6 (1.5)	474 (10.9)	-1 (2.2)
England	r 45 (4.5)	549 (4.4)	11 (6.5)	47 (4.6)	538 (4.3)	-17 (6.8) ▼	8 (2.3)	516 (7.3)	6 (2.7) ▲
Austria	36 (3.1)	532 (4.2)	◊ ◊	62 (3.1)	521 (2.8)	◊ ◊	1 (0.6)	~ ~	◊ ◊
Singapore	36 (0.0)	605 (6.6)	4 (4.1)	62 (0.0)	578 (4.8)	-1 (4.1)	2 (0.0)	~ ~	-3 (1.6)
Iran, Islamic Rep. of	31 (3.8)	449 (9.6)	7 (5.5)	64 (3.8)	429 (6.1)	-3 (5.7)	5 (1.7)	433 (12.8)	-3 (3.1)
Kazakhstan	29 (5.4)	532 (10.9)	◊ ◊	65 (5.7)	535 (5.7)	◊ ◊	5 (2.3)	513 (37.7)	◊ ◊
Sweden	27 (3.6)	532 (4.4)	◊ ◊	66 (4.0)	526 (3.5)	◊ ◊	6 (2.6)	480 (9.7)	◊ ◊
Hong Kong SAR	27 (3.9)	554 (6.4)	-3 (6.0)	69 (4.2)	555 (4.1)	4 (6.4)	5 (2.0)	531 (17.7)	-1 (2.9)
El Salvador	26 (4.1)	418 (11.4)	◊ ◊	60 (4.4)	377 (4.8)	◊ ◊	14 (3.1)	388 (12.2)	◊ ◊
Denmark	26 (3.9)	533 (4.5)	◊ ◊	69 (4.1)	514 (3.8)	◊ ◊	5 (2.1)	485 (17.4)	◊ ◊
Qatar	24 (0.2)	325 (4.1)	◊ ◊	69 (0.2)	279 (2.4)	◊ ◊	7 (0.1)	335 (5.2)	◊ ◊
Norway	21 (3.8)	484 (5.8)	-5 (5.5)	78 (3.9)	473 (4.0)	6 (5.6)	1 (1.0)	~ ~	-1 (1.4)
Kuwait	18 (2.9)	359 (13.6)	◊ ◊	73 (3.5)	352 (5.6)	◊ ◊	9 (2.3)	298 (12.5)	◊ ◊
Slovenia	18 (3.7)	517 (6.8)	10 (4.2) ▲	78 (3.8)	519 (2.2)	-7 (4.7)	4 (1.7)	522 (9.4)	-3 (2.7)
Lithuania	15 (3.0)	524 (4.4)	-10 (4.6) ▼	81 (3.3)	514 (2.8)	9 (5.0)	4 (1.4)	493 (3.9)	1 (2.0)
Morocco	r 13 (3.8)	337 (32.4)	10 (4.0) ▲	56 (5.0)	301 (9.1)	16 (6.9) ▲	31 (3.9)	268 (12.7)	-25 (6.1) ▼
Germany	13 (2.6)	541 (4.4)	◊ ◊	78 (3.0)	531 (2.6)	◊ ◊	9 (2.0)	489 (10.6)	◊ ◊
Hungary	12 (3.0)	573 (8.9)	4 (3.7)	78 (4.0)	537 (3.7)	-7 (5.0)	10 (3.1)	489 (11.2)	3 (3.9)
Colombia	12 (2.6)	452 (10.4)	◊ ◊	63 (5.0)	398 (6.8)	◊ ◊	25 (4.8)	386 (13.3)	◊ ◊
Italy	12 (2.7)	534 (8.2)	-3 (3.9)	81 (2.9)	536 (3.3)	5 (4.4)	8 (1.8)	531 (16.5)	-2 (3.0)
Netherlands	r 11 (2.6)	534 (10.6)	-8 (4.6)	84 (3.1)	522 (3.3)	5 (5.0)	5 (2.1)	483 (10.6)	3 (2.4)
Yemen	11 (2.7)	227 (14.2)	◊ ◊	71 (3.8)	199 (8.3)	◊ ◊	18 (3.6)	174 (16.3)	◊ ◊
Japan	10 (2.6)	551 (5.7)	-8 (4.0) ▼	84 (3.0)	548 (2.1)	6 (4.5)	7 (1.9)	540 (5.5)	2 (2.6)
Russian Federation	9 (2.0)	568 (9.9)	5 (2.3) ▲	83 (3.1)	546 (4.9)	-1 (4.1)	8 (2.5)	524 (20.2)	-4 (3.5)
Tunisia	9 (2.5)	371 (22.4)	0 (3.5)	66 (3.9)	327 (6.3)	17 (5.5) ▲	25 (3.6)	273 (13.5)	-17 (5.3) ▼
Algeria	7 (2.1)	353 (12.6)	◊ ◊	65 (4.4)	355 (8.3)	◊ ◊	28 (4.1)	346 (10.7)	◊ ◊
Armenia	r 5 (1.8)	502 (43.1)	3 (2.2)	72 (3.7)	484 (6.7)	-8 (5.2)	23 (3.5)	482 (14.9)	5 (4.9)
Slovak Republic	4 (1.5)	574 (9.7)	◊ ◊	69 (3.4)	531 (3.8)	◊ ◊	27 (3.4)	501 (11.9)	◊ ◊
Ukraine	3 (1.3)	475 (19.3)	◊ ◊	93 (2.3)	475 (3.0)	◊ ◊	5 (1.9)	445 (25.6)	◊ ◊
Latvia	2 (1.4)	~ ~	-4 (3.1)	84 (3.2)	544 (2.5)	-1 (5.3)	14 (3.2)	537 (5.6)	5 (4.4)
Georgia	2 (1.1)	~ ~	◊ ◊	73 (4.0)	424 (5.5)	◊ ◊	26 (4.1)	401 (8.9)	◊ ◊
Czech Republic	1 (0.0)	~ ~	◊ ◊	79 (3.8)	517 (3.4)	◊ ◊	21 (3.9)	508 (6.6)	◊ ◊
International Avg.	22 (0.5)	491 (2.3)		68 (0.6)	474 (0.8)		10 (0.4)	444 (2.6)	

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Massachusetts, US	70 (7.8)	579 (5.8)	◊ ◊	30 (7.9)	554 (9.5)	◊ ◊	1 (0.9)	~ ~	◊ ◊
Dubai, UAE	r 60 (0.4)	466 (4.0)	◊ ◊	37 (0.4)	456 (6.0)	◊ ◊	4 (0.3)	435 (5.6)	◊ ◊
Alberta, Canada	58 (4.4)	552 (4.5)	◊ ◊	39 (4.3)	533 (4.3)	◊ ◊	3 (1.6)	492 (18.7)	◊ ◊
Minnesota, US	54 (9.4)	561 (10.9)	◊ ◊	46 (9.4)	548 (9.5)	◊ ◊	0 (0.0)	~ ~	◊ ◊
British Columbia, Canada	45 (4.6)	548 (5.2)	◊ ◊	49 (4.3)	530 (3.7)	◊ ◊	6 (1.8)	504 (9.8)	◊ ◊
Ontario, Canada	41 (5.0)	548 (4.9)	-2 (6.7)	50 (5.1)	533 (4.9)	-2 (6.9)	9 (2.3)	496 (15.0)	4 (3.3)
Quebec, Canada	17 (3.1)	532 (5.1)	-8 (4.7)	82 (3.3)	514 (3.3)	12 (5.1) ▲	2 (1.0)	~ ~	-4 (2.3)

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

Index based on principals' responses to eight questions about their schools: teachers' job satisfaction; teachers' understanding of the school's curricular goals; teachers' degree of success in implementing the school's curriculum; teachers' expectations for student achievement; parental support for student achievement; parental involvement in school activities; students' regard for school property; and students' desire to do well in school. Average is computed based on a 5-point scale: 1 = very high; 2 = high; 3 = medium; 4 = low; and 5 = very low. High level indicates average is less than or equal to 2. Medium level indicates that average is greater than 2 and less or equal to 3. Low level indicates average is greater than 3.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

A diamond (◊) indicates the country did not participate in the assessment.



Exhibit 8.12 Index of Principals' Perception of School Climate (PPSC) with Trends (Continued)

TIMSS2007
Science 8th Grade

Country	High PPSC			Medium PPSC			Low PPSC		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Chinese Taipei	54 (4.2)	571 (4.8)	17 (5.7) ▲	42 (4.2)	552 (5.3)	-18 (5.7) ▼	4 (1.6)	518 (11.5)	1 (1.9)
Scotland s	35 (4.1)	512 (6.7)	-7 (5.9)	59 (4.6)	485 (5.1)	7 (6.6)	6 (2.4)	497 (30.3)	0 (3.5)
Australia	33 (3.5)	557 (8.1)	2 (5.6)	58 (4.5)	501 (3.8)	-3 (6.5)	9 (2.4)	465 (10.3)	2 (3.6)
Indonesia	32 (4.0)	445 (8.6)	13 (5.1) ▲	58 (4.4)	428 (5.6)	-13 (5.8) ▼	11 (3.1)	424 (10.7)	0 (4.2)
United States	32 (3.2)	547 (4.4)	-11 (4.6) ▼	57 (3.7)	513 (3.8)	8 (4.9)	12 (2.2)	485 (10.6)	4 (2.9)
England s	31 (3.9)	563 (8.3)	-1 (7.0)	65 (3.9)	536 (5.9)	2 (7.3)	4 (1.7)	474 (19.0)	-1 (3.6)
Israel	26 (3.4)	493 (10.2)	-2 (5.3)	66 (4.1)	465 (5.7)	-3 (5.8)	7 (2.3)	441 (16.3)	5 (2.6) ▲
Egypt	25 (3.4)	427 (7.6)	-1 (4.8)	65 (3.8)	403 (4.9)	3 (5.7)	10 (2.9)	386 (12.5)	-2 (4.2)
Korea, Rep. of	25 (3.6)	553 (3.5)	9 (4.9)	66 (3.6)	553 (2.6)	-2 (5.3)	9 (2.2)	551 (8.3)	-7 (3.7)
Jordan	25 (3.4)	510 (6.7)	7 (4.7)	67 (4.1)	477 (4.7)	-5 (5.9)	8 (2.3)	432 (14.9)	-3 (3.5)
Singapore	24 (0.0)	626 (7.1)	-6 (0.0) ▼	70 (0.0)	552 (5.9)	4 (0.0) ▲	6 (0.0)	502 (17.1)	2 (0.0) ▲
Malaysia	23 (3.8)	508 (12.4)	7 (5.0)	70 (3.7)	459 (6.3)	0 (5.6)	6 (1.8)	469 (16.8)	-7 (3.6)
Qatar	23 (0.1)	298 (3.4)	0 0	70 (0.1)	322 (1.6)	0 0	7 (0.1)	341 (4.5)	0 0
El Salvador	23 (3.4)	405 (6.6)	0 0	62 (4.3)	387 (4.3)	0 0	15 (3.3)	365 (7.8)	0 0
Thailand	22 (3.6)	489 (11.2)	0 0	73 (4.0)	467 (5.1)	0 0	5 (1.9)	441 (19.7)	0 0
Malta	21 (0.2)	499 (2.2)	0 0	61 (0.2)	477 (1.8)	0 0	18 (0.2)	338 (3.4)	0 0
Hong Kong SAR	21 (3.6)	564 (7.5)	9 (4.5) ▲	67 (4.4)	523 (6.3)	-3 (6.0)	12 (3.2)	499 (16.8)	-6 (4.7)
Oman	20 (3.6)	434 (7.6)	0 0	69 (4.0)	422 (4.2)	0 0	11 (2.6)	403 (13.0)	0 0
Ghana	20 (3.2)	351 (10.4)	7 (4.7)	59 (4.2)	295 (8.3)	-9 (6.1)	21 (3.9)	281 (9.9)	3 (5.1)
Bahrain	18 (0.2)	492 (5.0)	7 (0.2) ▲	76 (0.2)	466 (1.7)	3 (0.3) ▲	6 (0.1)	422 (4.8)	-9 (0.2) ▼
Syrian Arab Republic	17 (3.1)	450 (8.0)	0 0	69 (3.3)	452 (3.6)	0 0	14 (2.8)	453 (8.4)	0 0
Lebanon	17 (3.3)	455 (10.5)	-1 (4.8)	66 (4.3)	417 (6.5)	2 (6.3)	18 (3.2)	356 (15.8)	-1 (4.3)
Iran, Islamic Rep. of	16 (2.6)	512 (10.0)	6 (3.4)	64 (3.8)	456 (3.7)	-4 (5.3)	20 (3.1)	425 (5.8)	-2 (4.3)
Saudi Arabia	16 (3.3)	411 (8.2)	--	63 (4.6)	405 (3.6)	--	21 (3.9)	389 (8.2)	--
Kuwait	15 (2.7)	429 (8.8)	0 0	70 (3.8)	418 (3.6)	0 0	15 (3.1)	406 (10.7)	0 0
Colombia	14 (2.6)	443 (8.6)	0 0	52 (4.5)	420 (4.4)	0 0	34 (4.8)	403 (9.6)	0 0
Sweden	13 (2.5)	532 (7.3)	-8 (4.0)	78 (3.6)	507 (3.1)	6 (5.2)	8 (2.6)	513 (10.3)	2 (3.4)
Palestinian Nat'l Auth.	11 (2.6)	422 (7.2)	-3 (4.0)	78 (3.3)	403 (3.9)	1 (4.8)	11 (2.4)	392 (14.8)	2 (3.5)
Cyprus	11 (0.1)	437 (7.3)	-10 (0.2) ▼	74 (0.2)	454 (2.2)	-2 (0.3) ▼	16 (0.2)	447 (4.5)	12 (0.2) ▲
Japan	10 (2.3)	598 (10.3)	-18 (4.2) ▼	77 (3.2)	552 (2.2)	8 (4.7)	13 (2.7)	530 (7.6)	10 (3.0) ▲
Hungary	9 (2.8)	584 (10.4)	3 (3.5)	79 (4.0)	537 (3.7)	-4 (5.2)	11 (3.1)	521 (7.5)	1 (4.0)
Turkey	8 (2.2)	499 (19.0)	0 0	55 (4.4)	465 (5.1)	0 0	36 (4.3)	427 (6.4)	0 0
Romania	8 (2.1)	496 (13.0)	1 (3.1)	61 (4.2)	464 (4.8)	-8 (5.9)	31 (4.1)	452 (8.6)	8 (5.5)
Bosnia and Herzegovina	7 (2.0)	475 (7.4)	0 0	80 (3.0)	465 (3.4)	0 0	13 (2.5)	463 (6.3)	0 0
Algeria	7 (2.2)	412 (7.5)	0 0	60 (4.0)	408 (2.1)	0 0	33 (3.9)	408 (3.0)	0 0
Italy	7 (2.2)	503 (11.1)	-5 (3.5)	77 (3.7)	497 (3.4)	1 (5.1)	16 (3.1)	480 (6.9)	4 (3.9)
Slovenia	7 (2.0)	558 (8.0)	-2 (3.0)	85 (3.0)	537 (2.4)	2 (4.1)	8 (2.2)	527 (9.5)	0 (3.2)
Serbia	7 (2.3)	464 (16.4)	4 (2.7)	81 (3.4)	472 (3.4)	9 (5.3)	13 (2.9)	462 (8.9)	-13 (4.8) ▼
Botswana	6 (2.1)	378 (17.9)	5 (2.3) ▲	58 (4.6)	357 (4.4)	27 (6.2) ▲	35 (4.8)	342 (5.3)	-32 (6.4) ▼
Bulgaria	5 (2.1)	500 (36.7)	--	65 (4.2)	475 (7.6)	--	31 (4.2)	458 (11.1)	--
Norway	5 (2.0)	504 (8.3)	-8 (3.3) ▼	89 (2.9)	486 (2.5)	8 (4.5)	6 (2.2)	477 (4.0)	1 (3.1)
Armenia r	4 (1.7)	461 (15.6)	1 (2.2)	73 (3.8)	491 (7.6)	-6 (5.6)	23 (3.5)	482 (8.1)	5 (5.3)
Ukraine	4 (1.6)	550 (10.9)	0 0	87 (2.9)	486 (3.7)	0 0	10 (2.4)	449 (11.3)	0 0
Tunisia	3 (1.4)	477 (7.7)	1 (1.7)	44 (3.6)	451 (3.3)	14 (5.2) ▲	54 (3.5)	439 (2.7)	-15 (5.1) ▼
Czech Republic	2 (1.8)	~ ~	0 0	58 (4.0)	548 (2.9)	0 0	40 (4.2)	526 (3.2)	0 0
Lithuania	2 (1.4)	~ ~	-6 (2.7) ▼	94 (2.1)	519 (2.7)	6 (3.7)	4 (1.6)	495 (7.4)	0 (2.5)
Russian Federation	2 (0.9)	~ ~	1 (1.1)	79 (3.0)	532 (4.1)	9 (4.2) ▲	19 (3.1)	514 (6.1)	-10 (4.2) ▼
Georgia	0 (0.0)	~ ~	0 0	72 (4.3)	422 (5.9)	0 0	28 (4.3)	414 (5.8)	0 0
‡ Morocco	16 (5.3)	410 (12.5)	--	68 (5.4)	400 (4.0)	--	15 (4.1)	403 (12.6)	--
International Avg.	16 (0.4)	484 (1.6)		68 (0.5)	465 (0.6)		16 (0.4)	445 (1.6)	

Benchmarking Participants

Dubai, UAE r	56 (0.7)	506 (4.8)	0 0	42 (0.7)	466 (4.5)	0 0	2 (0.3)	~ ~	0 0
Massachusetts, US	44 (7.4)	571 (6.6)	0 0	45 (8.1)	561 (10.0)	0 0	10 (3.0)	491 (13.9)	0 0
Minnesota, US	44 (7.2)	534 (8.1)	0 0	53 (6.9)	548 (4.8)	0 0	3 (2.7)	429 (6.0)	0 0
British Columbia, Canada	35 (4.9)	539 (5.2)	0 0	62 (5.0)	521 (4.0)	0 0	3 (1.5)	527 (37.1)	0 0
Ontario, Canada	34 (4.7)	545 (5.1)	-8 (6.4)	57 (5.1)	522 (4.0)	5 (6.9)	9 (2.5)	509 (10.4)	4 (3.3)
Basque Country, Spain	23 (4.8)	520 (5.3)	11 (5.9)	65 (4.9)	495 (3.4)	-13 (6.2) ▼	12 (2.1)	468 (8.1)	3 (3.3)
Quebec, Canada	18 (3.5)	545 (9.2)	4 (4.1)	71 (4.3)	502 (4.2)	-7 (5.3)	12 (3.1)	478 (6.0)	4 (3.8)

▲ 2007 percent significantly higher ▼ 2007 percent significantly lower

Index based on principals' responses to eight questions about their schools: teachers' job satisfaction; teachers' understanding of the school's curricular goals; teachers' degree of success in implementing the school's curriculum; teachers' expectations for student achievement; parental support for student achievement; parental involvement in school activities; students' regard for school property; and students' desire to do well in school. Average is computed based on a 5-point scale: 1 = very high; 2 = high; 3 = medium; 4 = low; and 5 = very low. High level indicates average is less than or equal to 2. Medium level indicates that average is greater than 2 and less or equal to 3. Low level indicates average is greater than 3.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).
 () Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.
 A dash (-) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.
 An "r" indicates data are available for at least 70 but less than 85% of the students.
 An "s" indicates data are available for at least 50 but less than 70% of the students.
 A diamond (0) indicates the country did not participate in the assessment.

Exhibit 8.13 Index of Science Teachers' Perception of School Climate (TPSC) with Trends

TIMSS2007
Science **4th** Grade

Country	High TPSC			Medium TPSC			Low TPSC		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Scotland	r 47 (3.3)	513 (3.1)	6 (6.1)	50 (3.2)	493 (3.8)	-7 (6.0)	2 (1.3)	~ ~	1 (1.7)
New Zealand	37 (2.4)	528 (3.2)	0 (3.8)	57 (2.6)	494 (3.5)	-1 (4.1)	6 (1.4)	469 (8.5)	1 (1.8)
Australia	37 (3.6)	546 (5.5)	6 (5.1)	54 (3.3)	520 (4.8)	-5 (5.0)	10 (1.8)	497 (12.4)	-1 (3.1)
United States	36 (2.7)	562 (3.5)	-6 (3.9)	51 (2.9)	534 (3.1)	4 (4.0)	13 (1.8)	488 (7.0)	2 (2.4)
England	r 35 (3.8)	556 (5.4)	6 (5.9)	59 (3.8)	536 (3.7)	-4 (6.2)	6 (1.7)	502 (8.0)	-2 (2.9)
El Salvador	31 (4.1)	402 (9.3)	0 0	60 (4.5)	386 (5.9)	0 0	10 (2.5)	371 (12.6)	0 0
Austria	29 (2.5)	535 (3.2)	0 0	66 (2.4)	524 (3.0)	0 0	4 (1.3)	477 (12.2)	0 0
Kazakhstan	29 (5.5)	526 (12.0)	0 0	67 (5.7)	535 (5.8)	0 0	4 (1.8)	552 (19.1)	0 0
Chinese Taipei	28 (3.8)	557 (4.6)	-6 (5.8)	65 (4.3)	557 (2.5)	2 (6.2)	7 (2.0)	545 (9.1)	4 (2.4)
Iran, Islamic Rep. of	28 (3.8)	451 (11.0)	3 (5.5)	58 (4.0)	434 (5.9)	-2 (6.1)	15 (2.6)	415 (10.0)	-1 (4.4)
Qatar	21 (0.1)	306 (5.0)	0 0	65 (0.2)	296 (2.4)	0 0	14 (0.1)	250 (4.9)	0 0
Lithuania	20 (3.0)	525 (5.2)	-14 (4.5) ▼	76 (3.2)	512 (2.7)	11 (4.6) ●	4 (1.2)	493 (10.3)	3 (1.2) ●
Hong Kong SAR	19 (3.2)	575 (5.4)	8 (4.2)	67 (3.9)	555 (4.3)	-9 (5.7)	14 (3.3)	539 (8.2)	1 (4.6)
Germany	18 (2.4)	543 (4.3)	0 0	69 (3.2)	533 (2.5)	0 0	13 (2.4)	478 (9.8)	0 0
Norway	18 (3.1)	491 (6.2)	0 (4.7)	80 (3.1)	474 (3.7)	3 (4.8)	3 (0.8)	455 (18.7)	-3 (2.0)
Kuwait	r 18 (3.5)	363 (12.7)	0 0	56 (4.1)	355 (8.2)	0 0	27 (3.9)	323 (11.7)	0 0
Sweden	17 (2.5)	542 (5.6)	0 0	75 (2.9)	525 (3.2)	0 0	8 (2.0)	495 (11.3)	0 0
Denmark	17 (3.7)	538 (4.0)	0 0	69 (4.7)	520 (2.9)	0 0	14 (3.5)	495 (9.8)	0 0
Ukraine	15 (2.9)	475 (6.7)	0 0	80 (3.2)	474 (3.6)	0 0	5 (1.7)	466 (4.7)	0 0
Slovenia	15 (2.2)	518 (5.0)	-2 (4.2)	81 (2.3)	519 (2.2)	1 (4.6)	5 (1.2)	510 (7.7)	1 (2.2)
Singapore	13 (2.3)	587 (9.0)	-7 (4.2)	74 (2.9)	592 (5.0)	3 (4.8)	13 (1.8)	556 (8.2)	4 (2.8)
Yemen	11 (3.0)	184 (25.7)	0 0	57 (4.3)	212 (9.2)	0 0	32 (3.8)	186 (13.3)	0 0
Colombia	10 (2.6)	439 (22.8)	0 0	62 (4.7)	402 (7.1)	0 0	28 (4.4)	390 (11.9)	0 0
Georgia	9 (2.6)	437 (12.2)	0 0	72 (4.3)	416 (5.2)	0 0	19 (3.8)	412 (10.6)	0 0
Italy	9 (2.0)	545 (6.8)	1 (3.0)	73 (3.0)	539 (3.3)	0 (4.5)	18 (2.7)	515 (8.0)	-1 (3.8)
Russian Federation	9 (2.0)	572 (16.1)	3 (2.7)	83 (2.7)	548 (5.1)	4 (4.3)	8 (1.9)	515 (15.5)	-7 (3.7)
Tunisia	r 7 (1.9)	363 (23.0)	1 (2.9)	54 (3.5)	326 (7.9)	-4 (5.2)	38 (3.6)	298 (10.4)	2 (5.2)
Hungary	6 (1.5)	575 (10.4)	-8 (3.2) ▼	74 (3.7)	543 (3.5)	-4 (4.9)	19 (3.6)	496 (9.6)	13 (4.1) ●
Slovak Republic	5 (1.8)	536 (13.3)	0 0	67 (3.4)	532 (4.6)	0 0	27 (3.3)	508 (12.1)	0 0
Latvia	5 (1.5)	554 (11.3)	0 (2.8)	79 (2.7)	542 (2.4)	-10 (4.3) ▼	16 (2.6)	544 (6.2)	10 (3.5) ●
Algeria	5 (1.9)	370 (10.1)	0 0	57 (4.9)	356 (10.8)	0 0	38 (4.9)	345 (9.5)	0 0
Netherlands	4 (1.9)	528 (7.9)	-3 (3.2)	83 (3.2)	527 (3.2)	-1 (4.8)	13 (2.6)	497 (9.1)	5 (3.6)
Japan	4 (1.5)	573 (9.9)	-9 (3.1) ▼	76 (3.5)	547 (2.3)	1 (4.9)	20 (3.2)	545 (3.3)	8 (4.2)
Armenia	s 4 (1.4)	482 (23.3)	-14 (4.2) ▼	52 (4.0)	482 (8.0)	-8 (6.9)	45 (4.0)	489 (10.0)	22 (6.8) ●
Czech Republic	3 (1.4)	498 (7.7)	0 0	68 (3.7)	520 (3.7)	0 0	29 (3.7)	505 (4.8)	0 0
Morocco	s 2 (1.3)	~ ~	-4 (2.7)	39 (3.8)	319 (12.8)	11 (6.4)	58 (3.8)	276 (8.1)	-7 (6.3)
International Avg.	17 (0.5)	494 (1.9)		66 (0.6)	477 (0.9)		17 (0.5)	454 (1.8)	

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

Dubai, UAE	s 53 (4.2)	464 (10.2)	0 0	40 (3.9)	446 (6.3)	0 0	7 (0.8)	384 (7.7)	0 0
Massachusetts, US	50 (7.2)	581 (5.9)	0 0	47 (6.5)	566 (5.7)	0 0	3 (2.7)	498 (47.1)	0 0
Alberta, Canada	48 (4.1)	555 (4.4)	0 0	48 (4.1)	533 (4.6)	0 0	4 (1.5)	500 (34.7)	0 0
Minnesota, US	r 45 (8.9)	555 (13.3)	0 0	52 (8.9)	552 (7.2)	0 0	4 (1.9)	504 (14.1)	0 0
Ontario, Canada	27 (4.7)	545 (6.2)	-10 (6.2)	61 (4.8)	537 (5.4)	6 (6.5)	12 (3.3)	500 (12.9)	3 (4.6)
British Columbia, Canada	r 26 (3.6)	554 (4.9)	0 0	67 (4.3)	531 (3.5)	0 0	8 (2.8)	511 (14.2)	0 0
Quebec, Canada	16 (3.2)	536 (5.0)	2 (4.2)	68 (4.3)	518 (3.5)	-5 (5.8)	16 (3.2)	503 (7.3)	3 (4.5)

● 2007 percent significantly higher ▼ 2007 percent significantly lower

Index based on teachers' responses to eight questions about their schools: teachers' job satisfaction; teachers' understanding of the school's curricular goals; teachers' degree of success in implementing the school's curriculum; teachers' expectations for student achievement; parental support for student achievement; parental involvement in school activities; students' regard for school property; and students' desire to do well in school. Average is computed based on a 5-point scale: 1 = very high; 2 = high; 3 = medium; 4 = low; and 5 = very low. High level indicates average is less than or equal to 2. Medium level indicates that average is greater than 2 and less or equal to 3. Low level indicates average is greater than 3.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (0) indicates the country did not participate in the assessment.

Exhibit 8.13 Index of Science Teachers' Perception of School Climate (TPSC) with Trends (Continued)

TIMSS2007
Science **8th** Grade

Country	High TPSC			Medium TPSC			Low TPSC		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Indonesia	25 (3.7)	445 (9.8)	11 (4.1) ▲	57 (4.0)	435 (5.5)	-12 (5.0) ▼	18 (3.3)	424 (10.8)	1 (4.2)
Egypt	25 (3.0)	434 (6.4)	5 (4.2)	59 (3.9)	405 (4.8)	-1 (5.6)	16 (2.7)	377 (9.9)	-4 (4.2)
Lebanon	25 (3.2)	442 (13.2)	5 (4.3)	51 (4.1)	423 (6.3)	-4 (5.4)	25 (3.6)	369 (9.9)	0 (4.8)
Israel	r 23 (3.7)	499 (7.6)	-2 (4.8)	64 (4.4)	469 (6.1)	2 (5.7)	13 (2.7)	416 (13.6)	0 (3.7)
Malaysia	22 (3.5)	500 (11.3)	6 (4.6)	60 (4.1)	469 (7.6)	-11 (5.7) ▼	19 (3.3)	442 (10.2)	5 (4.7)
Chinese Taipei	22 (3.5)	574 (6.9)	2 (4.9)	65 (4.0)	561 (4.1)	0 (5.8)	13 (2.9)	541 (10.8)	-2 (4.3)
Scotland	s 21 (1.7)	520 (6.0)	8 (2.5) ▲	63 (2.2)	491 (4.4)	3 (3.7)	16 (2.2)	484 (10.0)	-12 (3.7) ▼
Qatar	18 (0.1)	350 (2.8)	0 0	55 (0.2)	320 (1.8)	0 0	26 (0.1)	292 (3.2)	0 0
Malta	18 (0.2)	511 (2.2)	0 0	46 (0.3)	482 (1.9)	0 0	36 (0.3)	382 (2.2)	0 0
England	s 18 (2.2)	584 (8.4)	6 (3.1) ▲	60 (3.1)	542 (5.7)	-10 (5.5)	22 (2.9)	510 (8.3)	3 (5.2)
United States	18 (2.3)	545 (6.6)	-6 (3.4)	54 (3.2)	521 (3.9)	3 (4.4)	28 (2.6)	495 (5.5)	3 (3.7)
Oman	16 (3.3)	446 (8.3)	0 0	68 (4.1)	426 (4.0)	0 0	17 (2.9)	387 (8.9)	0 0
Ghana	14 (2.6)	353 (15.5)	0 (4.1)	56 (3.8)	300 (7.8)	-5 (6.0)	30 (3.6)	285 (8.3)	5 (5.3)
Australia	r 14 (1.8)	547 (8.3)	0 (2.8)	56 (3.5)	526 (5.8)	-1 (5.3)	30 (3.4)	487 (5.8)	1 (5.2)
Saudi Arabia	14 (3.4)	417 (5.8)	--	57 (4.0)	408 (3.2)	--	30 (3.4)	384 (5.8)	--
Syrian Arab Republic	14 (2.5)	465 (5.8)	0 0	66 (3.5)	451 (3.4)	0 0	20 (3.1)	442 (8.3)	0 0
Jordan	14 (3.0)	518 (11.9)	7 (3.6)	49 (4.4)	487 (5.4)	-5 (6.2)	38 (3.9)	462 (7.4)	-1 (5.5)
Singapore	13 (1.5)	626 (11.8)	4 (2.2) ▲	64 (2.6)	568 (5.2)	-7 (3.6)	23 (1.9)	531 (10.4)	3 (2.8)
Cyprus	r 13 (0.6)	452 (3.2)	0 (1.1)	61 (1.1)	450 (2.4)	4 (1.6) ▲	26 (0.9)	453 (3.4)	-4 (1.4) ▼
Iran, Islamic Rep. of	12 (2.4)	496 (12.1)	3 (3.3)	49 (3.8)	464 (5.1)	6 (5.5)	38 (3.9)	441 (4.7)	-10 (5.5)
Bahrain	12 (1.2)	475 (4.2)	1 (2.4)	63 (2.3)	474 (2.5)	13 (4.2) ▲	25 (2.0)	447 (5.1)	-14 (4.1) ▼
El Salvador	12 (3.1)	404 (9.5)	0 0	58 (4.3)	388 (4.2)	0 0	30 (3.6)	379 (6.3)	0 0
Thailand	10 (2.1)	505 (18.3)	0 0	65 (3.6)	470 (5.9)	0 0	25 (3.6)	457 (7.8)	0 0
Hong Kong SAR	10 (2.7)	565 (10.9)	3 (3.6)	65 (4.0)	528 (6.8)	-1 (6.2)	26 (4.0)	520 (8.4)	-2 (6.0)
Bosnia and Herzegovina	10 (1.6)	471 (10.6)	0 0	60 (2.3)	467 (2.8)	0 0	30 (2.1)	461 (3.7)	0 0
Palestinian Nat'l Auth.	9 (2.2)	432 (14.5)	-1 (3.6)	62 (3.7)	408 (4.3)	-6 (5.4)	29 (3.5)	382 (7.5)	7 (5.0)
Colombia	9 (2.4)	443 (16.1)	0 0	46 (5.4)	421 (6.1)	0 0	45 (5.0)	408 (4.8)	0 0
Korea, Rep. of	r 9 (2.3)	553 (6.3)	3 (2.8)	65 (3.7)	556 (2.6)	-5 (4.9)	26 (3.2)	545 (3.3)	2 (4.4)
Kuwait	r 8 (2.2)	443 (14.6)	0 0	67 (3.6)	412 (4.4)	0 0	25 (3.4)	415 (8.4)	0 0
Romania	8 (1.3)	495 (9.5)	-3 (2.1)	58 (2.6)	464 (5.0)	-2 (3.8)	34 (2.8)	450 (5.8)	5 (4.0)
Serbia	8 (1.5)	480 (7.8)	1 (1.9)	67 (2.5)	472 (3.4)	4 (3.3)	25 (2.6)	464 (5.2)	-5 (3.4)
Turkey	7 (2.0)	525 (12.9)	0 0	32 (4.4)	473 (8.3)	0 0	60 (4.5)	435 (4.3)	0 0
Japan	7 (2.0)	592 (14.5)	-2 (3.0)	51 (4.3)	558 (2.7)	-10 (5.9)	42 (4.3)	543 (3.9)	12 (5.7) ▲
Sweden	7 (1.2)	534 (7.2)	0 (2.1)	70 (2.5)	510 (3.0)	5 (4.1)	23 (2.4)	503 (5.3)	-6 (3.8)
Hungary	7 (1.5)	567 (12.1)	2 (1.7)	73 (2.4)	541 (3.4)	-6 (3.2)	21 (2.3)	521 (4.7)	4 (3.0)
Botswana	6 (2.1)	414 (14.3)	5 (2.3) ▲	31 (4.5)	368 (6.4)	0 (6.2)	63 (4.8)	342 (3.9)	-6 (6.4)
Lithuania	6 (1.0)	535 (6.7)	0 (1.5)	78 (1.8)	519 (2.7)	-6 (2.4) ▼	16 (1.8)	509 (3.3)	6 (2.3) ▲
Slovenia	6 (1.3)	558 (7.8)	2 (1.9)	71 (2.6)	536 (2.6)	-6 (3.8)	23 (2.6)	538 (3.4)	4 (3.6)
Ukraine	6 (1.6)	499 (13.1)	0 0	84 (2.3)	487 (3.5)	0 0	10 (1.8)	472 (6.3)	0 0
Algeria	5 (1.5)	407 (5.6)	0 0	43 (3.4)	410 (2.8)	0 0	52 (3.3)	407 (2.3)	0 0
Bulgaria	5 (1.7)	514 (31.3)	--	44 (3.4)	478 (7.3)	--	51 (3.6)	456 (7.9)	--
Norway	4 (1.7)	502 (8.2)	-3 (2.7)	81 (3.0)	488 (2.4)	-4 (4.3)	14 (2.7)	473 (5.1)	7 (3.5)
Tunisia	4 (1.7)	434 (6.5)	-2 (2.7)	47 (2.2)	446 (3.1)	-7 (6.0)	49 (4.0)	445 (3.0)	9 (5.5)
Armenia	r 3 (0.8)	514 (17.3)	-8 (1.7) ▼	59 (2.1)	487 (6.5)	-5 (2.9)	38 (2.2)	487 (5.7)	13 (3.2) ▲
Italy	3 (1.1)	488 (26.7)	-1 (2.1)	55 (3.6)	504 (3.7)	6 (5.6)	42 (3.7)	486 (4.4)	-5 (5.4)
Georgia	3 (0.9)	445 (6.4)	0 0	54 (2.8)	425 (5.9)	0 0	43 (2.9)	415 (5.6)	0 0
Russian Federation	2 (0.7)	~ ~	1 (0.9)	67 (2.1)	534 (4.7)	15 (3.3) ▲	31 (2.0)	516 (3.3)	-16 (3.3) ▼
Czech Republic	1 (0.6)	~ ~	0 0	42 (2.7)	547 (3.4)	0 0	57 (2.8)	532 (2.5)	0 0
‡ Morocco	7 (2.8)	445 (14.7)	--	30 (5.5)	421 (7.1)	--	63 (4.7)	393 (3.4)	--
International Avg.	11 (0.3)	489 (1.7)		58 (0.5)	469 (0.7)		31 (0.4)	449 (1.0)	

Benchmarking Participants

Dubai, UAE	s 36 (3.1)	518 (6.1)	0 0	59 (3.2)	475 (5.6)	0 0	5 (0.7)	432 (9.9)	0 0
Ontario, Canada	28 (5.1)	536 (4.6)	9 (6.3)	60 (5.2)	531 (4.2)	-2 (7.0)	12 (2.8)	484 (13.4)	-7 (5.0)
Massachusetts, US	27 (7.0)	574 (11.3)	0 0	51 (7.6)	554 (10.2)	0 0	22 (5.2)	528 (13.1)	0 0
British Columbia, Canada	20 (3.0)	541 (4.2)	0 0	67 (3.7)	525 (3.7)	0 0	12 (2.7)	504 (13.3)	0 0
Basque Country, Spain	17 (3.4)	518 (7.4)	10 (4.3) ▲	57 (5.4)	498 (4.4)	-11 (7.2)	27 (4.5)	490 (5.9)	0 (6.2)
Minnesota, US	17 (5.5)	549 (13.0)	0 0	60 (7.3)	545 (4.0)	0 0	23 (5.7)	508 (13.0)	0 0
Quebec, Canada	9 (2.5)	571 (19.5)	1 (3.7)	52 (5.6)	516 (5.0)	-15 (7.1) ▼	39 (5.1)	493 (4.6)	14 (6.1) ▲

▲ 2007 percent significantly higher ▼ 2007 percent significantly lower

Index based on teachers' responses to eight questions about their schools: teachers' job satisfaction; teachers' understanding of the school's curricular goals; teachers' degree of success in implementing the school's curriculum; teachers' expectations for student achievement; parental support for student achievement; parental involvement in school activities; students' regard for school property; and students' desire to do well in school. Average is computed based on a 5-point scale: 1 = very high; 2 = high; 3 = medium; 4 = low; and 5 = very low. High level indicates average is less than or equal to 2. Medium level indicates that average is greater than 2 and less or equal to 3. Low level indicates average is greater than 3.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).
 () Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.
 A dash (-) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.
 An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.
 A diamond (0) indicates the country did not participate in the assessment.

At the eighth grade, teachers had a somewhat less positive outlook on school climate than principals. On average across countries, 11 percent of students were at the high level of the index (vs. 16% for principals), 58 percent at the medium level (vs. 68% for principals), and 31 percent at the low level (vs. 16% for principals). Twenty-four countries and the province of Quebec had less than 10 percent of students at the high level of the teachers' perception index. Average science achievement was positively related to teachers' perceptions of school climate at both fourth and eighth grades, with average achievement higher among students at the high index level and lower among students at the low level of the index.

How Safe and Orderly Are Schools?

Since a supportive school environment for learning is one in which teachers and students feel safe and secure, TIMSS asked teachers and students about their perceptions of safety in their schools. The Index of Science Teachers' Perception of Safety in School (TPSS) is based on science teachers' responses to three statements about their schools:

- ▶ This school is located in a safe neighborhood
- ▶ I feel safe at this school
- ▶ This school's security policies and practices are sufficient.

Students were assigned to the high level when their teachers agreed with all three statements and to the low level when their teachers disagreed with all three. Students whose teachers provided other response combinations were assigned to the medium level.

As shown in Exhibit 8.14, fourth grade teachers generally agreed that their schools were safe, reporting that, on average, most students were at the high (80%) or medium (15%) level of the teacher perception of safety index. In Singapore, Austria, Norway, the Czech Republic, the Slovak Republic, Georgia, Germany, Lithuania, Hong Kong SAR, and in Dubai, Massachusetts, and Alberta, 90 percent or more of students were at the high level of the index. There were increased percentages of students at the high level (since 2003) in Singapore, Lithuania, Scotland, Australia, England, Slovenia, Italy,

the Russian Federation, and the province of Quebec, and decreases in Tunisia and Armenia. Average science achievement was highest at the high level of the index (478 points, on average), next at the medium level (464 points), and lowest at the low level (414 points).

Eighth grade science teachers also tended to report that schools felt safe, with more than three fourths of students at the high (76%) and another 18 percent at the medium level of the teacher perception of safety index, on average. Ninety percent, or more, of students in Norway, Singapore, Hong Kong SAR, Hungary, the Czech Republic, and Dubai were at the high level of the index. Countries with increased percentages since 2003 included Norway, Hungary, Australia, Malaysia, Cyprus, Slovenia, the Russian Federation, Italy, England, Korea, and the Palestinian National Authority, while the United States and Armenia had decreases. Similar to the fourth grade, average science achievement was positively related to teacher perceptions of safety at eighth grade, with achievement highest among students at the high index level, and lowest at the low level of the index.

To complement teachers' perceptions of school safety, TIMSS asked students about their school experiences in terms of how often the following happened in their school in the past month:

- ▶ Something of mine was stolen
- ▶ I was hit or hurt by other student(s) (e.g., shoving, hitting, kicking)
- ▶ I was made to do things I didn't want to do by other students
- ▶ I was made fun of or called names
- ▶ I was left out of activities by other students

Students at the high level of the Index of Students' Perception of Being Safe in School (SPBSS) responded *No* to all five statements, while students at the low level responded *Yes* to three or more statements. Students with other combinations of responses were at the medium index level.

As shown in Exhibit 8.15, students at both grades reported a range of experiences across the TIMSS participants. At fourth grade, 42 percent of students were at the high level of the index, on average internationally,

Exhibit 8.14 Index of Science Teachers' Perception of Safety in School (TPSS) with Trends
TIMSS2007
Science 4th Grade

Country	High TPSS			Medium TPSS			Low TPSS		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Singapore	96 (1.1)	586 (4.0)	8 (2.7) ▲	3 (1.1)	632 (20.4)	-9 (2.7) ▼	0 (0.0)	~ ~	0 (0.0)
Austria	96 (1.1)	526 (2.7)	◊ ◊	4 (1.0)	503 (12.6)	◊ ◊	0 (0.2)	~ ~	◊ ◊
Norway	95 (1.7)	476 (3.6)	5 (3.2)	4 (1.4)	483 (11.8)	-5 (3.0)	1 (0.9)	~ ~	1 (1.1)
Czech Republic	94 (1.5)	516 (3.3)	◊ ◊	6 (1.4)	506 (13.1)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Slovak Republic	92 (2.0)	525 (5.3)	◊ ◊	8 (2.0)	537 (6.6)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Georgia	91 (2.2)	420 (5.0)	◊ ◊	5 (1.5)	409 (10.1)	◊ ◊	4 (1.5)	413 (19.5)	◊ ◊
Germany	91 (1.5)	532 (2.5)	◊ ◊	9 (1.6)	480 (14.8)	◊ ◊	0 (0.4)	~ ~	◊ ◊
Lithuania	91 (2.1)	515 (2.5)	10 (3.8) ▲	7 (1.8)	513 (5.7)	-10 (3.3) ▼	2 (1.1)	~ ~	0 (1.6)
Hong Kong SAR	90 (2.6)	559 (3.5)	6 (4.6)	9 (2.4)	536 (13.5)	-5 (4.3)	1 (0.8)	~ ~	-1 (1.5)
Scotland	r 89 (2.5)	504 (2.6)	11 (4.0) ▲	11 (2.5)	476 (10.0)	-11 (4.0) ▼	0 (0.0)	~ ~	-1 (0.0)
Kazakhstan	88 (3.3)	535 (4.8)	◊ ◊	12 (3.2)	517 (24.6)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Australia	87 (2.3)	532 (4.1)	9 (4.2) ▲	12 (2.3)	491 (10.1)	-8 (4.1)	1 (0.4)	~ ~	-1 (0.9)
Kuwait	r 86 (3.1)	354 (6.2)	◊ ◊	12 (2.8)	306 (13.8)	◊ ◊	1 (1.1)	~ ~	◊ ◊
Hungary	86 (2.6)	541 (3.3)	-2 (4.0)	12 (2.4)	505 (9.6)	2 (3.7)	1 (0.9)	~ ~	0 (1.3)
New Zealand	86 (1.8)	512 (2.8)	-2 (2.7)	14 (1.8)	456 (6.9)	2 (2.6)	0 (0.2)	~ ~	0 (0.4)
Netherlands	86 (2.9)	528 (3.1)	1 (3.6)	10 (2.1)	482 (7.7)	-3 (2.9)	5 (1.8)	518 (14.4)	2 (2.4)
England	r 86 (2.4)	547 (3.2)	15 (4.7) ▲	14 (2.4)	508 (6.1)	-14 (4.7) ▼	0 (0.3)	~ ~	-1 (1.2)
Qatar	85 (0.1)	288 (2.8)	◊ ◊	15 (0.1)	313 (4.4)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Ukraine	84 (3.0)	475 (3.6)	◊ ◊	14 (2.8)	465 (6.7)	◊ ◊	2 (1.0)	~ ~	◊ ◊
Denmark	84 (3.1)	523 (3.0)	◊ ◊	15 (3.2)	503 (7.0)	◊ ◊	1 (0.9)	~ ~	◊ ◊
Slovenia	84 (2.0)	518 (2.1)	11 (4.6) ▲	14 (1.9)	519 (4.8)	-9 (4.4) ▼	2 (0.8)	~ ~	-2 (1.9)
Italy	83 (2.4)	538 (3.1)	18 (4.2) ▲	15 (2.0)	527 (10.5)	-9 (3.6) ▼	2 (1.1)	~ ~	-9 (2.5) ▼
Sweden	83 (2.9)	529 (2.8)	◊ ◊	16 (2.8)	507 (7.1)	◊ ◊	1 (0.6)	~ ~	◊ ◊
Russian Federation	82 (3.2)	546 (5.2)	9 (4.5) ▲	18 (3.2)	553 (7.5)	-8 (4.5)	0 (0.5)	~ ~	-1 (0.8)
Iran, Islamic Rep. of	81 (3.1)	439 (4.9)	0 (5.3)	14 (2.6)	427 (10.6)	-3 (4.8)	5 (1.8)	424 (24.9)	3 (2.3)
Chinese Taipei	80 (3.2)	558 (2.5)	4 (4.7)	18 (3.0)	554 (4.9)	-3 (4.5)	2 (1.4)	~ ~	0 (1.9)
United States	78 (2.5)	549 (3.1)	-6 (3.2)	21 (2.4)	498 (6.4)	6 (3.1) ▲	1 (0.5)	~ ~	-1 (0.9)
Latvia	74 (3.3)	542 (2.5)	9 (5.4)	24 (3.3)	545 (3.9)	-7 (5.3)	2 (0.6)	~ ~	-2 (2.0)
Yemen	72 (4.3)	202 (8.3)	◊ ◊	26 (4.2)	201 (16.0)	◊ ◊	1 (1.0)	~ ~	◊ ◊
Algeria	68 (4.8)	356 (6.7)	◊ ◊	24 (4.3)	342 (18.6)	◊ ◊	8 (2.5)	352 (17.5)	◊ ◊
Japan	67 (3.6)	548 (2.4)	10 (5.3)	30 (3.4)	548 (3.2)	-6 (5.3)	3 (1.5)	546 (6.7)	-4 (2.7)
Tunisia	r 66 (3.7)	312 (8.4)	-14 (5.3) ▼	17 (3.1)	334 (13.3)	6 (4.1)	17 (3.1)	320 (10.5)	7 (4.1)
El Salvador	63 (3.8)	391 (6.1)	◊ ◊	22 (3.3)	386 (9.6)	◊ ◊	15 (3.3)	379 (9.7)	◊ ◊
Colombia	52 (5.8)	407 (10.3)	◊ ◊	26 (4.1)	391 (8.9)	◊ ◊	22 (4.9)	403 (10.1)	◊ ◊
Morocco	s 40 (3.9)	308 (12.4)	-10 (6.1)	30 (3.4)	283 (11.1)	0 (6.1)	29 (3.5)	288 (14.4)	10 (5.3)
Armenia	s 38 (4.0)	487 (10.1)	-44 (6.2) ▼	23 (3.4)	459 (10.6)	8 (5.6)	39 (3.5)	499 (9.9)	36 (3.8) ▲
International Avg.	80 (0.5)	478 (0.9)		15 (0.4)	464 (1.9)		5 (0.3)	414 (4.7)	
Benchmarking Participants									
Dubai, UAE	s 98 (0.2)	452 (6.0)	◊ ◊	2 (0.2)	~ ~	◊ ◊	0 (0.0)	~ ~	◊ ◊
Massachusetts, US	91 (4.0)	577 (4.5)	◊ ◊	8 (3.9)	527 (10.0)	◊ ◊	1 (0.0)	~ ~	◊ ◊
Alberta, Canada	90 (2.4)	544 (4.3)	◊ ◊	9 (2.4)	530 (6.2)	◊ ◊	1 (0.3)	~ ~	◊ ◊
Quebec, Canada	89 (2.7)	522 (2.9)	9 (4.6) ▲	8 (2.2)	486 (8.2)	-10 (4.1) ▼	3 (1.3)	517 (9.5)	0 (1.8)
British Columbia, Canada	r 88 (2.9)	539 (2.7)	◊ ◊	12 (2.9)	513 (11.2)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Minnesota, US	87 (6.0)	561 (5.3)	◊ ◊	13 (6.0)	495 (20.2)	◊ ◊	0 (0.0)	~ ~	◊ ◊
Ontario, Canada	84 (3.5)	540 (3.8)	-6 (4.7)	15 (3.5)	505 (12.1)	5 (4.6)	0 (0.3)	~ ~	0 (0.4)

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

Index based on teachers' responses to three statements about their schools: this school is located in a safe neighborhood; I feel safe at this school; and this school's security policies and practices are sufficient. High level indicates that the teacher agrees a lot or agrees to all three statements. Low level indicates that teacher disagrees or disagrees a lot to all three statements. Medium level includes all other combinations of responses.

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

A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students.

An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (◊) indicates the country did not participate in the assessment.

Exhibit 8.14 Index of Science Teachers' Perception of Safety in School (TPSS) with Trends (Continued)

TIMSS2007
Science **8th** Grade

Country	High TPSS			Medium TPSS			Low TPSS			
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	
Norway	94 (1.6)	487 (2.2)	13 (3.3) ▲	5 (1.5)	480 (9.0)	-13 (3.2) ▼	1 (0.0)	~ ~	1 (0.0)	
Singapore	94 (1.2)	568 (4.8)	2 (1.9)	6 (1.1)	557 (16.0)	-2 (1.8)	1 (0.5)	~ ~	0 (0.8)	
Hong Kong SAR	92 (2.7)	529 (5.1)	4 (4.0)	7 (2.6)	540 (23.6)	-5 (3.9)	1 (0.9)	~ ~	1 (0.9)	
Hungary	91 (1.6)	539 (3.0)	7 (2.7) ▲	8 (1.3)	543 (10.0)	-6 (2.4) ▼	2 (0.6)	~ ~	-1 (0.9)	
Czech Republic	90 (1.8)	539 (2.1)	0 0	9 (1.7)	534 (5.8)	0 0	1 (0.4)	~ ~	0 0	
Oman	89 (2.7)	427 (3.0)	0 0	10 (2.6)	392 (13.5)	0 0	1 (0.7)	~ ~	0 0	
Syrian Arab Republic	89 (2.4)	455 (2.9)	0 0	10 (2.2)	422 (11.9)	0 0	1 (0.7)	~ ~	0 0	
Indonesia	88 (2.6)	439 (4.2)	3 (3.6)	11 (2.7)	406 (11.1)	-1 (3.5)	1 (0.0)	~ ~	-2 (1.2)	
Qatar	87 (0.1)	316 (1.9)	0 0	12 (0.1)	335 (3.9)	0 0	1 (0.0)	~ ~	0 0	
Georgia	87 (2.3)	421 (5.3)	0 0	8 (1.6)	418 (6.0)	0 0	5 (1.2)	417 (10.9)	0 0	
Kuwait	86 (3.1)	417 (3.9)	0 0	12 (2.9)	411 (13.0)	0 0	2 (1.4)	~ ~	0 0	
Ukraine	86 (2.1)	486 (3.6)	0 0	13 (2.0)	483 (8.5)	0 0	1 (0.6)	~ ~	0 0	
Australia	86 (2.4)	521 (4.6)	15 (4.3) ▲	13 (2.1)	498 (6.9)	-14 (4.1) ▼	2 (0.9)	~ ~	-2 (1.5)	
Egypt	85 (3.1)	408 (3.9)	-1 (4.1)	14 (3.0)	417 (8.4)	1 (4.0)	2 (1.2)	~ ~	0 (1.6)	
Thailand	84 (3.1)	473 (5.0)	0 0	14 (3.0)	456 (8.9)	0 0	2 (0.9)	~ ~	0 0	
Israel	83 (2.9)	478 (5.7)	1 (4.0)	13 (2.4)	427 (14.9)	-2 (3.5)	3 (1.6)	434 (22.3)	1 (2.0)	
Malaysia	83 (3.2)	473 (6.4)	10 (5.2) ▲	14 (3.1)	455 (15.3)	-7 (4.7)	2 (1.3)	~ ~	-3 (2.7)	
Cyprus	82 (0.7)	451 (2.2)	8 (1.5) ▲	15 (0.6)	451 (3.5)	-7 (1.4) ▼	3 (0.4)	432 (11.7)	-1 (0.5)	
Lithuania	82 (2.1)	518 (2.7)	3 (3.3)	14 (1.8)	524 (4.9)	-5 (3.1)	3 (0.8)	507 (8.0)	1 (1.1)	
Sweden	82 (2.7)	514 (2.7)	4 (3.8)	18 (2.7)	492 (5.9)	-3 (3.8)	0 (0.0)	~ ~	-1 (0.7)	
Bosnia and Herzegovina	82 (1.6)	466 (3.0)	0 0	15 (1.3)	465 (4.7)	0 0	4 (1.0)	464 (8.5)	0 0	
Iran, Islamic Rep. of	80 (3.2)	466 (4.3)	6 (4.7)	15 (2.7)	432 (7.6)	-9 (4.3) ▼	6 (1.8)	432 (9.8)	2 (2.3)	
Slovenia	79 (2.2)	537 (2.6)	7 (3.4) ▲	18 (2.1)	540 (2.7)	-3 (3.1)	3 (1.1)	535 (9.5)	-3 (1.8)	
Serbia	79 (2.2)	470 (3.4)	3 (3.4)	18 (2.0)	477 (4.9)	1 (3.0)	4 (1.1)	453 (14.7)	-4 (1.7) ▼	
Romania	78 (2.2)	465 (4.3)	0 (3.2)	19 (2.1)	446 (5.3)	-1 (3.2)	3 (0.7)	470 (8.2)	0 (1.1)	
Russian Federation	78 (2.3)	530 (4.1)	18 (3.2) ▲	21 (2.1)	528 (5.4)	-13 (3.2) ▼	1 (0.5)	~ ~	-5 (1.4) ▼	
Bahrain	78 (1.9)	469 (2.5)	4 (2.8)	21 (1.9)	462 (6.0)	0 (2.7)	1 (0.0)	~ ~	-4 (1.6) ▼	
Italy	78 (2.9)	498 (3.2)	10 (4.4) ▲	18 (2.6)	488 (7.2)	-5 (3.9)	4 (1.3)	480 (11.4)	-5 (2.5)	
Turkey	77 (3.7)	460 (4.3)	0 0	17 (3.3)	433 (8.5)	0 0	5 (1.9)	431 (20.2)	0 0	
Bulgaria	77 (2.9)	469 (7.3)	--	18 (2.5)	464 (9.8)	--	4 (1.3)	482 (21.3)	--	
England	77 (3.0)	550 (5.1)	15 (5.8) ▲	21 (2.8)	523 (8.7)	-13 (5.7) ▼	2 (0.8)	~ ~	-2 (1.9)	
Saudi Arabia	77 (3.7)	409 (2.9)	--	19 (3.4)	380 (7.8)	--	4 (1.5)	381 (10.3)	--	
Lebanon	76 (3.5)	422 (6.2)	-5 (4.3)	19 (3.1)	387 (16.7)	2 (4.1)	5 (1.6)	371 (20.5)	3 (1.8)	
Jordan	75 (3.8)	486 (5.2)	3 (5.2)	19 (3.2)	467 (8.7)	-7 (4.8)	7 (2.2)	476 (12.8)	4 (2.6)	
United States	73 (2.3)	531 (3.5)	-7 (3.3) ▼	23 (2.2)	493 (6.7)	5 (3.2)	4 (1.3)	452 (14.1)	2 (1.5)	
Tunisia	72 (3.5)	445 (2.7)	-3 (4.8)	23 (3.1)	445 (3.6)	2 (4.5)	5 (1.8)	429 (7.3)	0 (2.4)	
Korea, Rep. of	72 (3.6)	555 (2.2)	22 (5.0) ▲	23 (3.5)	544 (4.1)	-20 (4.9) ▼	5 (1.7)	562 (6.4)	-3 (2.7)	
Palestinian Nat'l Auth.	72 (3.7)	411 (4.6)	17 (5.6) ▲	16 (3.2)	399 (9.1)	-10 (5.0)	12 (2.6)	364 (11.1)	-8 (4.4)	
Scotland	69 (3.0)	497 (4.4)	8 (4.3)	29 (2.8)	494 (6.9)	-7 (4.1)	3 (0.9)	485 (22.8)	-2 (1.7)	
Malta	67 (0.4)	459 (1.7)	0 0	25 (0.3)	452 (2.2)	0 0	8 (0.1)	387 (3.8)	0 0	
Algeria	65 (3.4)	410 (2.2)	0 0	25 (3.1)	404 (3.0)	0 0	9 (2.1)	412 (4.5)	0 0	
Japan	63 (4.5)	559 (3.0)	8 (5.9)	29 (4.0)	549 (5.6)	-6 (5.3)	8 (2.3)	540 (6.6)	-2 (3.3)	
Chinese Taipei	62 (4.6)	557 (4.9)	-1 (6.3)	31 (4.3)	569 (5.8)	-1 (5.9)	7 (1.9)	540 (11.4)	2 (2.5)	
El Salvador	59 (3.9)	386 (4.5)	0 0	28 (3.9)	392 (5.8)	0 0	14 (2.8)	378 (9.2)	0 0	
Colombia	56 (4.1)	426 (4.8)	0 0	30 (4.4)	408 (6.3)	0 0	14 (3.1)	395 (7.7)	0 0	
Ghana	39 (4.0)	328 (10.7)	-4 (6.1)	42 (4.2)	293 (9.0)	-1 (6.4)	18 (3.0)	273 (10.0)	5 (4.5)	
Botswana	39 (4.3)	365 (5.6)	2 (6.3)	41 (4.8)	344 (5.3)	-2 (6.5)	20 (3.5)	354 (7.7)	0 (5.2)	
Armenia	36 (2.5)	490 (5.2)	-30 (3.9) ▼	21 (1.8)	481 (5.7)	-9 (3.1) ▼	43 (2.5)	489 (9.9)	38 (2.8) ▲	
‡ Morocco	48 (3.8)	413 (5.5)	--	32 (4.9)	400 (6.0)	--	20 (5.6)	396 (8.2)	--	
International Avg.	76 (0.4)	469 (0.6)		18 (0.4)	457 (1.3)		6 (0.2)	441 (2.3)		
Benchmarking Participants										
Dubai, UAE	99 (0.7)	487 (3.2)	0 0	1 (0.0)	~ ~	0 0	0 (0.0)	~ ~	0 0	
British Columbia, Canada	87 (2.5)	528 (3.0)	0 0	13 (2.5)	519 (9.4)	0 0	0 (0.2)	~ ~	0 0	
Ontario, Canada	84 (3.6)	532 (3.0)	-7 (4.3)	16 (3.5)	499 (12.6)	8 (4.2)	1 (0.4)	~ ~	-1 (1.5)	
Quebec, Canada	83 (3.6)	516 (4.5)	2 (4.9)	15 (3.4)	491 (8.5)	-3 (4.7)	2 (1.1)	~ ~	1 (1.1)	
Basque Country, Spain	82 (4.3)	500 (3.6)	13 (6.7)	17 (4.1)	486 (8.9)	-13 (6.7)	2 (1.3)	~ ~	0 (1.7)	
Minnesota, US	72 (6.3)	543 (4.0)	0 0	28 (6.3)	519 (14.3)	0 0	0 (0.0)	~ ~	0 0	
Massachusetts, US	71 (5.0)	570 (4.7)	0 0	29 (5.0)	512 (13.7)	0 0	0 (0.0)	~ ~	0 0	

▲ 2007 percent significantly higher ▼ 2007 percent significantly lower

Index based on teachers' responses to three statements about their schools: this school is located in a safe neighborhood; I feel safe at this school; and this school's security policies and practices are sufficient. High level indicates that the teacher agrees a lot or agrees to all three statements. Low level indicates that teacher disagrees or disagrees a lot to all three statements. Medium level includes all other combinations of responses.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).

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

A dash (-) indicates comparable data are not available. A tilde (~) indicates insufficient data to report achievement.

An "r" indicates data are available for at least 70 but less than 85% of the students. An "s" indicates data are available for at least 50 but less than 70% of the students.

A diamond (0) indicates the country did not participate in the assessment.

Exhibit 8.15 Index of Students' Perception of Being Safe in School (SPBSS) with Trends
TIMSS2007
Science 4th Grade

Country	High SPBSS			Medium SPBSS			Low SPBSS		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Kazakhstan	80 (2.3)	535 (6.4)	◊ ◊	18 (2.2)	524 (5.7)	◊ ◊	3 (0.4)	518 (13.9)	◊ ◊
Sweden	70 (1.2)	529 (2.8)	◊ ◊	25 (0.9)	519 (3.7)	◊ ◊	5 (0.5)	494 (9.0)	◊ ◊
Denmark	59 (1.5)	520 (3.2)	◊ ◊	34 (1.4)	519 (3.5)	◊ ◊	8 (0.5)	499 (6.1)	◊ ◊
Norway	55 (1.3)	490 (3.8)	2 (1.7)	34 (0.9)	472 (3.9)	0 (1.3)	12 (0.8)	451 (7.1)	-1 (1.1)
Germany	54 (1.1)	540 (2.5)	◊ ◊	34 (0.8)	524 (3.4)	◊ ◊	12 (0.6)	506 (5.0)	◊ ◊
Japan	52 (1.3)	553 (2.6)	7 (1.8) ▲	34 (0.9)	547 (2.3)	-4 (1.2) ▼	14 (0.8)	536 (4.6)	-3 (1.1) ▼
Ukraine	52 (1.4)	483 (3.2)	◊ ◊	37 (1.0)	473 (3.5)	◊ ◊	11 (0.8)	459 (7.0)	◊ ◊
Russian Federation	51 (1.3)	552 (4.5)	11 (1.8) ▲	40 (1.1)	543 (6.1)	-6 (1.5) ▼	9 (0.6)	529 (8.0)	-5 (1.0) ▼
Lithuania	50 (1.3)	523 (2.7)	6 (1.7) ▲	38 (1.1)	510 (3.0)	-5 (1.5) ▼	12 (0.7)	492 (4.3)	-1 (1.0)
Austria	49 (1.0)	533 (2.6)	◊ ◊	35 (0.9)	524 (3.3)	◊ ◊	15 (0.9)	508 (4.4)	◊ ◊
Armenia	r 49 (1.6)	495 (4.9)	-9 (2.2) ▼	38 (1.3)	480 (8.3)	1 (1.9)	13 (1.0)	488 (15.2)	7 (1.1) ▲
Netherlands	48 (1.4)	531 (3.3)	5 (2.0) ▲	38 (1.1)	522 (2.8)	-2 (1.5)	14 (0.8)	503 (4.9)	-3 (1.3) ▼
Georgia	48 (1.5)	434 (4.9)	◊ ◊	43 (1.4)	415 (5.1)	◊ ◊	9 (0.7)	395 (10.0)	◊ ◊
Czech Republic	45 (1.5)	525 (3.7)	◊ ◊	43 (1.2)	513 (3.3)	◊ ◊	11 (0.7)	487 (5.1)	◊ ◊
Slovak Republic	44 (1.3)	545 (3.3)	◊ ◊	40 (1.0)	523 (5.3)	◊ ◊	15 (1.2)	490 (7.6)	◊ ◊
Iran, Islamic Rep. of	43 (1.4)	437 (4.9)	10 (2.6) ▲	43 (1.2)	438 (5.1)	-1 (1.9)	14 (0.8)	431 (7.1)	-9 (1.7) ▼
Latvia	41 (1.2)	549 (2.8)	-1 (1.9)	46 (1.1)	544 (3.1)	2 (1.6)	12 (0.8)	518 (3.7)	-1 (1.2)
Scotland	40 (1.2)	506 (3.1)	7 (1.8) ▲	39 (0.9)	506 (3.0)	0 (1.4)	21 (1.0)	482 (5.0)	-6 (1.6) ▼
Slovenia	40 (1.2)	525 (2.3)	0 (1.9)	42 (1.0)	521 (2.8)	2 (1.5)	18 (0.6)	502 (3.7)	-2 (1.4)
Yemen	39 (2.1)	212 (9.1)	◊ ◊	42 (1.5)	214 (7.4)	◊ ◊	19 (1.2)	179 (8.7)	◊ ◊
Italy	39 (1.0)	545 (3.9)	6 (1.5) ▲	41 (0.9)	532 (3.5)	0 (1.3)	20 (0.9)	521 (4.3)	-5 (1.3) ▼
Hong Kong SAR	37 (1.3)	561 (3.7)	-3 (1.9)	42 (0.9)	555 (3.8)	2 (1.3)	22 (1.1)	541 (4.8)	1 (1.6)
Algeria	36 (2.2)	378 (7.1)	◊ ◊	47 (1.6)	351 (6.5)	◊ ◊	17 (1.1)	326 (9.7)	◊ ◊
Hungary	35 (1.5)	553 (3.8)	-2 (1.9)	42 (1.2)	537 (4.6)	-1 (1.6)	23 (1.2)	516 (5.6)	3 (1.4)
Kuwait	34 (1.4)	395 (5.3)	◊ ◊	39 (1.0)	355 (5.2)	◊ ◊	27 (1.1)	310 (7.1)	◊ ◊
El Salvador	32 (1.4)	399 (5.0)	◊ ◊	46 (0.9)	394 (4.0)	◊ ◊	22 (1.2)	379 (5.6)	◊ ◊
England	32 (1.1)	556 (3.6)	0 (1.6)	43 (0.9)	544 (3.5)	1 (1.3)	25 (0.9)	522 (4.1)	-1 (1.5)
Colombia	31 (1.3)	424 (5.7)	◊ ◊	48 (1.0)	401 (5.5)	◊ ◊	21 (1.1)	385 (9.2)	◊ ◊
Australia	30 (1.2)	541 (3.7)	1 (1.6)	44 (1.3)	530 (4.0)	5 (1.6) ▲	26 (1.4)	512 (4.7)	-6 (1.9) ▼
Singapore	30 (0.9)	609 (4.5)	4 (1.3) ●	45 (0.7)	585 (4.1)	-2 (1.0)	25 (0.7)	566 (5.5)	-3 (1.2) ▼
Qatar	28 (0.5)	338 (3.2)	◊ ◊	40 (0.6)	302 (3.6)	◊ ◊	31 (0.6)	271 (3.1)	◊ ◊
Chinese Taipei	28 (1.1)	572 (2.6)	0 (1.5)	38 (0.9)	557 (2.5)	0 (1.2)	35 (1.1)	545 (2.7)	0 (1.5)
Morocco	r 26 (1.3)	325 (8.4)	1 (2.5)	54 (1.5)	298 (7.2)	2 (2.3)	20 (1.4)	285 (12.6)	-4 (2.0)
New Zealand	25 (0.9)	529 (3.4)	-1 (1.2)	42 (0.9)	509 (2.9)	0 (1.3)	33 (1.1)	483 (3.7)	1 (1.3)
Tunisia	23 (1.4)	362 (8.4)	0 (2.3)	49 (1.1)	327 (6.8)	-1 (1.6)	28 (1.1)	300 (7.5)	1 (1.8)
United States	--	--	--	--	--	--	--	--	--
International Avg.	42 (0.2)	489 (0.8)		40 (0.2)	475 (0.8)		18 (0.2)	455 (1.2)	

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2007

Benchmarking Participants

British Columbia, Canada	37 (0.9)	550 (3.2)	◊ ◊	41 (0.9)	538 (3.2)	◊ ◊	22 (0.7)	516 (3.8)	◊ ◊
Quebec, Canada	35 (1.2)	527 (3.4)	1 (1.6)	43 (1.1)	517 (3.5)	1 (1.4)	22 (1.0)	502 (4.0)	-3 (1.5)
Alberta, Canada	35 (1.1)	557 (4.5)	◊ ◊	41 (1.0)	541 (4.0)	◊ ◊	24 (1.1)	525 (4.2)	◊ ◊
Ontario, Canada	32 (1.1)	549 (4.1)	2 (1.6)	42 (1.0)	537 (4.5)	2 (1.4)	25 (1.1)	520 (4.4)	-4 (1.6) ▼
Dubai, UAE	25 (1.3)	498 (4.6)	◊ ◊	48 (1.1)	468 (4.0)	◊ ◊	27 (1.4)	438 (5.7)	◊ ◊
Massachusetts, US	--	--	◊ ◊	--	--	◊ ◊	--	--	◊ ◊
Minnesota, US	--	--	◊ ◊	--	--	◊ ◊	--	--	◊ ◊

▲ 2007 percent significantly higher

▼ 2007 percent significantly lower

Index based on students' responses to five statements about things that happened in their schools in the last month (1 = yes and 2 = no): something of mine was stolen; I was hit or hurt by other student(s) (e.g., shoving, hitting, kicking); I was made to do things that I didn't want to do by other students; I was made fun of or called names; and I was left out of activities by other students. High level indicates that the student answered NO to all five statements. Low level indicates that the student answered YES to three or more statements. Medium level includes all other possible combinations of responses.

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

A dash (-) indicates comparable data are not available.

An "r" indicates data are available for at least 70 but less than 85% of the students.

A diamond (◊) indicates the country did not participate in the assessment.



Exhibit 8.15 Index of Students' Perception of Being Safe in School (SPBSS) with Trends (Continued)

TIMSS2007
Science **8th** Grade

Country	High SPBSS			Medium SPBSS			Low SPBSS		
	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003	2007 Percent of Students	Average Achievement	Difference in Percent from 2003
Sweden	75 (0.8)	514 (2.7)	-3 (1.3) ▼	20 (0.7)	515 (3.0)	1 (1.1)	5 (0.4)	474 (8.2)	2 (0.5) ▲
Georgia	73 (1.5)	435 (5.7)	0 0	22 (1.5)	419 (5.1)	0 0	5 (0.5)	373 (9.3)	0 0
Russian Federation	71 (1.1)	534 (3.6)	12 (1.4) ▲	25 (0.9)	525 (5.5)	-10 (1.3) ▼	4 (0.3)	504 (9.5)	-2 (0.5) ▼
Ukraine	70 (0.9)	493 (3.2)	0 0	25 (0.8)	478 (4.4)	0 0	4 (0.4)	463 (11.4)	0 0
Serbia	69 (1.1)	478 (3.0)	1 (1.6)	25 (0.9)	464 (4.6)	-2 (1.4)	6 (0.5)	443 (9.8)	1 (0.7)
Bosnia and Herzegovina	67 (1.0)	473 (2.6)	0 0	26 (0.9)	462 (4.1)	0 0	7 (0.6)	429 (7.7)	0 0
Norway	65 (1.1)	490 (2.3)	2 (1.5)	29 (1.0)	485 (2.9)	-1 (1.3)	5 (0.3)	475 (6.8)	-1 (0.6)
Armenia	65 (1.1)	489 (5.0)	-7 (1.5) ▼	27 (0.9)	493 (8.9)	5 (1.2) ▲	8 (0.6)	478 (15.6)	2 (0.8)
Japan	65 (1.0)	556 (2.3)	4 (1.4) ▲	28 (0.8)	552 (2.8)	-3 (1.1) ▼	7 (0.5)	548 (5.3)	-1 (0.7)
Italy	63 (1.1)	499 (3.1)	7 (1.5) ▲	32 (1.1)	490 (3.0)	-3 (1.4)	5 (0.4)	480 (7.3)	-4 (0.7) ▼
Hungary	61 (1.0)	543 (3.3)	0 (1.5)	30 (0.8)	536 (3.2)	-2 (1.3)	9 (0.7)	530 (5.7)	2 (0.8) ▲
Israel	61 (1.3)	480 (4.4)	7 (1.8) ▲	29 (1.1)	474 (5.4)	-7 (1.6) ▼	10 (0.8)	428 (8.2)	-1 (1.0)
Scotland	60 (1.1)	495 (3.6)	0 (1.7)	32 (1.0)	502 (4.3)	0 (1.4)	8 (0.6)	491 (7.9)	0 (0.9)
Lithuania	59 (1.0)	522 (2.9)	0 (1.5)	35 (1.0)	518 (3.3)	1 (1.3)	6 (0.5)	496 (6.5)	-1 (0.7)
Czech Republic	59 (1.2)	543 (2.3)	0 0	35 (0.9)	536 (2.3)	0 0	6 (0.5)	515 (5.8)	0 0
England	58 (1.1)	543 (4.5)	7 (1.8) ▲	33 (0.9)	544 (5.4)	-5 (1.4) ▼	9 (0.6)	539 (8.7)	-3 (1.1) ▼
Kuwait	58 (1.1)	432 (2.8)	0 0	31 (1.0)	414 (4.3)	0 0	11 (0.6)	377 (5.2)	0 0
El Salvador	54 (1.1)	389 (3.0)	0 0	38 (1.0)	388 (3.4)	0 0	8 (0.6)	386 (6.5)	0 0
Slovenia	54 (1.2)	538 (2.3)	1 (1.8)	36 (1.0)	543 (2.9)	-1 (1.6)	10 (0.7)	524 (6.1)	0 (0.9)
Jordan	53 (1.4)	500 (4.5)	35 (2.7) ▲	38 (1.2)	474 (4.5)	16 (2.0) ▲	9 (0.6)	442 (6.5)	-51 (3.3) ▼
Singapore	52 (0.9)	578 (4.2)	8 (1.2) ▲	37 (0.7)	562 (5.1)	-6 (1.0) ▼	11 (0.7)	537 (8.7)	-2 (0.8) ▼
Malta	52 (0.8)	469 (2.2)	0 0	37 (0.7)	456 (3.0)	0 0	12 (0.5)	419 (6.2)	0 0
Korea, Rep. of	51 (1.3)	550 (2.5)	-11 (1.7) ▼	41 (1.1)	558 (2.5)	9 (1.4) ▲	8 (0.5)	553 (4.9)	2 (0.7) ▲
Hong Kong SAR	51 (1.0)	535 (4.6)	5 (1.7) ▲	39 (0.8)	530 (5.5)	-4 (1.2) ▼	10 (0.7)	512 (8.3)	-2 (1.0) ▼
Malaysia	51 (1.5)	486 (5.8)	0 (1.9)	40 (1.1)	460 (6.5)	-1 (1.5)	9 (0.7)	438 (11.3)	1 (0.9)
Turkey	50 (1.4)	468 (4.4)	0 0	40 (1.2)	446 (4.5)	0 0	10 (0.6)	421 (6.0)	0 0
Bulgaria	50 (1.4)	479 (6.0)	--	38 (1.1)	475 (8.4)	--	12 (1.1)	447 (7.5)	--
Cyprus	50 (0.9)	459 (2.4)	9 (1.3) ▲	37 (0.8)	455 (2.6)	-5 (1.2) ▼	13 (0.5)	420 (5.4)	-4 (0.9) ▼
Syrian Arab Republic	49 (1.1)	464 (3.0)	0 0	36 (0.9)	451 (3.9)	0 0	15 (0.8)	429 (5.0)	0 0
Chinese Taipei	49 (1.2)	566 (4.4)	2 (1.4)	35 (0.8)	557 (3.7)	-1 (1.1)	16 (0.7)	556 (5.1)	-1 (1.0)
Iran, Islamic Rep. of	49 (1.5)	469 (3.8)	-1 (2.1)	41 (1.2)	452 (4.1)	2 (1.6)	10 (0.7)	441 (6.4)	-1 (1.0)
Oman	48 (1.2)	439 (3.6)	0 0	39 (0.9)	421 (3.5)	0 0	13 (0.7)	386 (6.6)	0 0
Romania	48 (1.1)	477 (4.3)	0 (1.8)	38 (1.0)	459 (4.1)	0 (1.4)	14 (0.7)	434 (6.0)	0 (1.2)
Qatar	47 (0.5)	338 (2.3)	0 0	38 (0.6)	320 (2.6)	0 0	15 (0.4)	274 (4.7)	0 0
Australia	46 (1.2)	517 (4.4)	4 (1.7) ▲	38 (1.0)	515 (4.1)	-1 (1.4)	15 (0.7)	514 (4.9)	-3 (1.1) ▼
Saudi Arabia	46 (1.2)	409 (2.9)	--	41 (1.0)	406 (2.8)	--	13 (0.7)	385 (5.9)	--
Algeria	46 (1.3)	413 (2.1)	0 0	43 (1.1)	408 (2.0)	0 0	11 (0.6)	403 (4.3)	0 0
Palestinian Nat'l Auth.	45 (1.4)	427 (4.2)	4 (1.9) ▲	42 (1.1)	401 (3.8)	0 (1.5)	13 (0.8)	355 (9.1)	-4 (1.2) ▼
Tunisia	43 (1.2)	446 (2.7)	-3 (1.5) ▼	43 (0.9)	445 (2.3)	3 (1.3) ▲	14 (0.9)	443 (3.5)	1 (1.1)
Egypt	42 (1.3)	437 (3.6)	0 (1.9)	39 (0.8)	403 (4.8)	-1 (1.3)	19 (1.2)	371 (5.9)	1 (1.5)
Colombia	40 (1.6)	421 (4.1)	0 0	48 (1.2)	416 (3.8)	0 0	12 (0.8)	416 (4.4)	0 0
Lebanon	39 (1.9)	448 (6.4)	2 (2.6)	38 (1.8)	414 (8.3)	1 (2.0)	23 (1.5)	372 (5.9)	-3 (2.3)
Bahrain	37 (0.8)	486 (2.7)	-5 (1.3) ▼	45 (0.8)	468 (2.5)	3 (1.2) ▲	18 (0.7)	439 (3.5)	1 (1.1)
Indonesia	36 (1.3)	430 (4.4)	-3 (1.8)	45 (1.1)	433 (3.4)	0 (1.5)	19 (1.1)	415 (5.1)	3 (1.4) ▲
Thailand	30 (1.2)	480 (4.6)	0 0	47 (1.0)	471 (4.2)	0 0	23 (1.0)	458 (6.6)	0 0
Ghana	14 (0.9)	341 (7.3)	1 (1.4)	50 (1.0)	315 (5.5)	1 (1.4)	36 (1.1)	279 (6.2)	-1 (1.7)
Botswana	10 (0.6)	391 (4.9)	-2 (0.8) ▼	59 (0.9)	368 (3.1)	3 (1.2) ▲	31 (1.0)	323 (4.4)	-1 (1.4)
United States	--	--	--	--	--	--	--	--	--
‡ Morocco	37 (1.4)	406 (5.2)	--	47 (1.1)	403 (3.2)	--	16 (1.0)	389 (6.0)	--
International Avg.	51 (0.2)	475 (0.6)		37 (0.1)	464 (0.6)		12 (0.1)	442 (1.0)	
Benchmarking Participants									
Basque Country, Spain	63 (1.5)	505 (3.0)	1 (2.5)	31 (1.4)	491 (4.3)	-1 (2.1)	6 (0.7)	467 (8.8)	0 (1.0)
Quebec, Canada	60 (1.1)	510 (3.2)	5 (1.6) ▲	34 (1.0)	508 (3.8)	-2 (1.4)	7 (0.6)	495 (6.2)	-3 (0.9) ▼
British Columbia, Canada	49 (1.1)	528 (3.2)	0 0	38 (0.9)	528 (3.1)	0 0	13 (0.8)	515 (4.8)	0 0
Ontario, Canada	47 (1.5)	529 (5.0)	2 (2.1)	39 (1.1)	526 (3.6)	-1 (1.5)	14 (1.0)	521 (4.0)	-1 (1.5)
Dubai, UAE	47 (1.9)	504 (3.9)	0 0	41 (1.5)	485 (3.6)	0 0	12 (0.8)	471 (6.2)	0 0
Massachusetts, US	--	--	0 0	--	--	0 0	--	--	0 0
Minnesota, US	--	--	0 0	--	--	0 0	--	--	0 0

▲ 2007 percent significantly higher ▼ 2007 percent significantly lower

Index based on students' responses to five statements about things that happened in their schools in the last month (1 = yes and 2 = no): something of mine was stolen; I was hit or hurt by other student(s) (e.g., shoving, hitting, kicking); I was made to do things that I didn't want to do by other students; I was made fun of or called names; and I was left out of activities by other students. High level indicates that the student answered NO to all five statements. Low level indicates that the student answered YES to three or more statements. Medium level includes all other possible combinations of responses.

‡ Did not satisfy guidelines for sample participation rates (see Appendix A).
 () Standard errors appear in parentheses. Because results are rounded to the nearest whole number, some totals may appear inconsistent.
 A dash (-) indicates comparable data are not available.
 A diamond (0) indicates the country did not participate in the assessment.

indicating that they encountered none of the events listed above. However, 40 percent were at the medium level and 18 percent at the low level, implying that they had encountered at least some of these unpleasant events in school in the past month. The majority of students in Kazakhstan, Sweden, Denmark, Norway, Germany, Japan, the Ukraine, and the Russian Federation were at the high level. The percentage of students at the high level increased since 2003 in Japan, the Russian Federation, the Netherlands, Iran, Scotland, Italy, and Singapore, and decreased in Armenia.

At eighth grade, more than half (51%) the students across countries were at the high level of the student perception of being safe index, with 37 percent at the medium level and 12 percent at the low level. In Sweden, Georgia, the Russian Federation, and the Ukraine, 70 percent or more of students were at the high level of the index. Less than 20% of students were at the high level in Ghana and Botswana. TIMSS participants with increased percentages of students since 2003 at the high level of the index included the Russian Federation, Japan, Italy, Israel, England, Jordan, Singapore, Hong Kong SAR, Cyprus, Australia, the Palestinian National Authority, and the province of Quebec. There were decreases in Sweden, Armenia, Korea, Tunisia, Bahrain, and Botswana.

There was a positive association between average science achievement and students' perception of being safe at both fourth and eighth grades, with highest achievement among students at the high level of the index and lowest achievement among those at the low index level.

