

# School Composition and Resources

## Socioeconomic Background of the Student Body

As shown in Exhibit 6.1, TIMSS characterizes schools in terms of socioeconomic composition based on principals' reports of the percentages of economically disadvantaged and economically affluent students in the school (see About the Scale). "More affluent" schools were defined as having more than 25 percent of students from economically affluent homes and not more than 25 percent from economically disadvantaged homes, while "more disadvantaged" schools had more than 25 percent of students from disadvantaged homes and not more than 25 percent from affluent homes. All other combinations were considered to be "neither more affluent nor more disadvantaged."

Exhibits 6.2 and 6.3 present the percentages of fourth grade students in each category in relation to mathematics achievement and science achievement, respectively. At fourth grade, 41 percent of students, on average, were in schools with relatively more affluent students than disadvantaged students, 34 percent were in schools where there was a balance, and 25 percent were in schools with relatively more disadvantaged than affluent students. Average achievement was highest for students in the "more affluent" schools for both mathematics (521) and science (512) and lowest in the "more disadvantaged" schools (479 and 467 for mathematics and science, respectively). Average achievement for students attending "neither more affluent nor more disadvantaged" schools was in the middle (499 for mathematics and 489 for science).

Exhibits 6.4 and 6.5 present the percentages of eighth grade students in each category in relation to mathematics achievement and science achievement, respectively. Compared with the fourth grade, the distribution of eighth grade students was more even across the school composition groups, with 35 percent in schools with relatively more affluent students than disadvantaged students, 33 percent in schools where there was a balance, and 32 percent in schools with relatively more disadvantaged students than affluent students. The relationship with achievement was similar to fourth grade, with average achievement highest for students in "more affluent" schools for both mathematics (518) and science (518) and lowest in the "more disadvantaged" schools (466 and 468 for mathematics and science, respectively). Average achievement for students attending "neither more affluent nor more disadvantaged" schools was in the middle (489 for mathematics and 490 for science).

**Exhibit 6.1: School Composition by Socioeconomic Background of the Student Body***Students' Results based on Principals' Reports***About the Scale**

Approximately what percentage of students in your school have the following backgrounds?

	0 to 10%	11 to 25%	26 to 50%	More than 50%
1) Come from economically disadvantaged homes -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Come from economically affluent homes -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**More Affluent:** Schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes

**More Disadvantaged:** Schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes

**Neither More Affluent Nor More Disadvantaged:** All other possible response combinations

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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## Exhibit 6.2: School Composition by Socioeconomic Background of the Student Body

Students' Results based on Principals' Reports

Country	More Affluent Schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes		Neither More Affluent Nor More Disadvantaged		More Disadvantaged Schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	36 (4.3)	516 (5.7)	22 (3.7)	481 (7.1)	42 (4.2)	478 (6.4)
Armenia	49 (4.8)	502 (4.2)	28 (3.9)	491 (4.4)	23 (4.2)	499 (5.1)
Australia	34 (3.5)	542 (4.4)	38 (3.8)	512 (5.0)	28 (3.4)	485 (8.0)
Austria	30 (3.4)	554 (2.6)	40 (3.5)	545 (3.4)	29 (2.8)	515 (4.1)
Azerbaijan	14 (2.6)	510 (10.0)	30 (3.7)	505 (5.7)	56 (4.0)	521 (4.6)
Bahrain	38 (2.4)	475 (4.0)	36 (2.7)	488 (4.9)	26 (2.5)	474 (4.3)
Belgium (Flemish)	63 (3.7)	542 (2.6)	20 (3.8)	527 (5.0)	17 (2.9)	502 (6.3)
Bosnia and Herzegovina	44 (4.3)	460 (3.6)	34 (4.3)	451 (4.7)	22 (3.4)	451 (5.1)
Bulgaria	35 (3.3)	548 (4.1)	44 (4.2)	522 (9.2)	21 (3.1)	465 (10.7)
Canada	43 (2.5)	530 (3.0)	35 (2.5)	505 (2.8)	22 (2.2)	486 (4.1)
Chile	14 (2.0)	510 (5.8)	17 (3.5)	457 (7.2)	69 (3.7)	422 (3.8)
Chinese Taipei	25 (3.9)	607 (3.6)	71 (3.9)	599 (2.1)	4 (1.6)	566 (17.6)
Croatia	57 (4.2)	514 (3.1)	30 (3.7)	507 (4.4)	13 (2.7)	497 (5.3)
Cyprus	47 (4.6)	543 (4.5)	40 (4.7)	529 (4.8)	13 (2.9)	502 (7.3)
Czech Republic	55 (4.4)	542 (3.3)	37 (4.4)	526 (4.5)	8 (2.3)	502 (9.0)
Denmark	56 (4.1)	530 (3.0)	33 (3.9)	522 (4.2)	10 (2.2)	508 (6.6)
England	13 (3.5)	620 (13.7)	53 (5.6)	550 (4.0)	34 (5.3)	540 (5.6)
Finland	36 (4.0)	541 (3.1)	54 (4.1)	530 (3.4)	10 (2.3)	512 (7.1)
France	43 (3.9)	511 (3.6)	25 (3.8)	485 (6.2)	32 (3.5)	453 (5.0)
Georgia	39 (4.6)	488 (6.6)	40 (4.4)	478 (5.8)	21 (3.5)	479 (9.5)
Germany	29 (3.2)	541 (3.9)	44 (2.9)	528 (3.4)	27 (2.6)	484 (5.6)
Hong Kong SAR	34 (3.6)	612 (5.1)	25 (4.0)	607 (6.3)	41 (4.3)	590 (5.8)
Hungary	35 (3.7)	557 (4.1)	38 (4.6)	517 (5.2)	27 (3.9)	484 (6.4)
Iran, Islamic Rep. of	24 (3.3)	486 (8.2)	32 (3.2)	452 (6.0)	44 (3.2)	415 (4.6)
Ireland	49 (4.4)	557 (4.0)	27 (4.0)	555 (5.5)	24 (3.0)	522 (4.9)
Italy	38 (3.7)	522 (3.7)	45 (4.3)	517 (3.9)	17 (3.3)	498 (4.9)
Japan	48 (4.3)	602 (2.6)	45 (4.3)	585 (2.4)	8 (2.4)	583 (3.5)
Kazakhstan	81 (3.2)	514 (3.1)	17 (3.0)	503 (5.5)	2 (1.1)	~ ~
Korea, Rep. of	26 (3.3)	620 (4.1)	57 (4.1)	594 (3.0)	17 (3.1)	583 (4.4)
Kosovo	55 (6.0)	445 (5.2)	26 (4.7)	448 (9.1)	19 (4.4)	428 (8.7)
Kuwait	37 (4.5)	388 (12.4)	42 (5.3)	376 (8.7)	21 (3.9)	377 (14.3)
Latvia	54 (4.3)	552 (3.4)	41 (4.2)	538 (5.4)	5 (1.7)	539 (12.6)
Lithuania	73 (3.1)	552 (3.4)	19 (3.1)	525 (4.9)	8 (2.0)	492 (12.4)
Malta	48 (0.4)	519 (2.0)	45 (0.4)	505 (1.8)	7 (0.2)	472 (4.8)
Montenegro	43 (0.6)	459 (2.4)	34 (0.5)	448 (3.7)	23 (0.3)	443 (3.8)
Morocco	4 (1.8)	451 (14.2)	26 (3.9)	393 (9.7)	70 (4.2)	372 (7.2)
Netherlands	57 (5.3)	545 (3.1)	32 (5.2)	533 (3.5)	11 (3.6)	515 (6.2)
New Zealand	38 (3.2)	526 (4.1)	35 (3.5)	482 (4.7)	27 (2.7)	441 (4.6)
North Macedonia	66 (4.2)	489 (5.9)	10 (2.4)	459 (11.8)	24 (3.8)	445 (14.6)
Northern Ireland	39 (4.3)	586 (5.9)	30 (4.9)	576 (4.6)	30 (3.9)	539 (5.1)
Norway (5)	52 (4.9)	548 (3.6)	40 (4.6)	542 (3.5)	7 (2.2)	522 (7.6)
Oman	47 (3.9)	438 (6.9)	37 (3.7)	428 (6.1)	16 (2.3)	410 (10.5)
Pakistan	12 (7.0)	372 (58.2)	30 (5.6)	297 (20.0)	58 (6.9)	338 (16.9)
Philippines	18 (2.8)	359 (14.1)	32 (4.6)	287 (10.3)	50 (4.4)	284 (8.0)
Poland	25 (4.0)	534 (5.7)	64 (4.3)	521 (3.3)	11 (3.1)	493 (7.9)
Portugal	27 (2.9)	541 (5.1)	39 (3.8)	524 (4.1)	33 (3.8)	513 (4.1)
Qatar	66 (3.8)	458 (5.7)	24 (3.5)	443 (10.0)	11 (2.6)	419 (8.2)
Russian Federation	80 (2.7)	572 (3.7)	16 (2.5)	551 (5.9)	4 (1.4)	544 (10.1)
Saudi Arabia	38 (4.3)	425 (6.2)	38 (4.4)	393 (9.3)	24 (3.7)	371 (8.1)
Serbia	31 (4.1)	522 (5.1)	41 (4.2)	507 (4.5)	28 (3.7)	497 (6.9)
Singapore	53 (0.0)	635 (5.2)	37 (0.0)	623 (5.7)	10 (0.0)	584 (13.4)
Slovak Republic	45 (4.1)	530 (3.3)	41 (4.0)	510 (4.7)	13 (2.3)	445 (9.0)
South Africa (5)	9 (1.9)	502 (14.5)	13 (2.6)	379 (17.5)	78 (3.0)	364 (4.7)
Spain	60 (3.7)	512 (3.9)	27 (3.5)	501 (4.5)	13 (2.7)	472 (9.8)
Sweden	75 (3.7)	533 (3.1)	11 (2.7)	511 (8.0)	14 (2.9)	473 (8.8)
Turkey (5)	27 (3.7)	565 (6.2)	29 (3.6)	519 (11.0)	44 (4.2)	501 (6.9)
United Arab Emirates	50 (1.8)	484 (2.4)	26 (1.6)	477 (3.3)	24 (1.2)	471 (4.6)
United States	23 (2.3)	574 (5.7)	19 (2.2)	550 (3.2)	58 (2.7)	516 (3.4)
<b>International Average</b>	<b>41 (0.5)</b>	<b>521 (1.3)</b>	<b>34 (0.5)</b>	<b>499 (0.9)</b>	<b>25 (0.4)</b>	<b>479 (1.1)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	40 (3.8)	535 (5.6)	35 (4.2)	510 (4.4)	26 (3.9)	478 (5.1)
Quebec, Canada	55 (4.6)	541 (2.8)	29 (4.0)	520 (4.2)	16 (3.4)	523 (6.3)
Moscow City, Russian Fed.	87 (3.1)	593 (2.5)	11 (2.9)	589 (6.0)	2 (1.2)	~ ~
Madrid, Spain	65 (3.9)	528 (2.1)	23 (3.3)	506 (4.9)	13 (2.9)	483 (8.0)
Abu Dhabi, UAE	56 (1.2)	445 (2.9)	22 (1.3)	411 (4.4)	22 (1.5)	439 (8.4)
Dubai, UAE	51 (0.3)	554 (2.1)	32 (0.3)	543 (3.7)	17 (0.3)	513 (3.4)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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# Exhibit 6.3: School Composition by Socioeconomic Background of the Student Body

Students' Results based on Principals' Reports

Country	More Affluent Schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes		Neither More Affluent Nor More Disadvantaged		More Disadvantaged Schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	36 (4.3)	513 (6.4)	22 (3.7)	479 (7.6)	42 (4.2)	471 (6.7)
Armenia	49 (4.8)	469 (4.8)	28 (3.9)	459 (4.7)	23 (4.2)	470 (6.6)
Australia	34 (3.5)	557 (3.8)	38 (3.8)	530 (4.1)	28 (3.4)	504 (6.6)
Austria	30 (3.4)	541 (2.8)	40 (3.5)	531 (3.9)	29 (2.8)	489 (5.6)
Azerbaijan	14 (2.6)	421 (12.0)	30 (3.7)	413 (6.9)	56 (4.0)	434 (5.1)
Bahrain	38 (2.4)	491 (5.9)	36 (2.7)	504 (6.4)	26 (2.5)	479 (6.9)
Belgium (Flemish)	63 (3.7)	512 (2.5)	20 (3.8)	496 (5.7)	17 (2.9)	466 (6.7)
Bosnia and Herzegovina	44 (4.3)	466 (4.1)	34 (4.3)	460 (5.1)	22 (3.4)	455 (5.4)
Bulgaria	35 (3.3)	565 (5.1)	44 (4.2)	534 (10.3)	21 (3.1)	452 (12.6)
Canada	43 (2.5)	534 (2.8)	35 (2.5)	523 (2.7)	22 (2.2)	502 (3.4)
Chile	14 (2.0)	534 (5.2)	17 (3.5)	484 (7.2)	69 (3.7)	452 (3.4)
Chinese Taipei	25 (3.9)	568 (3.4)	71 (3.9)	557 (2.0)	4 (1.6)	521 (15.5)
Croatia	57 (4.2)	528 (2.8)	30 (3.7)	523 (3.9)	13 (2.7)	512 (5.1)
Cyprus	47 (4.6)	520 (4.4)	40 (4.7)	509 (4.5)	13 (2.9)	481 (7.2)
Czech Republic	55 (4.4)	541 (3.3)	37 (4.4)	529 (4.0)	8 (2.3)	507 (8.2)
Denmark	56 (4.1)	528 (3.3)	33 (3.9)	521 (3.9)	10 (2.2)	501 (5.5)
England	13 (3.5)	590 (11.4)	53 (5.6)	532 (4.0)	34 (5.3)	521 (5.9)
Finland	36 (4.0)	559 (3.6)	54 (4.1)	554 (3.6)	10 (2.3)	537 (8.6)
France	43 (3.9)	513 (3.8)	25 (3.8)	489 (5.9)	32 (3.5)	456 (4.9)
Georgia	39 (4.6)	460 (7.1)	40 (4.4)	451 (5.9)	21 (3.5)	450 (9.6)
Germany	29 (3.2)	538 (3.9)	44 (2.9)	527 (3.2)	27 (2.6)	478 (5.6)
Hong Kong SAR	34 (3.6)	546 (4.6)	25 (4.0)	532 (5.7)	41 (4.3)	520 (6.1)
Hungary	35 (3.7)	561 (3.5)	38 (4.6)	523 (4.7)	27 (3.9)	493 (6.6)
Iran, Islamic Rep. of	24 (3.3)	487 (7.4)	32 (3.2)	450 (6.1)	44 (3.2)	411 (5.0)
Ireland	49 (4.4)	536 (5.8)	27 (4.0)	533 (6.3)	24 (3.0)	505 (4.9)
Italy	38 (3.7)	517 (3.7)	45 (4.3)	513 (4.6)	17 (3.3)	489 (5.4)
Japan	48 (4.3)	570 (2.5)	45 (4.3)	554 (2.4)	8 (2.4)	553 (4.3)
Kazakhstan	81 (3.2)	498 (3.7)	17 (3.0)	476 (7.0)	2 (1.1)	~ ~
Korea, Rep. of	26 (3.3)	606 (3.7)	57 (4.1)	583 (2.6)	17 (3.1)	571 (4.1)
Kosovo	55 (6.0)	413 (6.4)	26 (4.7)	417 (10.0)	19 (4.4)	394 (10.7)
Kuwait	37 (4.5)	400 (14.0)	42 (5.3)	385 (10.2)	21 (3.9)	388 (16.9)
Latvia	54 (4.3)	547 (3.0)	41 (4.2)	535 (5.3)	5 (1.7)	531 (13.0)
Lithuania	73 (3.1)	547 (3.2)	19 (3.1)	523 (4.4)	8 (2.0)	489 (12.8)
Malta	48 (0.4)	505 (1.8)	45 (0.4)	493 (1.8)	7 (0.2)	455 (5.3)
Montenegro	43 (0.6)	460 (2.9)	34 (0.5)	449 (4.2)	23 (0.3)	441 (4.3)
Morocco	4 (1.8)	447 (23.7)	26 (3.9)	384 (11.7)	70 (4.2)	362 (8.8)
Netherlands	57 (5.3)	529 (3.7)	32 (5.2)	512 (4.1)	11 (3.6)	488 (9.6)
New Zealand	38 (3.2)	537 (3.5)	35 (3.5)	499 (3.8)	27 (2.7)	459 (5.0)
North Macedonia	66 (4.2)	446 (7.4)	10 (2.4)	415 (13.4)	24 (3.8)	396 (15.3)
Northern Ireland	39 (4.3)	532 (4.3)	30 (4.9)	524 (4.1)	30 (3.9)	500 (4.2)
Norway (5)	52 (4.9)	545 (3.5)	40 (4.6)	538 (4.0)	7 (2.2)	517 (7.2)
Oman	47 (3.9)	447 (7.9)	37 (3.7)	432 (6.5)	16 (2.3)	407 (8.4)
Pakistan	12 (7.0)	335 (56.9)	30 (5.6)	263 (22.6)	58 (6.9)	303 (20.1)
Philippines	18 (2.8)	327 (17.4)	32 (4.6)	234 (11.9)	50 (4.4)	235 (9.1)
Poland	25 (4.0)	545 (5.6)	64 (4.3)	531 (3.1)	11 (3.1)	504 (7.0)
Portugal	27 (2.9)	515 (4.6)	39 (3.8)	504 (3.8)	33 (3.8)	495 (3.6)
Qatar	66 (3.8)	457 (5.9)	24 (3.5)	447 (13.5)	11 (2.6)	424 (10.0)
Russian Federation	80 (2.7)	572 (3.2)	16 (2.5)	551 (6.1)	4 (1.4)	546 (9.8)
Saudi Arabia	38 (4.3)	432 (7.5)	38 (4.4)	395 (10.2)	24 (3.7)	365 (10.0)
Serbia	31 (4.1)	532 (4.9)	41 (4.2)	516 (4.3)	28 (3.7)	504 (7.4)
Singapore	53 (0.0)	605 (4.6)	37 (0.0)	590 (5.1)	10 (0.0)	553 (11.9)
Slovak Republic	45 (4.1)	543 (3.3)	41 (4.0)	523 (4.5)	13 (2.3)	439 (12.0)
South Africa (5)	9 (1.9)	501 (19.2)	13 (2.6)	334 (24.2)	78 (3.0)	311 (6.7)
Spain	60 (3.7)	520 (3.1)	27 (3.5)	511 (4.5)	13 (2.7)	483 (9.7)
Sweden	75 (3.7)	551 (3.2)	11 (2.7)	526 (7.4)	14 (2.9)	480 (10.5)
Turkey (5)	27 (3.7)	562 (5.1)	29 (3.6)	522 (10.6)	44 (4.2)	507 (6.9)
United Arab Emirates	50 (1.8)	474 (2.5)	26 (1.6)	468 (4.3)	24 (1.2)	468 (5.4)
United States	23 (2.3)	580 (6.0)	19 (2.2)	556 (3.2)	58 (2.7)	518 (3.7)
<b>International Average</b>	<b>41 (0.5)</b>	<b>512 (1.3)</b>	<b>34 (0.5)</b>	<b>489 (1.0)</b>	<b>25 (0.4)</b>	<b>467 (1.1)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	40 (3.8)	539 (5.3)	35 (4.2)	526 (4.2)	26 (3.9)	497 (4.6)
Quebec, Canada	55 (4.6)	530 (2.7)	29 (4.0)	514 (3.9)	16 (3.4)	510 (5.9)
Moscow City, Russian Fed.	87 (3.1)	595 (2.4)	11 (2.9)	594 (5.6)	2 (1.2)	~ ~
Madrid, Spain	65 (3.9)	530 (1.9)	23 (3.3)	515 (4.8)	13 (2.9)	493 (6.6)
Abu Dhabi, UAE	56 (1.2)	422 (3.4)	22 (1.3)	379 (6.1)	22 (1.5)	427 (10.2)
Dubai, UAE	51 (0.3)	554 (2.3)	32 (0.3)	544 (3.9)	17 (0.3)	517 (4.0)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

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**Exhibit 6.4: School Composition by Socioeconomic Background of the Student Body***Students' Results based on Principals' Reports*

Country	More Affluent Schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes		Neither More Affluent Nor More Disadvantaged		More Disadvantaged Schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	39 (3.6)	558 (7.8)	34 (3.4)	511 (5.5)	27 (3.0)	474 (5.8)
Bahrain	28 (0.2)	492 (4.6)	50 (0.3)	479 (2.5)	22 (0.2)	472 (3.3)
Chile	16 (2.4)	502 (6.0)	11 (2.7)	453 (10.3)	72 (3.0)	424 (3.9)
Chinese Taipei	14 (2.7)	656 (9.2)	66 (3.5)	616 (3.4)	20 (2.4)	571 (6.6)
Cyprus	s 54 (0.5)	519 (2.7)	32 (0.4)	490 (4.1)	14 (0.3)	466 (4.9)
Egypt	11 (2.8)	431 (13.6)	19 (3.5)	418 (14.2)	69 (4.3)	403 (6.4)
England	s 37 (4.7)	562 (9.4)	30 (5.1)	500 (10.5)	33 (5.0)	489 (11.3)
Finland	30 (3.9)	513 (4.3)	60 (4.2)	509 (3.4)	10 (2.5)	494 (8.0)
France	r 32 (4.2)	510 (4.9)	30 (3.9)	486 (4.1)	38 (4.4)	463 (4.1)
Georgia	39 (4.6)	465 (7.1)	37 (4.5)	466 (6.9)	24 (4.1)	456 (10.1)
Hong Kong SAR	27 (2.8)	622 (7.0)	34 (3.9)	581 (8.3)	39 (3.6)	553 (9.0)
Hungary	39 (4.1)	556 (6.8)	36 (4.4)	514 (6.1)	25 (3.5)	461 (6.6)
Iran, Islamic Rep. of	18 (2.7)	503 (11.8)	27 (3.6)	454 (5.9)	55 (3.7)	425 (5.5)
Ireland	30 (3.8)	545 (4.0)	44 (4.2)	531 (4.2)	26 (3.4)	500 (6.6)
Israel	29 (3.1)	563 (6.6)	30 (3.6)	531 (9.7)	41 (3.5)	483 (9.3)
Italy	38 (3.9)	509 (4.0)	43 (4.1)	504 (4.2)	19 (3.5)	464 (6.0)
Japan	52 (4.3)	602 (4.7)	36 (4.0)	588 (3.1)	12 (2.7)	573 (6.5)
Jordan	r 16 (2.7)	450 (8.9)	27 (3.6)	413 (6.2)	57 (3.9)	413 (6.0)
Kazakhstan	82 (3.4)	492 (3.8)	17 (3.2)	469 (9.0)	1 (1.0)	~ ~
Korea, Rep. of	23 (3.4)	639 (6.1)	48 (3.8)	607 (3.3)	29 (3.3)	581 (4.8)
Kuwait	r 26 (4.5)	417 (11.9)	56 (4.7)	403 (5.4)	19 (2.9)	403 (13.1)
Lebanon	r 25 (3.4)	463 (5.0)	31 (4.4)	439 (6.3)	44 (5.3)	406 (5.0)
Lithuania	71 (3.3)	526 (3.6)	20 (3.5)	499 (5.1)	9 (2.4)	504 (8.3)
Malaysia	10 (1.6)	539 (10.6)	25 (3.2)	489 (8.7)	65 (3.3)	438 (4.6)
Morocco	r 7 (2.1)	458 (18.2)	13 (2.8)	393 (6.4)	80 (3.4)	380 (2.9)
New Zealand	38 (3.8)	516 (6.5)	43 (4.3)	484 (4.6)	19 (3.0)	434 (8.3)
Norway (9)	r 56 (5.1)	511 (4.0)	34 (4.6)	500 (3.8)	10 (3.4)	487 (8.2)
Oman	35 (3.8)	428 (6.6)	42 (3.9)	406 (4.4)	23 (3.3)	389 (7.2)
Portugal	21 (3.0)	528 (5.8)	37 (4.1)	500 (6.0)	42 (4.1)	486 (4.3)
Qatar	55 (3.4)	458 (7.0)	32 (3.5)	429 (5.7)	13 (1.9)	429 (13.2)
Romania	29 (3.8)	501 (9.8)	32 (4.0)	475 (7.6)	39 (4.2)	467 (7.7)
Russian Federation	74 (3.3)	549 (5.4)	19 (2.8)	536 (8.7)	7 (1.8)	511 (11.9)
Saudi Arabia	r 47 (4.1)	403 (5.0)	37 (4.3)	388 (5.4)	17 (3.1)	383 (7.2)
Singapore	43 (0.0)	640 (6.2)	46 (0.0)	611 (6.2)	10 (0.0)	539 (12.6)
South Africa (9)	r 10 (1.6)	463 (16.0)	13 (2.1)	413 (10.2)	77 (2.4)	379 (3.4)
Sweden	69 (4.0)	511 (3.3)	22 (3.8)	490 (5.8)	8 (2.5)	479 (5.2)
Turkey	27 (3.0)	540 (8.2)	28 (3.6)	491 (9.1)	45 (4.0)	474 (5.7)
United Arab Emirates	r 51 (1.3)	483 (2.3)	25 (1.3)	462 (2.7)	24 (0.9)	452 (5.3)
United States	22 (2.2)	581 (7.0)	23 (2.5)	530 (8.5)	55 (2.7)	488 (5.9)
<b>International Average</b>	<b>35 (0.5)</b>	<b>518 (1.3)</b>	<b>33 (0.6)</b>	<b>489 (1.1)</b>	<b>32 (0.5)</b>	<b>466 (1.2)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	r 47 (4.7)	548 (8.3)	34 (4.4)	524 (5.4)	19 (3.4)	488 (11.1)
Quebec, Canada	57 (3.8)	553 (5.0)	29 (4.1)	541 (7.7)	15 (3.1)	532 (13.1)
Moscow City, Russian Fed.	84 (3.2)	579 (4.7)	14 (2.8)	551 (10.7)	3 (1.5)	595 (21.9)
Gauteng, RSA (9)	r 17 (3.1)	481 (11.3)	14 (3.3)	467 (15.1)	69 (4.1)	402 (3.5)
Western Cape, RSA (9)	r 17 (3.2)	558 (7.3)	6 (2.1)	497 (23.1)	77 (3.1)	418 (5.2)
Abu Dhabi, UAE	r 56 (1.2)	445 (4.6)	24 (1.7)	402 (6.5)	20 (1.4)	440 (8.5)
Dubai, UAE	r 53 (0.5)	553 (2.8)	27 (0.5)	546 (5.2)	20 (0.4)	471 (5.4)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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# Exhibit 6.5: School Composition by Socioeconomic Background of the Student Body

Students' Results based on Principals' Reports

Country	More Affluent Schools where more than 25% of the student body comes from economically affluent homes and not more than 25% from economically disadvantaged homes		Neither More Affluent Nor More Disadvantaged		More Disadvantaged Schools where more than 25% of the student body comes from economically disadvantaged homes and not more than 25% from economically affluent homes	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	39 (3.6)	565 (6.0)	34 (3.4)	525 (4.3)	27 (3.0)	487 (5.6)
Bahrain	28 (0.2)	521 (3.8)	50 (0.3)	479 (2.7)	22 (0.2)	463 (3.4)
Chile	16 (2.4)	518 (5.5)	11 (2.7)	473 (9.8)	72 (3.0)	447 (3.9)
Chinese Taipei	14 (2.7)	605 (7.2)	66 (3.5)	577 (2.3)	20 (2.4)	544 (5.4)
Cyprus s	54 (0.5)	501 (3.1)	32 (0.4)	472 (4.7)	14 (0.3)	449 (6.8)
Egypt	11 (2.8)	404 (12.6)	19 (3.5)	396 (15.2)	69 (4.3)	380 (7.2)
England s	37 (4.7)	568 (8.2)	30 (5.1)	500 (9.7)	33 (5.0)	489 (10.8)
Finland	30 (3.9)	546 (5.1)	60 (4.2)	544 (4.1)	10 (2.5)	526 (10.0)
France r	32 (4.2)	518 (5.2)	30 (3.9)	492 (4.4)	38 (4.4)	466 (4.6)
Georgia	39 (4.6)	449 (6.8)	37 (4.5)	448 (6.2)	24 (4.1)	447 (7.8)
Hong Kong SAR	27 (2.8)	547 (8.3)	34 (3.9)	493 (11.0)	39 (3.6)	489 (8.8)
Hungary	39 (4.1)	563 (5.7)	36 (4.4)	530 (5.3)	25 (3.5)	480 (6.0)
Iran, Islamic Rep. of	18 (2.7)	500 (10.6)	27 (3.6)	458 (5.7)	55 (3.7)	430 (5.4)
Ireland	30 (3.8)	547 (4.6)	44 (4.2)	529 (4.5)	26 (3.4)	498 (7.9)
Israel	29 (3.1)	550 (6.0)	30 (3.6)	525 (8.4)	41 (3.5)	482 (8.8)
Italy	38 (3.9)	512 (4.1)	43 (4.1)	505 (4.0)	19 (3.5)	470 (6.9)
Japan	52 (4.3)	575 (3.8)	36 (4.0)	565 (2.3)	12 (2.7)	556 (5.6)
Jordan r	16 (2.7)	489 (10.8)	27 (3.6)	444 (7.8)	57 (3.9)	445 (7.4)
Kazakhstan	82 (3.4)	483 (3.5)	17 (3.2)	461 (9.7)	1 (1.0)	~ ~
Korea, Rep. of	23 (3.4)	585 (4.7)	48 (3.8)	559 (2.9)	29 (3.3)	544 (3.4)
Kuwait r	26 (4.5)	451 (11.8)	56 (4.7)	446 (7.0)	19 (2.9)	443 (12.2)
Lebanon r	25 (3.4)	429 (9.4)	31 (4.4)	394 (10.0)	44 (5.3)	342 (8.1)
Lithuania	71 (3.3)	539 (3.6)	20 (3.5)	513 (4.7)	9 (2.4)	518 (7.4)
Malaysia	10 (1.6)	536 (8.5)	25 (3.2)	482 (8.8)	65 (3.3)	440 (4.9)
Morocco r	7 (2.1)	447 (22.0)	13 (2.8)	393 (9.8)	80 (3.4)	389 (3.8)
New Zealand	38 (3.8)	535 (5.7)	43 (4.3)	502 (4.6)	19 (3.0)	449 (9.3)
Norway (9) r	56 (5.1)	504 (4.5)	34 (4.6)	494 (4.7)	10 (3.4)	473 (11.6)
Oman	35 (3.8)	471 (7.2)	42 (3.9)	455 (4.8)	23 (3.3)	434 (7.6)
Portugal	21 (3.0)	541 (5.4)	37 (4.1)	517 (5.4)	42 (4.1)	507 (4.1)
Qatar	55 (3.4)	486 (6.9)	32 (3.5)	464 (6.2)	13 (1.9)	463 (12.9)
Romania	29 (3.8)	492 (8.1)	32 (4.0)	468 (7.2)	39 (4.2)	461 (7.1)
Russian Federation	74 (3.3)	546 (5.2)	19 (2.8)	541 (7.5)	7 (1.8)	518 (12.3)
Saudi Arabia r	47 (4.1)	437 (5.7)	37 (4.3)	429 (6.2)	17 (3.1)	423 (7.8)
Singapore	43 (0.0)	632 (6.0)	46 (0.0)	603 (5.9)	10 (0.0)	530 (12.4)
South Africa (9) r	10 (1.6)	469 (21.3)	13 (2.1)	401 (14.2)	77 (2.4)	356 (4.5)
Sweden	69 (4.0)	534 (3.8)	22 (3.8)	505 (7.2)	8 (2.5)	487 (7.7)
Turkey	27 (3.0)	553 (7.3)	28 (3.6)	511 (8.1)	45 (4.0)	497 (5.1)
United Arab Emirates r	51 (1.3)	482 (2.8)	25 (1.3)	459 (2.8)	24 (0.9)	456 (6.0)
United States	22 (2.2)	579 (5.6)	23 (2.5)	540 (7.4)	55 (2.7)	497 (6.4)
<b>International Average</b>	<b>35 (0.5)</b>	<b>518 (1.3)</b>	<b>33 (0.6)</b>	<b>490 (1.2)</b>	<b>32 (0.5)</b>	<b>468 (1.3)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada r	47 (4.7)	534 (4.7)	34 (4.4)	518 (5.1)	19 (3.4)	490 (8.5)
Quebec, Canada	57 (3.8)	545 (4.8)	29 (4.1)	538 (7.2)	15 (3.1)	524 (13.6)
Moscow City, Russian Fed.	84 (3.2)	569 (3.3)	14 (2.8)	550 (8.0)	3 (1.5)	571 (17.9)
Gauteng, RSA (9) r	17 (3.1)	501 (13.5)	14 (3.3)	480 (18.4)	69 (4.1)	398 (4.8)
Western Cape, RSA (9) r	17 (3.2)	584 (8.5)	6 (2.1)	516 (31.0)	77 (3.1)	410 (6.0)
Abu Dhabi, UAE r	56 (1.2)	427 (5.5)	24 (1.7)	374 (9.3)	20 (1.4)	440 (10.6)
Dubai, UAE r	53 (0.5)	564 (2.9)	27 (0.5)	561 (4.3)	20 (0.4)	479 (5.8)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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## Students' Native Language is the Language of the Test

Principals' categorizations of their schools according to the percentage of fourth grade students who spoke the language of the TIMSS 2019 assessment as their first language are shown in Exhibit 6.6, together with average mathematics achievement, and in Exhibit 6.7 together with science achievement. On average, 63 percent were in schools where most students (more than 90%) spoke the language of the TIMSS assessment as their first language, and another 18 percent were in schools where more than half of students (51–90%) spoke the language of the assessment as their first language. Both groups of students had higher average achievement than the 19 percent of students attending schools where only half of the students (or less) spoke the language of the assessment as their native language (506 and 501 vs. 486 for mathematics, and 498 and 493 vs. 471 for science).

As shown in Exhibit 6.8 for mathematics and in Exhibit 6.9 for science, the distribution of eighth grade students across the language composition groups was similar to fourth grade. Sixty-four percent of students were in schools where most students spoke the assessment language as their first language (more than 90%) and 17 percent and 18 percent were in schools where more than half of the students (51–90%) and only half of the students (or less) did so, respectively. There was little difference in average mathematics or science achievement among the groups, although average science achievement was lower in schools where only half of the students (or less) spoke the language of the assessment as their native language (483 vs. 484 and 487 for mathematics, and 479 vs. 491 and 490 for science).

**Exhibit 6.6: Schools with Students Having the Language of the Test as Their Native Language***Students' Results based on Principals' Reports*

Country	School has More than 90% of Students with Language of Test as Their Native Language		School has 51–90% of Students with Language of Test as Their Native Language		School has 50% or Less of Students with Language of Test as Their Native Language	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	99 (1.0)	494 (3.5)	1 (0.7)	~ ~	1 (0.8)	~ ~
Armenia	95 (1.6)	498 (2.6)	4 (1.3)	493 (12.0)	1 (0.8)	~ ~
Australia	48 (3.5)	516 (4.4)	34 (3.8)	514 (5.2)	17 (3.0)	513 (13.4)
Austria	21 (2.3)	551 (4.1)	46 (3.5)	547 (3.3)	34 (3.2)	521 (3.8)
Azerbaijan	97 (1.4)	510 (3.3)	3 (1.4)	518 (12.9)	0 (0.1)	~ ~
Bahrain	56 (1.8)	483 (3.4)	15 (1.7)	463 (7.8)	29 (1.6)	484 (3.3)
Belgium (Flemish)	37 (3.6)	545 (2.5)	39 (4.1)	535 (2.9)	24 (3.2)	510 (6.5)
Bosnia and Herzegovina	95 (1.8)	450 (2.4)	4 (1.7)	481 (5.2)	1 (0.8)	~ ~
Bulgaria	58 (4.0)	535 (6.4)	19 (2.9)	512 (6.7)	24 (3.1)	467 (8.7)
Canada	43 (2.3)	517 (3.0)	39 (2.8)	505 (3.2)	18 (2.1)	512 (4.6)
Chile	95 (1.8)	441 (3.1)	4 (1.8)	436 (13.1)	0 (0.2)	~ ~
Chinese Taipei	66 (3.3)	602 (2.0)	28 (3.5)	598 (3.1)	5 (1.7)	567 (15.2)
Croatia	92 (2.5)	510 (2.2)	6 (2.2)	512 (7.7)	2 (1.2)	~ ~
Cyprus	44 (4.0)	540 (4.2)	37 (4.0)	530 (4.6)	19 (2.5)	515 (7.5)
Czech Republic	91 (2.4)	531 (2.8)	9 (2.4)	549 (8.8)	0 (0.0)	~ ~
Denmark	52 (4.4)	528 (3.0)	42 (4.7)	524 (3.7)	6 (2.0)	509 (12.5)
England	43 (5.4)	561 (5.4)	45 (5.6)	554 (6.5)	13 (3.5)	559 (16.7)
Finland	69 (3.2)	538 (2.4)	28 (3.0)	522 (4.0)	3 (1.4)	490 (16.8)
France	64 (3.6)	494 (3.7)	28 (3.9)	478 (6.1)	9 (1.8)	441 (13.8)
Georgia	86 (3.1)	485 (3.9)	12 (2.9)	460 (9.2)	2 (0.9)	~ ~
Germany	25 (2.9)	535 (3.5)	53 (3.6)	525 (3.3)	22 (2.7)	495 (6.4)
Hong Kong SAR	74 (3.6)	601 (3.7)	11 (4.0)	593 (19.7)	15 (3.7)	612 (11.9)
Hungary	96 (1.8)	522 (2.9)	4 (1.8)	535 (29.1)	0 (0.0)	~ ~
Iran, Islamic Rep. of	57 (3.4)	455 (4.2)	12 (2.5)	457 (10.2)	31 (3.3)	417 (8.7)
Ireland	59 (3.6)	555 (2.9)	30 (3.6)	540 (4.8)	11 (2.7)	534 (7.7)
Italy	62 (3.9)	515 (3.4)	38 (3.9)	516 (3.4)	1 (0.7)	~ ~
Japan	98 (1.4)	593 (1.8)	2 (1.2)	~ ~	1 (0.7)	~ ~
Kazakhstan	55 (2.5)	506 (3.0)	27 (3.2)	521 (6.3)	18 (2.9)	518 (7.9)
Korea, Rep. of	94 (2.0)	601 (2.4)	6 (2.0)	580 (10.7)	0 (0.0)	~ ~
Kosovo	96 (1.4)	445 (3.1)	3 (1.2)	428 (16.0)	1 (0.7)	~ ~
Kuwait	79 (2.4)	372 (5.0)	4 (2.3)	444 (23.5)	17 (2.0)	417 (12.9)
Latvia	51 (3.3)	544 (3.5)	21 (3.2)	540 (6.8)	28 (1.0)	556 (4.4)
Lithuania	87 (2.8)	540 (3.5)	10 (2.4)	564 (10.4)	3 (1.2)	534 (14.3)
Malta	6 (0.2)	516 (3.6)	10 (0.2)	534 (3.3)	84 (0.3)	506 (1.7)
Montenegro	69 (0.5)	457 (2.1)	23 (0.5)	451 (3.5)	8 (0.3)	424 (6.6)
Morocco	67 (3.1)	386 (6.4)	11 (2.2)	375 (10.5)	22 (2.6)	378 (5.8)
Netherlands	53 (5.4)	546 (2.8)	37 (5.4)	531 (3.7)	10 (2.6)	518 (7.1)
New Zealand	52 (3.6)	480 (4.5)	29 (3.5)	504 (6.8)	20 (2.7)	482 (8.9)
North Macedonia	72 (3.2)	479 (6.6)	18 (3.3)	468 (10.4)	10 (2.7)	430 (11.4)
Northern Ireland	66 (4.3)	566 (4.0)	24 (4.3)	573 (9.1)	10 (2.7)	558 (12.9)
Norway (5)	54 (4.9)	544 (3.8)	40 (5.1)	545 (3.8)	6 (1.9)	531 (9.2)
Oman	78 (1.7)	429 (4.3)	7 (1.5)	392 (10.8)	15 (1.1)	458 (10.0)
Pakistan	5 (1.8)	334 (18.1)	4 (1.9)	266 (32.0)	91 (2.6)	333 (13.6)
Philippines	1 (0.7)	~ ~	2 (1.0)	~ ~	97 (1.1)	296 (6.6)
Poland	99 (1.0)	520 (2.7)	1 (1.0)	~ ~	0 (0.0)	~ ~
Portugal	86 (2.3)	527 (3.0)	11 (2.2)	519 (6.3)	4 (1.5)	505 (12.8)
Qatar	39 (2.8)	410 (4.6)	11 (2.2)	437 (11.9)	49 (2.3)	484 (5.5)
Russian Federation	75 (3.1)	567 (3.8)	15 (2.6)	569 (7.3)	10 (1.6)	564 (9.1)
Saudi Arabia	88 (2.3)	396 (3.6)	6 (1.9)	394 (14.0)	5 (1.3)	424 (17.6)
Serbia	91 (2.2)	512 (3.1)	8 (2.1)	468 (10.2)	1 (0.5)	~ ~
Singapore	0 (0.0)	~ ~	0 (0.0)	~ ~	100 (0.0)	625 (3.9)
Slovak Republic	90 (2.1)	519 (2.9)	5 (1.4)	442 (16.3)	5 (1.8)	419 (13.9)
South Africa (5)	10 (1.6)	411 (13.0)	10 (2.1)	494 (12.0)	80 (2.3)	359 (3.5)
Spain	58 (3.2)	509 (4.0)	28 (3.3)	496 (6.3)	14 (2.0)	490 (4.6)
Sweden	43 (4.3)	535 (3.8)	34 (4.6)	523 (4.4)	23 (4.1)	490 (7.1)
Turkey (5)	78 (3.1)	537 (4.9)	9 (2.0)	510 (6.8)	14 (2.4)	449 (13.6)
United Arab Emirates	26 (0.6)	475 (3.1)	5 (0.2)	555 (4.7)	69 (0.6)	475 (1.9)
United States	45 (3.0)	544 (4.2)	35 (3.0)	531 (5.4)	20 (2.5)	522 (6.2)
<b>International Average</b>	<b>63 (0.4)</b>	<b>506 (0.6)</b>	<b>18 (0.4)</b>	<b>501 (1.5)</b>	<b>19 (0.3)</b>	<b>486 (1.5)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	34 (3.5)	522 (6.6)	46 (4.7)	505 (4.7)	21 (3.4)	510 (5.9)
Quebec, Canada	60 (4.5)	530 (3.0)	25 (4.4)	533 (4.3)	15 (3.4)	539 (7.8)
Moscow City, Russian Fed.	75 (3.6)	595 (2.4)	24 (3.6)	587 (4.8)	1 (0.9)	~ ~
Madrid, Spain	74 (3.3)	526 (1.8)	24 (3.3)	495 (5.0)	2 (1.0)	~ ~
Abu Dhabi, UAE	16 (0.6)	467 (7.9)	3 (0.2)	550 (10.0)	81 (0.6)	425 (2.4)
Dubai, UAE	15 (0.3)	487 (4.3)	11 (0.2)	585 (2.5)	74 (0.3)	548 (2.0)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

**Exhibit 6.7: Schools with Students Having the Language of the Test as Their Native Language***Students' Results based on Principals' Reports*

Country	School has More than 90% of Students with Language of Test as Their Native Language		School has 51–90% of Students with Language of Test as Their Native Language		School has 50% or Less of Students with Language of Test as Their Native Language	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	99 (1.0)	489 (3.6)	1 (0.7)	~ ~	1 (0.8)	~ ~
Armenia	95 (1.6)	467 (3.5)	4 (1.3)	458 (9.9)	1 (0.8)	~ ~
Australia	48 (3.5)	537 (4.1)	34 (3.8)	530 (4.5)	17 (3.0)	522 (11.0)
Austria	21 (2.3)	542 (3.5)	46 (3.5)	533 (4.1)	34 (3.2)	495 (4.9)
Azerbaijan	97 (1.4)	419 (4.0)	3 (1.4)	428 (16.6)	0 (0.1)	~ ~
Bahrain	56 (1.8)	495 (4.9)	15 (1.7)	462 (11.2)	29 (1.6)	505 (4.5)
Belgium (Flemish)	37 (3.6)	515 (2.4)	39 (4.1)	504 (3.2)	24 (3.2)	475 (7.6)
Bosnia and Herzegovina	95 (1.8)	457 (2.9)	4 (1.7)	491 (7.4)	1 (0.8)	~ ~
Bulgaria	58 (4.0)	549 (7.4)	19 (2.9)	520 (8.8)	24 (3.1)	455 (10.7)
Canada	43 (2.3)	529 (3.0)	39 (2.8)	521 (3.0)	18 (2.1)	516 (3.7)
Chile	95 (1.8)	470 (2.8)	4 (1.8)	461 (13.2)	0 (0.2)	~ ~
Chinese Taipei	66 (3.3)	561 (2.1)	28 (3.5)	558 (2.6)	5 (1.7)	524 (12.7)
Croatia	92 (2.5)	525 (2.2)	6 (2.2)	528 (7.2)	2 (1.2)	~ ~
Cyprus	44 (4.0)	517 (4.6)	37 (4.0)	511 (3.6)	19 (2.5)	498 (7.8)
Czech Republic	91 (2.4)	532 (2.8)	9 (2.4)	547 (8.0)	0 (0.0)	~ ~
Denmark	52 (4.4)	527 (3.2)	42 (4.7)	520 (4.1)	6 (2.0)	505 (13.5)
England	43 (5.4)	543 (5.2)	45 (5.6)	534 (5.5)	13 (3.5)	535 (14.6)
Finland	69 (3.2)	562 (2.6)	28 (3.0)	543 (4.1)	3 (1.4)	494 (10.8)
France	64 (3.6)	498 (3.6)	28 (3.9)	480 (6.1)	9 (1.8)	442 (12.5)
Georgia	86 (3.1)	457 (4.2)	12 (2.9)	432 (8.7)	2 (0.9)	~ ~
Germany	25 (2.9)	541 (3.2)	53 (3.6)	521 (3.1)	22 (2.7)	486 (6.6)
Hong Kong SAR	74 (3.6)	527 (3.7)	11 (4.0)	533 (24.5)	15 (3.7)	551 (10.9)
Hungary	96 (1.8)	528 (2.9)	4 (1.8)	537 (26.7)	0 (0.0)	~ ~
Iran, Islamic Rep. of	57 (3.4)	459 (4.2)	12 (2.5)	453 (9.8)	31 (3.3)	404 (9.2)
Ireland	59 (3.6)	534 (3.2)	30 (3.6)	519 (7.3)	11 (2.7)	516 (8.0)
Italy	62 (3.9)	511 (3.8)	38 (3.9)	509 (3.9)	1 (0.7)	~ ~
Japan	98 (1.4)	561 (1.8)	2 (1.2)	~ ~	1 (0.7)	~ ~
Kazakhstan	55 (2.5)	480 (3.7)	27 (3.2)	515 (7.7)	18 (2.9)	507 (9.8)
Korea, Rep. of	94 (2.0)	589 (2.2)	6 (2.0)	569 (9.9)	0 (0.0)	~ ~
Kosovo	96 (1.4)	414 (3.8)	3 (1.2)	390 (16.9)	1 (0.7)	~ ~
Kuwait	79 (2.4)	389 (6.9)	4 (2.3)	465 (20.2)	17 (2.0)	394 (14.8)
Latvia	51 (3.3)	540 (3.2)	21 (3.2)	533 (6.4)	28 (1.0)	552 (3.9)
Lithuania	87 (2.8)	536 (3.3)	10 (2.4)	554 (10.7)	3 (1.2)	532 (15.2)
Malta	6 (0.2)	504 (4.8)	10 (0.2)	530 (3.9)	84 (0.3)	491 (1.4)
Montenegro	69 (0.5)	458 (2.8)	23 (0.5)	452 (3.9)	8 (0.3)	419 (6.4)
Morocco	67 (3.1)	376 (7.8)	11 (2.2)	371 (12.0)	22 (2.6)	368 (9.3)
Netherlands	53 (5.4)	532 (3.6)	37 (5.4)	509 (4.3)	10 (2.6)	484 (9.2)
New Zealand	52 (3.6)	499 (4.2)	29 (3.5)	517 (6.0)	20 (2.7)	492 (8.2)
North Macedonia	72 (3.2)	433 (7.6)	18 (3.3)	428 (11.0)	10 (2.7)	382 (13.0)
Northern Ireland	66 (4.3)	518 (3.4)	24 (4.3)	523 (6.6)	10 (2.7)	513 (9.7)
Norway (5)	54 (4.9)	542 (3.6)	40 (5.1)	540 (3.6)	6 (1.9)	519 (8.6)
Oman	78 (1.7)	435 (5.0)	7 (1.5)	393 (10.3)	15 (1.1)	452 (9.3)
Pakistan	5 (1.8)	306 (19.8)	4 (1.9)	244 (33.1)	91 (2.6)	295 (15.3)
Philippines	1 (0.7)	~ ~	2 (1.0)	~ ~	97 (1.1)	248 (7.7)
Poland	99 (1.0)	531 (2.6)	1 (1.0)	~ ~	0 (0.0)	~ ~
Portugal	86 (2.3)	505 (2.8)	11 (2.2)	502 (6.3)	4 (1.5)	488 (9.5)
Qatar	39 (2.8)	412 (5.8)	11 (2.2)	443 (13.5)	49 (2.3)	482 (6.8)
Russian Federation	75 (3.1)	569 (3.5)	15 (2.6)	568 (5.4)	10 (1.6)	553 (9.6)
Saudi Arabia	88 (2.3)	400 (4.3)	6 (1.9)	403 (14.9)	5 (1.3)	433 (20.1)
Serbia	91 (2.2)	521 (3.3)	8 (2.1)	477 (11.4)	1 (0.5)	~ ~
Singapore	0 (0.0)	~ ~	0 (0.0)	~ ~	100 (0.0)	595 (3.4)
Slovak Republic	90 (2.1)	532 (3.0)	5 (1.4)	451 (15.1)	5 (1.8)	402 (17.2)
South Africa (5)	10 (1.6)	387 (16.8)	10 (2.1)	492 (15.5)	80 (2.3)	303 (4.8)
Spain	58 (3.2)	518 (3.3)	28 (3.3)	506 (6.0)	14 (2.0)	494 (5.6)
Sweden	43 (4.3)	554 (4.0)	34 (4.6)	540 (4.2)	23 (4.1)	499 (8.2)
Turkey (5)	78 (3.1)	541 (4.6)	9 (2.0)	520 (6.2)	14 (2.4)	448 (13.8)
United Arab Emirates	26 (0.6)	482 (3.7)	5 (0.2)	552 (5.3)	69 (0.6)	461 (2.4)
United States	45 (3.0)	551 (4.3)	35 (3.0)	532 (5.8)	20 (2.5)	523 (6.0)
<b>International Average</b>	<b>63 (0.4)</b>	<b>498 (0.7)</b>	<b>18 (0.4)</b>	<b>493 (1.5)</b>	<b>19 (0.3)</b>	<b>471 (1.5)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	34 (3.5)	537 (6.0)	46 (4.7)	519 (4.2)	21 (3.4)	514 (5.1)
Quebec, Canada	60 (4.5)	523 (3.0)	25 (4.4)	522 (4.6)	15 (3.4)	520 (6.4)
Moscow City, Russian Fed.	75 (3.6)	596 (2.4)	24 (3.6)	591 (4.6)	1 (0.9)	~ ~
Madrid, Spain	74 (3.3)	530 (1.8)	24 (3.3)	504 (4.2)	2 (1.0)	~ ~
Abu Dhabi, UAE	16 (0.6)	468 (9.4)	3 (0.2)	541 (9.4)	81 (0.6)	397 (2.9)
Dubai, UAE	15 (0.3)	492 (5.0)	11 (0.2)	583 (2.8)	74 (0.3)	549 (2.2)

( ) Standard errors appear in parentheses. Because of rounding some results 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 6.8: Schools with Students Having the Language of the Test as Their Native Language***Students' Results based on Principals' Reports*

Country	School has More than 90% of Students with Language of Test as Their Native Language		School has 51–90% of Students with Language of Test as Their Native Language		School has 50% or Less of Students with Language of Test as Their Native Language	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	56 (3.8)	506 (4.2)	31 (3.5)	530 (8.8)	13 (2.8)	548 (16.7)
Bahrain	64 (0.3)	480 (1.9)	14 (0.2)	480 (7.2)	21 (0.3)	485 (3.0)
Chile	94 (2.0)	442 (3.1)	6 (2.0)	416 (13.9)	0 (0.0)	~ ~
Chinese Taipei	62 (3.3)	624 (3.8)	28 (3.5)	604 (5.2)	11 (2.1)	568 (8.9)
Cyprus	36 (0.4)	500 (3.0)	43 (0.5)	487 (2.6)	21 (0.4)	538 (4.3)
Egypt	99 (0.8)	413 (5.4)	1 (0.8)	~ ~	0 (0.0)	~ ~
England	50 (5.3)	516 (8.8)	35 (4.5)	529 (14.7)	15 (3.5)	506 (9.5)
Finland	75 (2.8)	510 (2.8)	23 (2.7)	507 (5.3)	1 (1.0)	~ ~
France	71 (3.7)	494 (3.2)	24 (3.5)	469 (6.3)	4 (1.9)	431 (10.9)
Georgia	86 (3.1)	462 (4.7)	12 (2.9)	458 (10.5)	2 (1.2)	~ ~
Hong Kong SAR	46 (3.5)	567 (6.5)	8 (2.6)	585 (26.5)	46 (4.1)	590 (7.8)
Hungary	98 (1.1)	516 (3.1)	2 (1.1)	~ ~	0 (0.0)	~ ~
Iran, Islamic Rep. of	48 (3.1)	465 (6.3)	12 (2.4)	457 (10.5)	40 (3.4)	420 (6.9)
Ireland	70 (4.0)	533 (2.6)	28 (4.0)	510 (5.3)	2 (1.4)	~ ~
Israel	65 (3.0)	515 (5.0)	30 (3.0)	527 (10.0)	5 (1.8)	518 (25.6)
Italy	59 (4.0)	500 (3.5)	37 (4.0)	499 (4.7)	4 (1.5)	472 (19.8)
Japan	99 (0.9)	594 (2.7)	1 (0.6)	~ ~	1 (0.6)	~ ~
Jordan	98 (0.8)	420 (4.3)	2 (0.4)	~ ~	1 (0.7)	~ ~
Kazakhstan	57 (2.6)	486 (5.2)	27 (3.2)	486 (5.9)	16 (2.9)	496 (10.1)
Korea, Rep. of	97 (1.3)	608 (2.7)	2 (1.2)	~ ~	1 (0.6)	~ ~
Kuwait	83 (3.1)	394 (5.0)	3 (1.5)	395 (27.0)	14 (2.8)	453 (13.4)
Lebanon	6 (2.1)	424 (6.8)	6 (2.1)	462 (17.9)	87 (2.9)	427 (3.7)
Lithuania	91 (2.2)	518 (2.9)	7 (2.0)	535 (16.6)	2 (0.8)	~ ~
Malaysia	47 (3.4)	462 (5.1)	29 (3.4)	447 (7.7)	24 (3.7)	473 (7.8)
Morocco	67 (3.7)	391 (2.9)	14 (2.6)	390 (6.7)	19 (2.9)	377 (5.3)
New Zealand	48 (4.8)	491 (5.2)	49 (5.0)	484 (5.3)	2 (1.1)	~ ~
Norway (9)	55 (5.0)	509 (3.5)	39 (4.8)	500 (5.2)	6 (1.8)	492 (7.5)
Oman	85 (1.6)	403 (3.0)	4 (1.1)	384 (5.9)	12 (1.2)	472 (9.8)
Portugal	85 (2.8)	502 (3.6)	9 (2.2)	481 (10.8)	6 (2.2)	500 (11.3)
Qatar	51 (2.6)	404 (5.7)	8 (2.2)	456 (22.7)	41 (2.5)	490 (5.4)
Romania	91 (1.9)	482 (4.5)	5 (1.6)	481 (18.8)	3 (1.1)	413 (16.8)
Russian Federation	75 (3.6)	552 (4.7)	14 (2.5)	536 (8.8)	11 (2.6)	500 (16.9)
Saudi Arabia	92 (1.8)	392 (2.6)	5 (1.6)	393 (13.4)	3 (0.8)	463 (27.6)
Singapore	0 (0.0)	~ ~	0 (0.0)	~ ~	100 (0.0)	616 (4.0)
South Africa (9)	9 (1.3)	444 (8.7)	10 (1.5)	453 (6.8)	81 (1.8)	377 (2.7)
Sweden	31 (3.6)	514 (6.2)	54 (3.8)	504 (3.2)	15 (3.3)	478 (6.7)
Turkey	77 (3.4)	508 (5.0)	9 (2.3)	479 (11.5)	13 (2.5)	435 (12.1)
United Arab Emirates	35 (0.9)	445 (3.8)	3 (0.2)	544 (7.6)	62 (0.9)	482 (2.0)
United States	50 (3.0)	522 (7.3)	39 (2.9)	515 (6.2)	10 (1.7)	509 (12.2)
<b>International Average</b>	<b>64 (0.5)</b>	<b>487 (0.8)</b>	<b>17 (0.4)</b>	<b>484 (2.1)</b>	<b>18 (0.3)</b>	<b>483 (2.3)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	46 (4.3)	521 (9.4)	41 (4.8)	536 (4.7)	13 (2.8)	527 (6.9)
Quebec, Canada	53 (4.6)	538 (4.6)	33 (4.9)	556 (6.6)	14 (3.3)	557 (13.2)
Moscow City, Russian Fed.	75 (3.5)	583 (4.8)	24 (3.4)	551 (7.3)	1 (0.8)	~ ~
Gauteng, RSA (9)	10 (2.9)	469 (17.7)	18 (3.0)	459 (9.6)	72 (3.4)	407 (3.8)
Western Cape, RSA (9)	32 (4.2)	446 (9.1)	27 (3.7)	479 (11.6)	40 (4.1)	413 (6.4)
Abu Dhabi, UAE	21 (0.7)	457 (8.4)	3 (0.1)	524 (13.6)	75 (0.7)	423 (3.5)
Dubai, UAE	20 (0.3)	453 (5.1)	6 (0.2)	585 (5.6)	74 (0.4)	553 (2.7)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
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**Exhibit 6.9: Schools with Students Having the Language of the Test as Their Native Language***Students' Results based on Principals' Reports*

Country	School has More than 90% of Students with Language of Test as Their Native Language		School has 51–90% of Students with Language of Test as Their Native Language		School has 50% or Less of Students with Language of Test as Their Native Language	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	56 (3.8)	525 (3.6)	31 (3.5)	536 (7.5)	13 (2.8)	540 (14.8)
Bahrain	64 (0.3)	474 (2.0)	14 (0.2)	498 (4.6)	21 (0.3)	515 (4.2)
Chile	94 (2.0)	464 (3.1)	6 (2.0)	434 (14.3)	0 (0.0)	~ ~
Chinese Taipei	62 (3.3)	583 (2.8)	28 (3.5)	569 (3.8)	11 (2.1)	539 (6.7)
Cyprus	36 (0.4)	481 (3.5)	43 (0.5)	473 (3.4)	21 (0.4)	514 (4.6)
Egypt	99 (0.8)	389 (5.6)	1 (0.8)	~ ~	0 (0.0)	~ ~
England	50 (5.3)	521 (8.4)	35 (4.5)	528 (13.5)	15 (3.5)	501 (10.9)
Finland	75 (2.8)	545 (3.2)	23 (2.7)	536 (7.0)	1 (1.0)	~ ~
France	71 (3.7)	500 (3.6)	24 (3.5)	473 (6.6)	4 (1.9)	434 (13.0)
Georgia	86 (3.1)	446 (4.1)	12 (2.9)	451 (9.0)	2 (1.2)	~ ~
Hong Kong SAR	46 (3.5)	494 (7.9)	8 (2.6)	540 (31.5)	46 (4.1)	507 (9.0)
Hungary	98 (1.1)	530 (2.8)	2 (1.1)	~ ~	0 (0.0)	~ ~
Iran, Islamic Rep. of	48 (3.1)	469 (5.8)	12 (2.4)	461 (9.7)	40 (3.4)	422 (6.7)
Ireland	70 (4.0)	532 (3.0)	28 (4.0)	509 (5.9)	2 (1.4)	~ ~
Israel	65 (3.0)	512 (5.1)	30 (3.0)	516 (9.2)	5 (1.8)	505 (25.3)
Italy	59 (4.0)	502 (3.4)	37 (4.0)	503 (4.7)	4 (1.5)	474 (24.1)
Japan	99 (0.9)	570 (2.2)	1 (0.6)	~ ~	1 (0.6)	~ ~
Jordan	98 (0.8)	451 (4.8)	2 (0.4)	~ ~	1 (0.7)	~ ~
Kazakhstan	57 (2.6)	467 (4.7)	27 (3.2)	491 (5.9)	16 (2.9)	495 (9.9)
Korea, Rep. of	97 (1.3)	561 (2.1)	2 (1.2)	~ ~	1 (0.6)	~ ~
Kuwait	83 (3.1)	439 (5.6)	3 (1.5)	442 (38.8)	14 (2.8)	472 (15.1)
Lebanon	6 (2.1)	362 (12.4)	6 (2.1)	424 (26.3)	87 (2.9)	376 (5.9)
Lithuania	91 (2.2)	531 (2.8)	7 (2.0)	544 (16.7)	2 (0.8)	~ ~
Malaysia	47 (3.4)	473 (5.1)	29 (3.4)	445 (8.6)	24 (3.7)	453 (8.2)
Morocco	67 (3.7)	409 (3.0)	14 (2.6)	407 (8.5)	19 (2.9)	392 (5.3)
New Zealand	48 (4.8)	512 (4.7)	49 (5.0)	498 (5.7)	2 (1.1)	~ ~
Norway (9)	55 (5.0)	504 (4.1)	39 (4.8)	491 (5.9)	6 (1.8)	468 (8.2)
Oman	85 (1.6)	453 (3.2)	4 (1.1)	432 (9.8)	12 (1.2)	496 (9.1)
Portugal	85 (2.8)	520 (3.2)	9 (2.2)	505 (10.1)	6 (2.2)	520 (11.3)
Qatar	51 (2.6)	449 (5.5)	8 (2.2)	487 (18.3)	41 (2.5)	504 (6.7)
Romania	91 (1.9)	473 (4.3)	5 (1.6)	473 (16.3)	3 (1.1)	402 (21.1)
Russian Federation	75 (3.6)	551 (3.7)	14 (2.5)	538 (8.3)	11 (2.6)	498 (16.5)
Saudi Arabia	92 (1.8)	430 (2.7)	5 (1.6)	432 (14.7)	3 (0.8)	495 (24.4)
Singapore	0 (0.0)	~ ~	0 (0.0)	~ ~	100 (0.0)	608 (3.9)
South Africa (9)	9 (1.3)	448 (11.6)	10 (1.5)	463 (8.2)	81 (1.8)	352 (3.7)
Sweden	31 (3.6)	536 (7.1)	54 (3.8)	524 (4.2)	15 (3.3)	486 (9.7)
Turkey	77 (3.4)	527 (4.4)	9 (2.3)	503 (10.1)	13 (2.5)	457 (10.6)
United Arab Emirates	35 (0.9)	450 (4.1)	3 (0.2)	544 (9.0)	62 (0.9)	478 (2.5)
United States	50 (3.0)	530 (7.4)	39 (2.9)	520 (5.7)	10 (1.7)	516 (12.1)
<b>International Average</b>	<b>64 (0.5)</b>	<b>490 (0.8)</b>	<b>17 (0.4)</b>	<b>491 (2.3)</b>	<b>18 (0.3)</b>	<b>479 (2.4)</b>
<b>Benchmarking Participants</b>						
Ontario, Canada	46 (4.3)	521 (6.0)	41 (4.8)	524 (4.2)	13 (2.8)	509 (6.4)
Quebec, Canada	53 (4.6)	534 (4.5)	33 (4.9)	550 (6.3)	14 (3.3)	542 (11.2)
Moscow City, Russian Fed.	75 (3.5)	572 (3.2)	24 (3.4)	549 (5.4)	1 (0.8)	~ ~
Gauteng, RSA (9)	10 (2.9)	485 (20.4)	18 (3.0)	474 (12.2)	72 (3.4)	404 (5.1)
Western Cape, RSA (9)	32 (4.2)	449 (10.8)	27 (3.7)	491 (13.6)	40 (4.1)	399 (8.4)
Abu Dhabi, UAE	21 (0.7)	465 (10.2)	3 (0.1)	523 (16.1)	75 (0.7)	399 (4.3)
Dubai, UAE	20 (0.3)	458 (5.5)	6 (0.2)	586 (5.8)	74 (0.4)	567 (2.5)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

## Students Enter Primary School with Literacy and Numeracy Skills

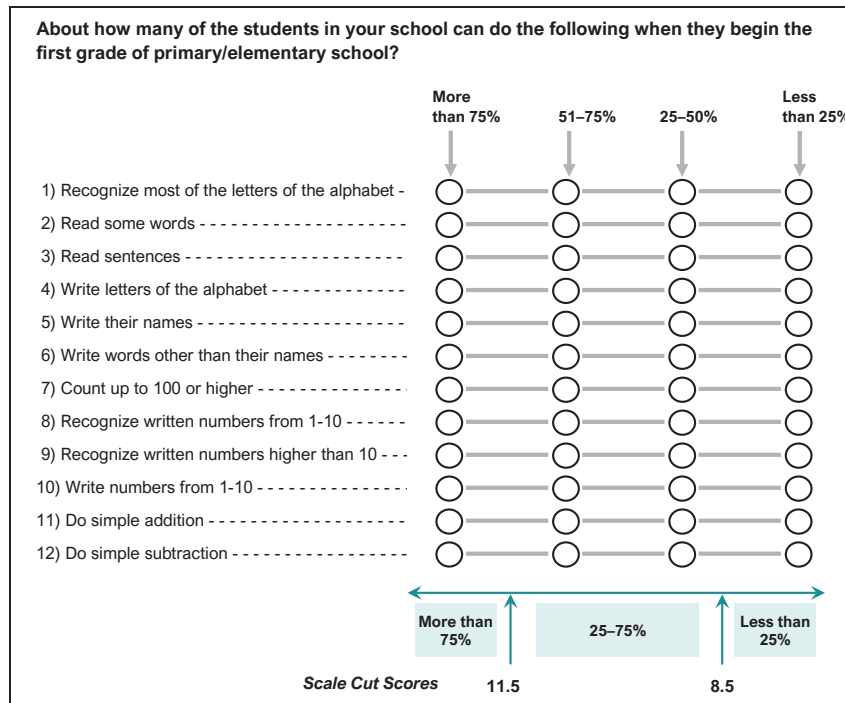
To collect information about the ability composition of the student intake into the primary grades, TIMSS asked school principals to estimate the percentage of students in the school who possess a range of literacy and numeracy skills when beginning primary school (see About the Scale in Exhibit 6.10).

Exhibits 6.11 and 6.12 present the percentages of students in each of three groups of schools categorized by their principals' reports, together with average mathematics and science achievement, respectively. There was considerable variation across countries in the percentage of students in the highest category—"more than 75% enter with skills"—from 89 percent in Ireland, where many students start preprimary school after their fourth birthday (as described in the *TIMSS 2019 Encyclopedia*), to 0 percent in the Czech Republic and Hungary. On average, 24 percent of students were in schools where "more than 75%" of the students entered school with literacy and numeracy skills, 56 percent were in schools where "25–75%" entered with such skills, and 20 percent in schools where "less than 25%" enter with literacy and numeracy skills.

For both mathematics and science, average achievement was higher for students in schools with greater percentages of entering students having literacy and numeracy skills. Students attending schools where "more than 75% enter with skills" had the highest achievement, followed by schools where "25–75% enter with skills," and students in schools with "less than 25%" having the lowest average achievement (508, 499, and 480, respectively, for mathematics and 499, 490, and 471, respectively, for science).

**Exhibit 6.10: Schools Where Students Enter the Primary Grades With Literacy and Numeracy Skills***Students' Results based on Principals' Reports***About the Scale**

Students were scored according to their principals' reports regarding the percentage of students in the school who begin primary school with the twelve skills on the *Schools Where Students Enter the Primary Grades with Literacy and Numeracy Skills* scale. Cut scores divide the scale into three categories. Students in **Schools Where More than 75% Enter with Skills** had a score at or above the cut score corresponding to their principals reporting that "more than 75%" of the students have six of the twelve skills and "51–75%" of the students have the other six, on average. Students in **Schools Where Less than 25% Enter with Skills** had a score at or below the cut score corresponding to their principals reporting that "less than 25%" of the students have six of the twelve skills and "25–50%" of the students have the other six, on average. All other students attended **Schools Where 25–75% Enter with Skills**.



SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
 Downloaded from <http://timss2019.org/download>

**Exhibit 6.11: Schools Where Students Enter the Primary Grades With Literacy and Numeracy Skills***Students' Results based on Principals' Reports*

Country	Schools Where More than 75% Enter with Skills		Schools Where 25–75% Enter with Skills		Schools Where Less than 25% Enter with Skills		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland	89 (2.6)	552 (2.6)	11 (2.6)	522 (9.8)	0 (0.4)	~ ~	12.7 (0.08)
Singapore	84 (0.0)	627 (4.5)	15 (0.0)	618 (9.0)	1 (0.0)	~ ~	12.7 (0.00)
Latvia	65 (4.1)	545 (3.5)	35 (4.1)	549 (3.5)	0 (0.0)	~ ~	11.8 (0.08)
Hong Kong SAR	65 (4.4)	607 (4.0)	35 (4.3)	593 (6.2)	1 (0.8)	~ ~	12.2 (0.13)
Korea, Rep. of	62 (4.0)	604 (2.8)	34 (4.1)	592 (4.1)	4 (1.9)	592 (18.9)	11.9 (0.15)
Spain	60 (2.9)	511 (2.5)	39 (2.8)	491 (3.5)	1 (0.8)	~ ~	11.8 (0.07)
United States	60 (3.1)	546 (3.4)	32 (3.1)	518 (6.0)	8 (1.6)	533 (7.2)	11.6 (0.12)
Chinese Taipei	59 (3.7)	599 (2.6)	39 (3.8)	601 (2.6)	2 (1.2)	~ ~	11.9 (0.13)
United Arab Emirates	r 57 (1.1)	504 (2.3)	34 (1.2)	449 (2.9)	9 (0.4)	435 (5.4)	11.6 (0.04)
Qatar	52 (3.5)	465 (5.8)	38 (3.8)	432 (5.6)	10 (2.7)	435 (13.3)	11.4 (0.15)
England	s 47 (5.1)	567 (8.0)	49 (5.1)	548 (4.4)	4 (1.9)	536 (21.5)	11.4 (0.16)
Bahrain	40 (2.6)	483 (3.9)	50 (2.9)	478 (3.8)	10 (1.8)	478 (5.3)	11.0 (0.10)
Philippines	39 (3.8)	310 (10.6)	55 (3.9)	288 (7.2)	6 (1.9)	287 (17.5)	11.1 (0.14)
Montenegro	37 (0.4)	451 (2.9)	61 (0.5)	454 (2.3)	2 (0.2)	~ ~	11.1 (0.01)
Kazakhstan	32 (3.6)	520 (4.8)	65 (3.6)	509 (3.6)	3 (1.2)	493 (17.8)	10.8 (0.11)
Sweden	31 (4.2)	531 (4.1)	62 (4.3)	516 (4.1)	6 (2.2)	504 (8.0)	11.0 (0.13)
Canada	30 (2.3)	522 (3.7)	64 (2.4)	510 (2.5)	6 (1.4)	491 (6.8)	10.8 (0.09)
Japan	28 (3.9)	598 (4.0)	69 (4.0)	591 (1.9)	3 (1.4)	588 (7.1)	10.9 (0.10)
Kuwait	27 (3.9)	403 (11.6)	50 (3.9)	385 (7.4)	24 (3.1)	353 (9.5)	10.2 (0.17)
Kosovo	25 (4.3)	449 (6.5)	64 (4.7)	443 (3.6)	11 (2.7)	438 (8.5)	10.4 (0.14)
Finland	24 (3.4)	540 (4.8)	74 (3.6)	531 (2.5)	3 (1.0)	496 (16.7)	10.8 (0.08)
Albania	21 (3.8)	506 (8.7)	75 (4.1)	490 (4.4)	4 (1.6)	509 (16.7)	10.6 (0.11)
Oman	21 (2.7)	447 (7.4)	68 (3.1)	430 (4.6)	12 (2.2)	406 (9.9)	10.3 (0.10)
Pakistan	20 (6.3)	365 (29.0)	45 (5.6)	306 (11.4)	35 (6.7)	336 (24.1)	9.4 (0.39)
Bulgaria	20 (3.2)	556 (4.7)	54 (4.5)	521 (6.5)	26 (3.5)	471 (9.3)	9.8 (0.14)
Saudi Arabia	20 (2.8)	415 (7.2)	54 (3.4)	402 (4.7)	27 (3.3)	381 (8.4)	9.8 (0.14)
Poland	18 (3.4)	523 (6.5)	77 (3.7)	520 (3.2)	5 (1.9)	505 (9.7)	10.5 (0.11)
Georgia	18 (3.6)	494 (7.6)	48 (4.2)	483 (5.2)	34 (4.0)	474 (7.5)	9.6 (0.21)
Lithuania	18 (2.6)	554 (7.6)	77 (2.8)	541 (3.3)	6 (1.4)	524 (8.8)	10.4 (0.10)
Azerbaijan	17 (2.7)	510 (7.2)	55 (3.5)	517 (3.8)	28 (3.4)	517 (5.3)	9.8 (0.13)
Russian Federation	15 (2.8)	576 (6.2)	68 (3.0)	570 (3.3)	17 (2.5)	549 (9.5)	10.0 (0.11)
Turkey (5)	14 (3.0)	540 (9.5)	36 (3.7)	536 (7.8)	49 (4.2)	507 (7.3)	9.1 (0.21)
Chile	13 (2.8)	481 (9.7)	60 (4.0)	438 (4.6)	27 (4.0)	430 (5.1)	9.7 (0.15)
Malta	13 (0.3)	519 (3.4)	68 (0.4)	512 (1.6)	19 (0.3)	490 (2.8)	9.8 (0.01)
France	13 (3.1)	503 (9.0)	83 (3.6)	483 (3.5)	4 (1.7)	455 (10.5)	10.3 (0.10)
Netherlands	s 12 (3.8)	543 (7.2)	80 (5.1)	537 (2.7)	8 (3.7)	531 (11.5)	10.1 (0.13)
South Africa (5)	11 (1.9)	413 (18.4)	75 (3.3)	363 (4.1)	14 (2.8)	404 (12.9)	9.9 (0.11)
Portugal	10 (2.1)	536 (8.1)	68 (3.3)	526 (3.0)	22 (2.9)	521 (6.7)	9.4 (0.11)
Morocco	9 (2.1)	412 (15.6)	42 (3.5)	396 (8.0)	49 (3.1)	368 (6.8)	8.6 (0.13)
Australia	9 (2.1)	526 (9.3)	43 (3.4)	530 (4.8)	47 (3.3)	498 (4.6)	8.9 (0.13)
Armenia	8 (2.2)	492 (9.5)	56 (4.1)	504 (3.6)	36 (4.0)	491 (4.3)	9.1 (0.13)
Croatia	7 (2.3)	515 (15.0)	83 (3.2)	510 (2.3)	9 (2.4)	506 (5.7)	9.9 (0.10)
Iran, Islamic Rep. of	6 (2.0)	425 (9.9)	29 (3.9)	452 (8.1)	65 (3.9)	442 (5.9)	8.1 (0.15)
Cyprus	6 (2.0)	558 (9.6)	61 (4.2)	535 (3.7)	33 (3.9)	522 (5.7)	9.1 (0.12)
Denmark	r 5 (2.1)	531 (12.5)	81 (3.7)	526 (2.5)	15 (3.2)	518 (5.0)	9.6 (0.09)
Bosnia and Herzegovina	5 (1.9)	469 (12.9)	67 (4.1)	451 (3.1)	28 (3.8)	450 (4.4)	9.3 (0.10)
Italy	4 (1.8)	506 (8.3)	67 (4.1)	517 (3.2)	28 (4.1)	513 (4.1)	9.2 (0.12)
Norway (5)	r 4 (1.6)	556 (8.5)	75 (4.2)	548 (2.7)	21 (4.2)	527 (6.1)	9.3 (0.12)
North Macedonia	4 (1.3)	447 (31.3)	64 (4.5)	484 (5.5)	32 (4.4)	453 (9.5)	9.1 (0.13)
Serbia	4 (1.7)	531 (26.3)	77 (3.9)	512 (3.3)	19 (4.1)	486 (9.5)	9.5 (0.12)
New Zealand	3 (1.1)	528 (21.8)	48 (3.7)	505 (4.6)	49 (3.6)	468 (4.8)	8.4 (0.11)
Austria	3 (1.3)	527 (12.8)	53 (3.4)	545 (3.3)	44 (3.6)	534 (3.2)	8.8 (0.08)
Belgium (Flemish)	2 (1.3)	~ ~	79 (4.0)	535 (2.4)	18 (3.8)	521 (5.7)	9.3 (0.09)
Slovak Republic	1 (1.0)	~ ~	70 (3.2)	518 (2.9)	29 (3.1)	485 (8.2)	9.0 (0.09)
Germany	1 (0.6)	~ ~	68 (3.5)	527 (2.7)	31 (3.5)	508 (5.0)	8.9 (0.07)
Czech Republic	0 (0.0)	~ ~	60 (4.0)	539 (3.1)	40 (4.0)	525 (4.6)	8.7 (0.08)
Hungary	0 (0.0)	~ ~	32 (4.0)	534 (5.6)	68 (4.0)	517 (3.8)	7.8 (0.10)
Northern Ireland	- -	- -	- -	- -	- -	- -	- -
International Average	24 (0.4)	508 (1.5)	56 (0.5)	499 (0.6)	20 (0.4)	480 (1.4)	
Benchmarking Participants							
Dubai, UAE	r 75 (0.3)	555 (2.0)	18 (0.2)	515 (3.2)	7 (0.3)	504 (4.8)	12.2 (0.01)
Madrid, Spain	72 (3.4)	521 (2.6)	28 (3.4)	513 (3.9)	0 (0.5)	~ ~	12.2 (0.09)
Abu Dhabi, UAE	r 44 (1.7)	470 (3.4)	42 (1.8)	413 (3.6)	14 (0.9)	394 (11.0)	11.1 (0.06)
Moscow City, Russian Fed.	40 (4.3)	594 (3.4)	57 (4.4)	591 (2.8)	2 (1.3)	~ ~	11.2 (0.11)
Ontario, Canada	35 (4.1)	527 (6.2)	61 (4.3)	505 (4.4)	5 (2.0)	486 (7.4)	11.0 (0.16)
Quebec, Canada	21 (3.5)	538 (5.3)	72 (4.0)	531 (2.9)	7 (2.4)	527 (5.1)	10.6 (0.14)

This TIMSS context questionnaire scale was established in 2015 based on the combined response distribution of all countries that participated in TIMSS 2015. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

A dash (-) indicates comparable data 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

**Exhibit 6.12: Schools Where Students Enter the Primary Grades With Literacy and Numeracy Skills***Students' Results based on Principals' Reports*

Country	Schools Where More than 75% Enter with Skills		Schools Where 25–75% Enter with Skills		Schools Where Less than 25% Enter with Skills		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland	89 (2.6)	531 (3.4)	11 (2.6)	505 (9.6)	0 (0.4)	~ ~	12.7 (0.08)
Singapore	84 (0.0)	596 (4.0)	15 (0.0)	586 (8.1)	1 (0.0)	~ ~	12.7 (0.00)
Latvia	65 (4.1)	541 (3.2)	35 (4.1)	544 (3.1)	0 (0.0)	~ ~	11.8 (0.08)
Hong Kong SAR	65 (4.4)	536 (4.0)	35 (4.3)	523 (5.8)	1 (0.8)	~ ~	12.2 (0.13)
Korea, Rep. of	62 (4.0)	592 (2.7)	34 (4.1)	581 (3.9)	4 (1.9)	583 (14.0)	11.9 (0.15)
Spain	60 (2.9)	520 (2.5)	39 (2.8)	499 (3.6)	1 (0.8)	~ ~	11.8 (0.07)
United States	60 (3.1)	549 (3.7)	32 (3.1)	521 (6.0)	8 (1.6)	539 (8.6)	11.6 (0.12)
Chinese Taipei	59 (3.7)	558 (2.5)	39 (3.8)	560 (2.4)	2 (1.2)	~ ~	11.9 (0.13)
United Arab Emirates	r 57 (1.1)	500 (2.7)	34 (1.2)	435 (4.0)	9 (0.4)	420 (6.9)	11.6 (0.04)
Qatar	52 (3.5)	466 (6.4)	38 (3.8)	430 (6.6)	10 (2.7)	441 (18.2)	11.4 (0.15)
England	s 47 (5.1)	547 (6.8)	49 (5.1)	529 (4.7)	4 (1.9)	521 (21.1)	11.4 (0.16)
Bahrain	40 (2.6)	502 (5.6)	50 (2.9)	490 (5.6)	10 (1.8)	477 (7.3)	11.0 (0.10)
Philippines	39 (3.8)	267 (12.6)	55 (3.9)	238 (8.4)	6 (1.9)	236 (17.3)	11.1 (0.14)
Montenegro	37 (0.4)	451 (3.6)	61 (0.5)	454 (2.8)	2 (0.2)	~ ~	11.1 (0.01)
Kazakhstan	32 (3.6)	500 (6.1)	65 (3.6)	492 (4.3)	3 (1.2)	476 (23.7)	10.8 (0.11)
Sweden	31 (4.2)	550 (4.5)	62 (4.3)	531 (4.8)	6 (2.2)	515 (9.7)	11.0 (0.13)
Canada	30 (2.3)	532 (3.4)	64 (2.4)	521 (2.2)	6 (1.4)	500 (5.0)	10.8 (0.09)
Japan	28 (3.9)	566 (4.2)	69 (4.0)	560 (1.8)	3 (1.4)	559 (7.4)	10.9 (0.10)
Kuwait	27 (3.9)	405 (14.6)	50 (3.9)	396 (8.4)	24 (3.1)	368 (11.0)	10.2 (0.17)
Kosovo	25 (4.3)	421 (7.5)	64 (4.7)	411 (4.6)	11 (2.7)	402 (10.6)	10.4 (0.14)
Finland	24 (3.4)	563 (4.6)	74 (3.6)	553 (2.8)	3 (1.0)	518 (19.2)	10.8 (0.08)
Albania	21 (3.8)	501 (7.6)	75 (4.1)	486 (4.9)	4 (1.6)	497 (16.0)	10.6 (0.11)
Oman	21 (2.7)	455 (7.6)	68 (3.1)	434 (5.2)	12 (2.2)	405 (12.1)	10.3 (0.10)
Pakistan	20 (6.3)	341 (25.5)	45 (5.6)	271 (13.9)	35 (6.7)	287 (27.7)	9.4 (0.39)
Bulgaria	20 (3.2)	574 (5.8)	54 (4.5)	532 (7.3)	26 (3.5)	459 (11.2)	9.8 (0.14)
Saudi Arabia	20 (2.8)	420 (7.9)	54 (3.4)	409 (5.4)	27 (3.3)	377 (9.7)	9.8 (0.14)
Poland	18 (3.4)	534 (5.5)	77 (3.7)	531 (3.1)	5 (1.9)	512 (8.5)	10.5 (0.11)
Georgia	18 (3.6)	470 (7.7)	48 (4.2)	456 (5.4)	34 (4.0)	444 (7.6)	9.6 (0.21)
Lithuania	18 (2.6)	549 (7.4)	77 (2.8)	537 (3.1)	6 (1.4)	518 (8.6)	10.4 (0.10)
Azerbaijan	17 (2.7)	420 (8.2)	55 (3.5)	429 (4.7)	28 (3.4)	426 (6.5)	9.8 (0.13)
Russian Federation	15 (2.8)	577 (5.9)	68 (3.0)	570 (3.0)	17 (2.5)	548 (9.2)	10.0 (0.11)
Turkey (5)	14 (3.0)	542 (8.3)	36 (3.7)	538 (6.9)	49 (4.2)	511 (7.1)	9.1 (0.21)
Chile	13 (2.8)	506 (8.8)	60 (4.0)	466 (4.3)	27 (4.0)	460 (4.7)	9.7 (0.15)
Malta	13 (0.3)	509 (3.5)	68 (0.4)	499 (1.3)	19 (0.3)	475 (2.8)	9.8 (0.01)
France	13 (3.1)	505 (9.7)	83 (3.6)	486 (3.3)	4 (1.7)	467 (16.7)	10.3 (0.10)
Netherlands	s 12 (3.8)	528 (10.3)	80 (5.1)	517 (3.4)	8 (3.7)	515 (13.2)	10.1 (0.13)
South Africa (5)	11 (1.9)	382 (24.9)	75 (3.3)	309 (5.7)	14 (2.8)	369 (17.5)	9.9 (0.11)
Portugal	10 (2.1)	513 (6.7)	68 (3.3)	505 (2.9)	22 (2.9)	500 (5.0)	9.4 (0.11)
Morocco	9 (2.1)	398 (21.3)	42 (3.5)	390 (9.3)	49 (3.1)	356 (7.9)	8.6 (0.13)
Australia	9 (2.1)	548 (7.0)	43 (3.4)	545 (4.3)	47 (3.3)	517 (4.0)	8.9 (0.13)
Armenia	8 (2.2)	460 (11.4)	56 (4.1)	472 (4.3)	36 (4.0)	459 (5.6)	9.1 (0.13)
Croatia	7 (2.3)	531 (9.8)	83 (3.2)	525 (2.3)	9 (2.4)	518 (6.4)	9.9 (0.10)
Iran, Islamic Rep. of	6 (2.0)	432 (7.8)	29 (3.9)	451 (8.1)	65 (3.9)	438 (6.0)	8.1 (0.15)
Cyprus	6 (2.0)	539 (12.0)	61 (4.2)	513 (3.8)	33 (3.9)	503 (5.5)	9.1 (0.12)
Denmark	r 5 (2.1)	523 (11.1)	81 (3.7)	523 (2.8)	15 (3.2)	515 (4.9)	9.6 (0.09)
Bosnia and Herzegovina	5 (1.9)	479 (14.0)	67 (4.1)	457 (3.7)	28 (3.8)	459 (4.7)	9.3 (0.10)
Italy	4 (1.8)	502 (6.6)	67 (4.1)	512 (3.7)	28 (4.1)	507 (4.6)	9.2 (0.12)
Norway (5)	r 4 (1.6)	548 (10.2)	75 (4.2)	545 (2.5)	21 (4.2)	522 (6.3)	9.3 (0.12)
North Macedonia	4 (1.3)	388 (35.7)	64 (4.5)	438 (6.9)	32 (4.4)	409 (10.5)	9.1 (0.13)
Serbia	4 (1.7)	541 (26.3)	77 (3.9)	522 (3.5)	19 (4.1)	494 (9.7)	9.5 (0.12)
New Zealand	3 (1.1)	538 (17.6)	48 (3.7)	519 (3.6)	49 (3.6)	485 (4.5)	8.4 (0.11)
Austria	3 (1.3)	513 (18.9)	53 (3.4)	531 (3.6)	44 (3.6)	512 (4.2)	8.8 (0.08)
Belgium (Flemish)	2 (1.3)	~ ~	79 (4.0)	504 (2.6)	18 (3.8)	487 (5.7)	9.3 (0.09)
Slovak Republic	1 (1.0)	~ ~	70 (3.2)	532 (2.9)	29 (3.1)	489 (9.8)	9.0 (0.09)
Germany	1 (0.6)	~ ~	68 (3.5)	525 (2.7)	31 (3.5)	503 (5.2)	8.9 (0.07)
Czech Republic	0 (0.0)	~ ~	60 (4.0)	538 (3.2)	40 (4.0)	527 (4.1)	8.7 (0.08)
Hungary	0 (0.0)	~ ~	32 (4.0)	537 (5.3)	68 (4.0)	525 (3.7)	7.8 (0.10)
Northern Ireland	- -	- -	- -	- -	- -	- -	- -
International Average	24 (0.4)	499 (1.6)	56 (0.5)	490 (0.7)	20 (0.4)	471 (1.6)	
Benchmarking Participants							
Dubai, UAE	r 75 (0.3)	556 (2.2)	18 (0.2)	513 (3.5)	7 (0.3)	515 (6.1)	12.2 (0.01)
Madrid, Spain	72 (3.4)	526 (2.4)	28 (3.4)	517 (3.5)	0 (0.5)	~ ~	12.2 (0.09)
Abu Dhabi, UAE	r 44 (1.7)	459 (3.6)	42 (1.8)	381 (5.1)	14 (0.9)	360 (14.2)	11.1 (0.06)
Moscow City, Russian Fed.	40 (4.3)	597 (3.3)	57 (4.4)	593 (2.8)	2 (1.3)	~ ~	11.2 (0.11)
Ontario, Canada	35 (4.1)	534 (5.9)	61 (4.3)	521 (3.8)	5 (2.0)	491 (7.6)	11.0 (0.16)
Quebec, Canada	21 (3.5)	525 (4.0)	72 (4.0)	523 (3.2)	7 (2.4)	509 (4.5)	10.6 (0.14)

This TIMSS context questionnaire scale was established in 2015 based on the combined response distribution of all countries that participated in TIMSS 2015. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

A dash (-) indicates comparable data 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
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## Instruction Affected by Resource Shortages

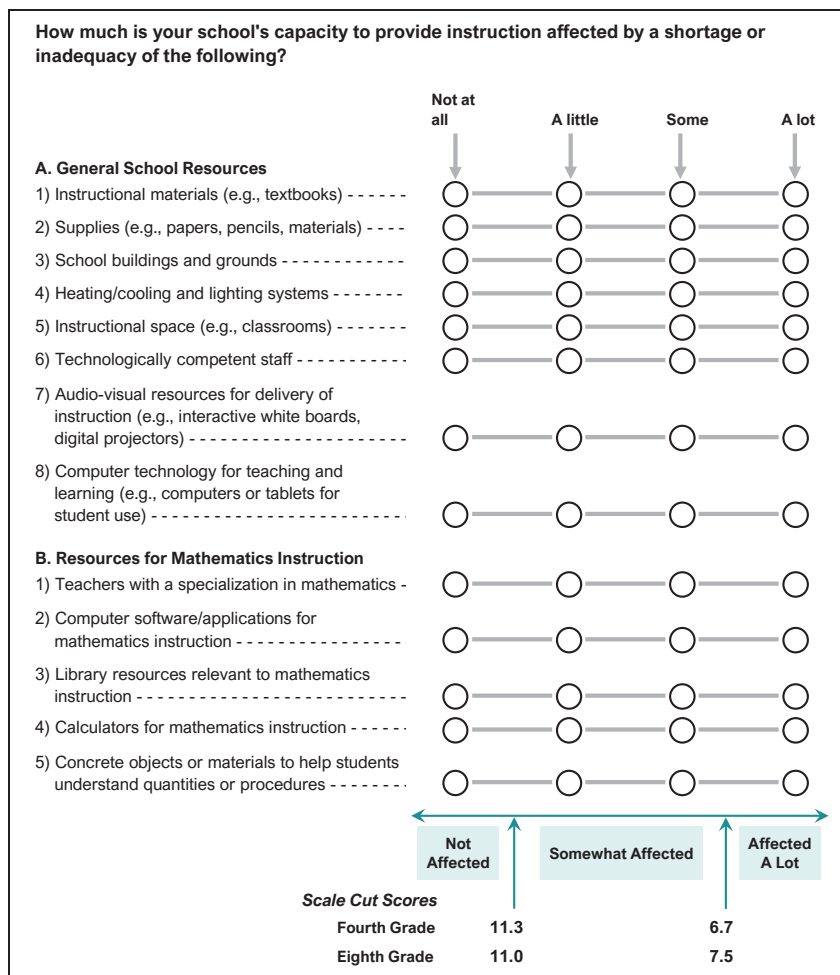
### Instruction Affected by Mathematics Resource Shortages

The *Instruction Affected by Mathematics Resource Shortages* scale, described in Exhibit 6.13, summarizes principals' reports about two kinds of resource shortages affecting instruction: general school resources and resources specific to mathematics instruction (see About the Scale). In Exhibit 6.14, countries are ordered (from most to least) according to the percentage of fourth grade students in schools "not affected" by resource shortages, from a high of 68 percent in Korea to a low of 0 percent in Kosovo. On average, 26 percent of fourth grade students attended schools "not affected" by resource shortages, and they had the highest average mathematics achievement (514). Sixty-eight percent of the students were in schools "somewhat affected" by resource shortages, and 6 percent were in schools "affected a lot." Average mathematics achievement for these two groups was 499 and 473, respectively.

Exhibit 6.15 presents the results of the *Instruction Affected by Mathematics Resource Shortages* scale for eighth grade students. Similar to fourth grade, the percentage of students in schools "not affected" by resource shortages ranged from a high of 73 percent to a low of 2 percent, with an average of 30 percent. Sixty-three percent of the students were in schools "somewhat affected" by resource shortages, and 7 percent were in schools "affected a lot." As in fourth grade, average mathematics achievement was highest for students in schools "not affected" by resource shortages (509), next for students in "somewhat affected" schools (483), and lowest for students in schools that were "affected a lot" (476).

**Exhibit 6.13: Instruction Affected by Mathematics Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports***About the Scale**

Students were scored according to their principals' responses regarding thirteen school and classroom resources on the *Instruction Affected by Mathematics Resource Shortages* scale. Cut scores divide the scale into three categories. Students in schools where instruction was **Not Affected** by resource shortages had a score at or above the cut score corresponding to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score at or below the cut score corresponding to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.



SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
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**Exhibit 6.14: Instruction Affected by Mathematics Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports*

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Korea, Rep. of	68 (4.0)	601 (2.8)	30 (3.9)	594 (4.0)	2 (0.7)	~ ~	12.3 (0.23)
Singapore	61 (0.0)	624 (5.2)	27 (0.0)	635 (6.8)	12 (0.0)	611 (10.0)	11.5 (0.00)
Norway (5)	52 (5.3)	544 (4.0)	48 (5.3)	544 (3.5)	0 (0.0)	~ ~	11.3 (0.15)
Bulgaria	50 (4.1)	523 (4.4)	50 (4.1)	507 (7.1)	0 (0.0)	~ ~	11.4 (0.17)
United States	49 (2.9)	538 (4.4)	49 (2.8)	532 (4.5)	1 (0.7)	~ ~	11.4 (0.14)
Kazakhstan	45 (4.1)	513 (4.5)	49 (4.0)	509 (4.0)	6 (2.0)	526 (18.3)	11.2 (0.25)
Australia	44 (4.0)	523 (5.9)	53 (3.9)	509 (4.2)	3 (1.4)	485 (20.2)	11.3 (0.18)
Poland	43 (4.0)	526 (4.2)	57 (4.0)	516 (3.3)	0 (0.0)	~ ~	11.2 (0.16)
Canada	43 (2.4)	521 (2.9)	56 (2.4)	504 (2.5)	1 (0.6)	~ ~	11.1 (0.12)
Sweden	43 (4.7)	522 (4.0)	57 (4.7)	521 (3.7)	1 (0.8)	~ ~	10.8 (0.18)
Qatar	42 (3.7)	474 (6.3)	27 (3.5)	445 (7.1)	31 (3.2)	420 (5.6)	9.7 (0.34)
United Arab Emirates	40 (1.8)	509 (2.1)	44 (1.7)	454 (2.6)	16 (1.9)	474 (4.0)	10.2 (0.19)
Belgium (Flemish)	39 (4.2)	532 (3.7)	59 (4.3)	533 (2.6)	1 (0.8)	~ ~	11.0 (0.19)
Cyprus	39 (4.5)	539 (4.5)	57 (4.3)	526 (4.4)	4 (2.1)	539 (14.3)	10.7 (0.25)
Denmark	38 (3.9)	530 (3.3)	59 (3.7)	522 (2.7)	2 (0.8)	~ ~	10.8 (0.17)
New Zealand	38 (3.9)	497 (6.4)	60 (4.1)	482 (4.2)	2 (1.1)	~ ~	11.0 (0.19)
Finland	38 (4.3)	532 (3.6)	62 (4.3)	532 (3.1)	0 (0.0)	~ ~	10.8 (0.13)
Armenia	37 (4.0)	505 (4.8)	62 (4.1)	495 (3.3)	1 (1.0)	~ ~	10.7 (0.15)
Latvia	35 (3.7)	536 (6.0)	65 (3.7)	551 (2.8)	0 (0.0)	~ ~	10.8 (0.13)
Netherlands	35 (6.5)	541 (4.7)	65 (6.5)	536 (2.7)	0 (0.0)	~ ~	10.7 (0.19)
Spain	35 (3.3)	515 (3.0)	65 (3.3)	496 (3.2)	0 (0.3)	~ ~	10.8 (0.10)
Georgia	33 (4.1)	477 (7.3)	66 (4.2)	485 (4.5)	1 (0.7)	~ ~	10.7 (0.16)
Chile	31 (4.1)	463 (7.0)	65 (4.3)	430 (3.5)	4 (1.7)	443 (13.5)	10.4 (0.19)
Czech Republic	30 (4.0)	534 (4.3)	69 (4.1)	532 (3.6)	1 (0.8)	~ ~	10.8 (0.12)
Russian Federation	28 (3.1)	576 (6.8)	69 (3.3)	562 (3.3)	2 (1.1)	~ ~	10.3 (0.14)
Chinese Taipei	25 (3.4)	600 (4.3)	72 (3.5)	599 (2.3)	3 (1.3)	603 (9.1)	10.4 (0.15)
Bahrain	25 (2.4)	495 (4.6)	48 (2.6)	480 (2.8)	27 (2.2)	467 (6.2)	9.0 (0.18)
Hungary	25 (3.7)	520 (6.6)	73 (3.9)	523 (3.6)	2 (1.6)	~ ~	10.0 (0.17)
Japan	25 (3.5)	598 (4.1)	75 (3.6)	591 (2.0)	1 (0.7)	~ ~	10.4 (0.12)
Lithuania	23 (4.0)	542 (6.4)	76 (4.1)	542 (3.8)	1 (0.8)	~ ~	10.4 (0.17)
England	23 (4.1)	566 (10.7)	77 (4.1)	555 (5.0)	0 (0.0)	~ ~	10.6 (0.16)
Malta	22 (0.4)	523 (2.4)	76 (0.4)	505 (1.6)	1 (0.1)	~ ~	10.3 (0.02)
Hong Kong SAR	22 (3.0)	602 (6.1)	72 (3.9)	600 (4.4)	6 (2.5)	628 (17.8)	9.8 (0.22)
Kuwait	21 (3.0)	398 (9.1)	59 (4.4)	374 (6.9)	21 (3.7)	394 (14.0)	8.7 (0.22)
Serbia	20 (3.5)	524 (6.8)	79 (3.5)	504 (3.6)	1 (0.9)	~ ~	9.9 (0.12)
Germany	19 (2.7)	524 (5.8)	81 (2.7)	521 (2.6)	0 (0.3)	~ ~	10.1 (0.10)
Northern Ireland	18 (3.7)	571 (10.7)	82 (3.7)	566 (3.5)	0 (0.0)	~ ~	9.9 (0.14)
Austria	18 (2.8)	555 (5.7)	81 (2.9)	536 (2.1)	1 (0.7)	~ ~	10.2 (0.09)
Portugal	16 (2.7)	531 (5.9)	83 (2.8)	524 (3.1)	1 (0.7)	~ ~	9.9 (0.13)
Croatia	16 (2.8)	518 (6.6)	84 (2.8)	509 (2.3)	0 (0.0)	~ ~	10.1 (0.12)
Ireland	16 (3.4)	568 (6.8)	83 (3.5)	545 (2.7)	1 (0.7)	~ ~	10.2 (0.11)
Slovak Republic	15 (2.9)	524 (8.0)	79 (3.1)	506 (3.8)	6 (1.6)	529 (17.6)	9.4 (0.13)
Italy	15 (2.8)	525 (7.3)	83 (3.0)	514 (2.6)	2 (1.3)	~ ~	9.9 (0.12)
Oman	14 (2.0)	449 (7.9)	72 (2.8)	428 (5.0)	14 (2.2)	426 (11.8)	8.9 (0.13)
France	14 (2.8)	504 (7.9)	86 (2.8)	482 (3.4)	0 (0.0)	~ ~	9.8 (0.12)
Bosnia and Herzegovina	12 (2.7)	454 (4.9)	83 (3.3)	452 (2.8)	5 (1.7)	442 (18.1)	9.5 (0.14)
Montenegro	10 (0.2)	438 (8.8)	83 (0.3)	456 (2.0)	7 (0.2)	441 (4.0)	9.3 (0.02)
Saudi Arabia	9 (1.8)	409 (11.6)	72 (3.0)	393 (4.7)	19 (2.5)	416 (8.4)	8.6 (0.13)
Pakistan	8 (2.7)	288 (28.7)	89 (3.1)	329 (12.9)	3 (1.3)	388 (29.6)	9.1 (0.17)
Iran, Islamic Rep. of	8 (1.9)	470 (13.1)	84 (2.6)	443 (4.0)	8 (2.0)	414 (10.5)	8.6 (0.13)
South Africa (5)	8 (1.7)	454 (22.6)	87 (2.4)	368 (3.5)	6 (1.6)	376 (18.9)	9.1 (0.11)
North Macedonia	8 (2.3)	469 (20.1)	79 (3.7)	475 (6.1)	14 (3.0)	461 (15.0)	8.7 (0.17)
Albania	6 (1.7)	550 (16.5)	78 (3.1)	489 (4.1)	15 (2.8)	495 (8.3)	8.7 (0.15)
Morocco	6 (1.7)	362 (24.8)	90 (2.5)	379 (5.1)	4 (1.8)	508 (44.5)	9.5 (0.11)
Turkey (5)	5 (1.7)	556 (17.7)	72 (2.8)	524 (5.5)	23 (3.0)	513 (10.9)	8.1 (0.16)
Azerbaijan	2 (1.0)	~ ~	89 (2.1)	516 (2.9)	9 (1.9)	509 (8.8)	8.5 (0.09)
Philippines	1 (0.4)	~ ~	95 (1.4)	294 (6.7)	4 (1.4)	336 (16.6)	8.7 (0.09)
Kosovo	0 (0.0)	~ ~	72 (4.1)	445 (3.9)	28 (4.1)	443 (4.4)	7.5 (0.20)
<b>International Average</b>	<b>26 (0.4)</b>	<b>514 (1.3)</b>	<b>68 (0.5)</b>	<b>499 (0.6)</b>	<b>6 (0.2)</b>	<b>473 (3.2)</b>	
<b>Benchmarking Participants</b>							
Moscow City, Russian Fed.	65 (4.1)	591 (3.1)	35 (4.1)	596 (3.0)	0 (0.0)	~ ~	12.5 (0.25)
Dubai, UAE	55 (0.3)	554 (2.5)	29 (0.3)	519 (2.3)	16 (0.2)	557 (4.6)	10.9 (0.02)
Madrid, Spain	50 (3.8)	520 (3.0)	50 (3.8)	516 (3.8)	0 (0.4)	~ ~	11.6 (0.16)
Quebec, Canada	49 (4.2)	535 (3.3)	49 (4.2)	529 (3.5)	3 (1.6)	539 (25.6)	11.2 (0.22)
Abu Dhabi, UAE	36 (1.5)	469 (2.7)	51 (1.8)	411 (3.7)	13 (1.4)	436 (11.0)	10.2 (0.09)
Ontario, Canada	35 (4.4)	530 (6.5)	64 (4.4)	501 (3.8)	1 (0.6)	~ ~	10.9 (0.19)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
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**Exhibit 6.15: Instruction Affected by Mathematics Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports*

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Singapore	73 (0.0)	617 (4.7)	21 (0.0)	610 (9.2)	6 (0.0)	625 (20.1)	12.1 (0.00)
Australia	62 (3.5)	535 (5.7)	37 (3.5)	493 (4.8)	2 (1.2)	~ ~	11.4 (0.13)
Norway (9)	59 (4.8)	507 (4.1)	41 (4.8)	502 (4.0)	0 (0.0)	~ ~	11.2 (0.10)
France	57 (4.4)	493 (3.9)	42 (4.3)	474 (4.0)	1 (0.8)	~ ~	11.4 (0.14)
Korea, Rep. of	52 (4.1)	611 (4.0)	44 (4.3)	602 (4.6)	4 (1.9)	601 (6.9)	11.3 (0.16)
New Zealand	51 (4.7)	500 (6.3)	45 (4.9)	473 (5.0)	5 (4.0)	473 (66.4)	11.0 (0.30)
United States	49 (3.0)	533 (5.3)	49 (3.0)	504 (7.4)	2 (1.0)	~ ~	11.1 (0.12)
Qatar	44 (3.6)	476 (8.4)	29 (3.4)	430 (6.8)	27 (3.5)	404 (7.6)	9.8 (0.25)
Hong Kong SAR	44 (4.5)	593 (7.0)	50 (3.9)	562 (7.3)	7 (2.7)	610 (26.0)	10.5 (0.25)
Sweden	42 (3.8)	510 (4.5)	56 (3.7)	498 (3.3)	2 (1.1)	~ ~	10.9 (0.09)
United Arab Emirates	41 (1.8)	499 (2.7)	44 (1.8)	450 (2.8)	15 (0.7)	455 (4.9)	10.3 (0.06)
Cyprus	41 (0.5)	509 (3.2)	54 (0.5)	494 (2.3)	5 (0.2)	532 (6.5)	10.8 (0.02)
Kazakhstan	39 (3.9)	492 (6.7)	54 (4.2)	483 (4.7)	7 (2.1)	497 (26.0)	10.8 (0.16)
Japan	39 (3.3)	606 (5.0)	61 (3.4)	587 (2.9)	1 (0.7)	~ ~	10.7 (0.08)
Finland	38 (4.1)	508 (4.9)	62 (4.2)	509 (2.9)	1 (0.7)	~ ~	10.8 (0.11)
Chile	35 (3.3)	466 (6.7)	62 (3.4)	427 (3.7)	3 (1.4)	426 (17.7)	10.4 (0.13)
England	34 (5.0)	530 (12.7)	64 (4.8)	515 (7.4)	1 (1.4)	~ ~	10.6 (0.17)
Chinese Taipei	32 (3.4)	619 (5.2)	68 (3.4)	610 (3.6)	0 (0.0)	~ ~	10.7 (0.10)
Georgia	32 (3.4)	474 (9.4)	68 (3.5)	455 (5.2)	1 (1.0)	~ ~	10.5 (0.10)
Ireland	31 (3.5)	533 (5.2)	68 (3.6)	522 (2.9)	1 (0.6)	~ ~	10.6 (0.11)
Hungary	28 (4.1)	510 (8.7)	71 (4.1)	519 (4.9)	1 (1.0)	~ ~	10.3 (0.11)
Russian Federation	23 (3.4)	555 (8.7)	75 (3.5)	541 (5.0)	1 (0.7)	~ ~	10.1 (0.12)
Lebanon	21 (3.0)	469 (6.5)	66 (3.5)	418 (3.7)	13 (2.6)	419 (10.0)	9.5 (0.15)
Bahrain	21 (0.2)	499 (3.1)	52 (0.2)	472 (2.2)	27 (0.2)	485 (4.3)	9.2 (0.01)
Egypt	20 (3.3)	440 (10.9)	73 (3.6)	405 (6.2)	8 (2.4)	424 (10.8)	9.8 (0.15)
Israel	17 (3.5)	539 (10.8)	80 (3.7)	514 (5.3)	3 (1.1)	535 (35.2)	9.9 (0.12)
Oman	17 (2.7)	442 (8.6)	71 (3.4)	403 (3.5)	12 (2.5)	408 (8.4)	9.5 (0.13)
Kuwait	17 (3.6)	419 (12.7)	59 (4.3)	393 (5.5)	23 (3.6)	412 (9.9)	9.0 (0.18)
Lithuania	16 (3.1)	519 (7.1)	81 (3.5)	518 (3.7)	3 (1.7)	534 (19.9)	10.1 (0.10)
Portugal	15 (2.9)	520 (8.1)	82 (3.2)	496 (3.6)	3 (1.6)	506 (21.0)	10.0 (0.10)
Italy	14 (3.0)	507 (7.6)	86 (3.0)	497 (2.9)	0 (0.0)	~ ~	9.9 (0.07)
Saudi Arabia	11 (2.3)	401 (7.9)	67 (3.7)	388 (3.4)	22 (3.1)	410 (6.1)	8.8 (0.13)
Turkey	8 (2.3)	543 (20.7)	71 (3.4)	499 (5.4)	21 (3.0)	468 (12.1)	8.6 (0.13)
Romania	8 (2.1)	536 (16.4)	86 (2.7)	476 (4.6)	7 (2.0)	460 (17.2)	9.5 (0.12)
Jordan	7 (2.4)	406 (24.9)	82 (3.0)	417 (4.5)	11 (2.3)	451 (13.2)	9.0 (0.10)
South Africa (9)	6 (1.0)	477 (15.7)	88 (1.9)	383 (2.5)	6 (1.6)	386 (8.9)	9.3 (0.08)
Morocco	5 (1.7)	435 (17.9)	92 (1.6)	384 (2.2)	3 (0.9)	441 (13.4)	9.6 (0.07)
Iran, Islamic Rep. of	4 (1.4)	534 (15.9)	87 (2.6)	443 (3.6)	9 (2.3)	445 (17.6)	9.0 (0.10)
Malaysia	2 (0.7)	~ ~	79 (3.2)	452 (3.7)	18 (3.2)	489 (10.5)	8.3 (0.09)
<b>International Average</b>	<b>30 (0.5)</b>	<b>509 (1.6)</b>	<b>63 (0.6)</b>	<b>483 (0.7)</b>	<b>7 (0.3)</b>	<b>476 (4.1)</b>	
<b>Benchmarking Participants</b>							
Quebec, Canada	68 (4.6)	545 (3.8)	31 (4.6)	549 (8.0)	1 (1.1)	~ ~	11.7 (0.15)
Moscow City, Russian Fed.	63 (4.2)	574 (5.6)	37 (4.2)	578 (6.0)	0 (0.0)	~ ~	11.8 (0.16)
Dubai, UAE	58 (0.5)	551 (3.4)	28 (0.4)	504 (3.9)	13 (0.3)	538 (3.8)	11.2 (0.02)
Ontario, Canada	44 (4.5)	539 (8.5)	55 (4.5)	518 (5.1)	1 (1.1)	~ ~	11.0 (0.18)
Abu Dhabi, UAE	38 (1.9)	461 (4.7)	40 (1.9)	418 (5.8)	21 (1.2)	414 (9.5)	10.0 (0.10)
Western Cape, RSA (9)	14 (2.3)	546 (11.3)	84 (2.6)	425 (4.6)	3 (1.3)	434 (36.7)	9.7 (0.10)
Gauteng, RSA (9)	10 (2.6)	500 (9.7)	86 (2.8)	409 (3.5)	4 (1.3)	449 (29.0)	9.4 (0.11)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results 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.

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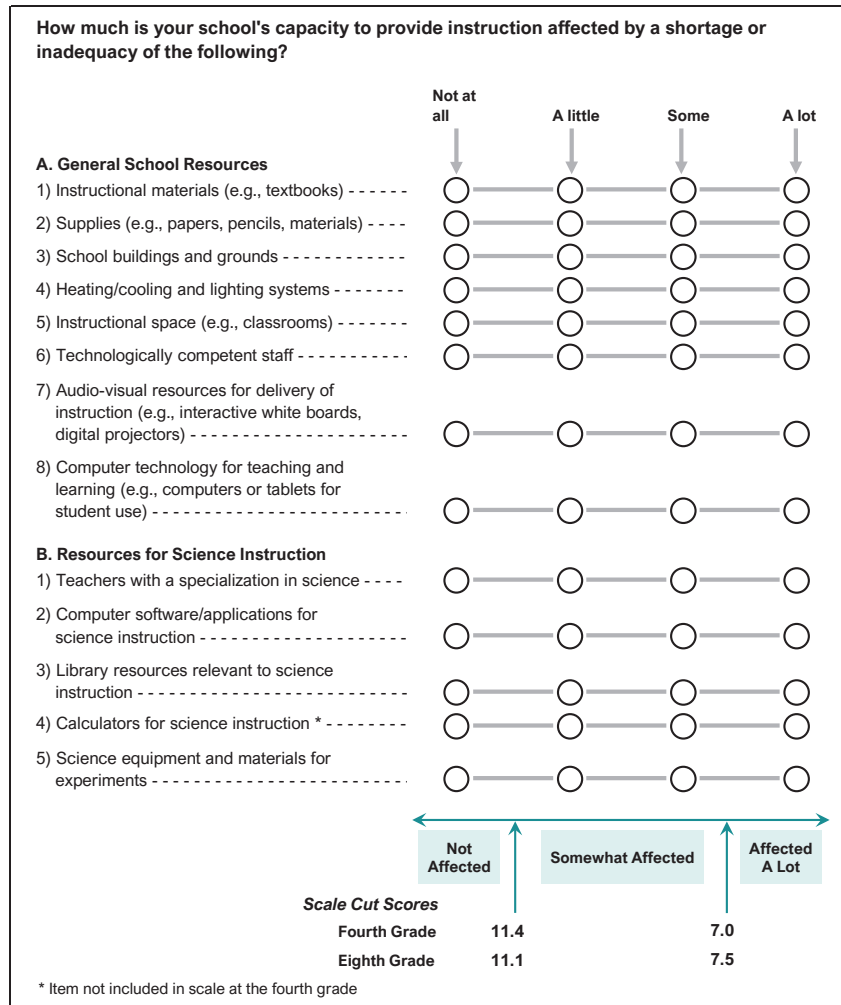
## Instruction Affected by Science Resource Shortages

The *Instruction Affected by Science Resource Shortages* scale, like its counterpart for mathematics, includes principals' reports about two kinds of resource shortages affecting instruction: general school resources and resources specific to science instruction (see About the Scale in Exhibit 6.16). On average, 24 percent of fourth grade students were in schools "not affected" by science resource shortages, 69 percent were in schools "somewhat affected," and 7 percent were in schools "affected a lot" (see Exhibit 6.17). Average science achievement ranged across the three categories from a high of 508 for students in schools "not affected" by resource shortages, to 488 for students in schools "somewhat affected," to a low of 472 for students in schools "affected a lot."

Eighth grade students' results for the *Instruction Affected by Science Resource Shortages* scale are shown in Exhibit 6.18. On average, 30 percent of students were in schools "not affected" by science resource shortages, 62 percent were in schools "somewhat affected," and 8 percent were in schools "affected a lot." Similar to the mathematics scale, there was a modest negative association between the degree students' schools were affected by resource shortages and average science achievement, with achievement highest for students in schools "not affected" by resource shortages (510), next highest in "somewhat affected" schools (484), and lowest in schools that were "affected a lot" (472).

**Exhibit 6.16: Instruction Affected by Science Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports***About the Scale**

Students were scored according to their principals' responses regarding thirteen school and classroom resources on the *Instruction Affected by Science Resource Shortages* scale. Cut scores divide the scale into three categories. Students in schools where instruction was **Not Affected** by resource shortages had a score at or above the cut score corresponding to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score at or below the cut score corresponding to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.



SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

**Exhibit 6.17: Instruction Affected by Science Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports*

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Korea, Rep. of	70 (4.0)	590 (2.7)	27 (3.9)	581 (3.8)	4 (1.2)	599 (12.5)	12.6 (0.24)
Singapore	63 (0.0)	595 (4.5)	25 (0.0)	601 (5.8)	12 (0.0)	582 (8.8)	11.6 (0.00)
Bulgaria	48 (4.1)	533 (5.4)	52 (4.1)	510 (8.0)	0 (0.0)	~ ~	11.4 (0.16)
Poland	48 (4.2)	532 (3.6)	51 (4.2)	529 (3.5)	1 (0.8)	~ ~	11.3 (0.16)
United States	45 (2.9)	544 (5.1)	54 (2.9)	535 (4.3)	2 (0.8)	~ ~	11.2 (0.14)
Qatar	43 (3.8)	473 (7.6)	24 (3.4)	444 (7.7)	33 (3.3)	423 (6.4)	9.6 (0.36)
Kazakhstan	43 (4.3)	493 (5.9)	49 (4.1)	497 (5.3)	8 (2.1)	485 (18.0)	11.3 (0.26)
United Arab Emirates	40 (1.8)	502 (2.5)	42 (1.7)	444 (3.0)	18 (1.8)	464 (4.0)	10.2 (0.19)
Norway (5)	39 (5.3)	542 (3.6)	61 (5.3)	539 (3.5)	0 (0.0)	~ ~	10.9 (0.13)
Georgia	38 (4.1)	455 (6.9)	61 (4.2)	455 (5.0)	1 (0.8)	~ ~	10.9 (0.18)
Australia	37 (3.7)	538 (5.6)	61 (3.8)	530 (3.7)	2 (1.4)	~ ~	10.9 (0.16)
Belgium (Flemish)	35 (4.4)	502 (3.7)	64 (4.4)	500 (3.0)	1 (0.8)	~ ~	10.9 (0.17)
Sweden	35 (4.4)	536 (5.5)	64 (4.5)	538 (4.0)	1 (0.8)	~ ~	10.8 (0.16)
Cyprus	34 (4.8)	517 (4.7)	60 (4.6)	506 (3.6)	6 (2.6)	526 (15.1)	10.7 (0.25)
Canada	33 (2.1)	530 (3.3)	66 (2.1)	520 (2.1)	2 (0.7)	~ ~	10.8 (0.09)
Latvia	32 (3.3)	533 (6.2)	66 (3.5)	545 (2.6)	1 (0.9)	~ ~	10.8 (0.14)
Spain	31 (3.0)	523 (3.3)	68 (3.1)	506 (2.9)	1 (0.8)	~ ~	10.7 (0.10)
Armenia	30 (4.1)	474 (5.7)	69 (4.1)	464 (3.9)	1 (0.6)	~ ~	10.7 (0.16)
Denmark	30 (3.6)	523 (4.0)	67 (3.4)	522 (3.0)	3 (1.1)	522 (8.4)	10.7 (0.16)
Finland	30 (3.7)	552 (3.9)	70 (3.7)	556 (3.3)	0 (0.0)	~ ~	10.7 (0.13)
Chinese Taipei	30 (3.4)	560 (3.4)	67 (3.3)	557 (2.2)	3 (1.3)	555 (10.2)	10.6 (0.17)
Czech Republic	29 (4.2)	531 (4.3)	70 (4.3)	535 (3.3)	1 (0.8)	~ ~	10.9 (0.13)
Chile	28 (3.8)	489 (6.8)	66 (4.1)	462 (3.4)	6 (2.1)	462 (12.2)	10.3 (0.18)
Russian Federation	27 (3.0)	574 (6.3)	69 (3.0)	564 (3.2)	4 (1.2)	575 (11.9)	10.3 (0.15)
New Zealand	27 (3.5)	516 (6.3)	71 (3.6)	498 (3.3)	3 (1.3)	485 (21.8)	10.5 (0.16)
Bahrain	24 (2.3)	521 (5.5)	43 (2.3)	488 (4.9)	33 (2.0)	478 (7.2)	9.0 (0.19)
Hungary	24 (3.6)	526 (7.0)	74 (4.0)	530 (3.5)	3 (1.8)	512 (40.0)	10.1 (0.17)
Japan	23 (3.6)	564 (3.9)	74 (3.6)	561 (2.0)	3 (1.0)	572 (6.4)	10.5 (0.13)
Lithuania	23 (3.7)	535 (6.3)	76 (3.8)	539 (3.5)	1 (0.8)	~ ~	10.4 (0.17)
Kuwait	22 (3.0)	408 (10.8)	51 (4.9)	382 (8.4)	27 (4.1)	401 (15.1)	8.6 (0.26)
England	21 (3.9)	557 (7.9)	79 (3.9)	532 (4.8)	0 (0.0)	~ ~	10.5 (0.14)
Malta	21 (0.4)	513 (2.5)	76 (0.4)	491 (1.5)	3 (0.1)	501 (5.9)	10.3 (0.02)
Serbia	20 (3.5)	533 (7.0)	77 (3.6)	513 (4.0)	3 (1.2)	507 (15.5)	9.9 (0.12)
Croatia	18 (2.9)	527 (5.5)	82 (2.9)	524 (2.2)	0 (0.0)	~ ~	10.2 (0.14)
Germany	17 (2.6)	520 (7.1)	82 (2.6)	518 (2.5)	0 (0.3)	~ ~	10.2 (0.10)
Hong Kong SAR	17 (2.7)	540 (6.3)	74 (3.8)	528 (4.5)	8 (2.6)	541 (24.6)	9.7 (0.20)
Austria	16 (2.8)	545 (6.5)	83 (2.8)	518 (2.7)	1 (0.6)	~ ~	10.2 (0.09)
Bosnia and Herzegovina	16 (3.0)	464 (6.7)	80 (3.4)	458 (3.2)	5 (1.9)	452 (13.3)	9.6 (0.14)
Oman	15 (2.1)	452 (8.0)	62 (3.5)	431 (5.1)	23 (2.9)	432 (12.2)	8.9 (0.16)
Slovak Republic	15 (3.0)	537 (6.4)	78 (3.2)	519 (4.7)	7 (1.8)	514 (11.2)	9.5 (0.13)
Portugal	15 (2.9)	510 (5.6)	84 (3.0)	503 (2.8)	1 (0.7)	~ ~	9.9 (0.13)
Ireland	13 (2.9)	545 (8.0)	86 (3.1)	526 (3.5)	1 (0.7)	~ ~	10.0 (0.11)
Netherlands	13 (3.8)	518 (9.1)	87 (3.8)	519 (3.5)	0 (0.0)	~ ~	10.1 (0.16)
Northern Ireland	12 (3.1)	526 (6.8)	85 (3.4)	518 (2.9)	2 (1.5)	~ ~	9.5 (0.13)
Montenegro	11 (0.2)	435 (9.3)	82 (0.3)	457 (2.5)	7 (0.2)	437 (5.1)	9.4 (0.01)
France	10 (2.6)	507 (7.8)	89 (2.7)	487 (3.3)	1 (0.8)	~ ~	9.7 (0.12)
Pakistan	10 (2.7)	280 (35.8)	79 (6.2)	282 (14.7)	12 (6.1)	354 (30.1)	9.2 (0.21)
Saudi Arabia	9 (1.8)	424 (11.2)	69 (3.0)	394 (5.7)	21 (2.7)	422 (8.7)	8.6 (0.15)
Iran, Islamic Rep. of	9 (2.1)	476 (11.5)	77 (3.1)	439 (4.3)	14 (2.4)	425 (9.3)	8.7 (0.15)
North Macedonia	8 (2.3)	434 (19.7)	71 (4.2)	431 (6.7)	21 (3.7)	409 (13.5)	8.7 (0.17)
Albania	8 (2.1)	550 (10.5)	69 (3.3)	483 (4.6)	23 (3.0)	490 (5.8)	8.6 (0.16)
South Africa (5)	8 (1.9)	423 (32.2)	84 (3.0)	318 (5.4)	8 (2.2)	323 (25.8)	9.2 (0.11)
Morocco	7 (1.8)	340 (21.9)	89 (2.5)	371 (6.4)	4 (1.8)	492 (45.1)	9.6 (0.11)
Italy	7 (1.9)	518 (13.5)	92 (2.2)	510 (3.1)	2 (1.3)	~ ~	9.8 (0.11)
Turkey (5)	5 (1.7)	568 (10.7)	62 (3.3)	527 (5.1)	33 (3.5)	519 (9.0)	8.0 (0.18)
Azerbaijan	2 (1.0)	~ ~	87 (2.4)	428 (3.6)	11 (2.2)	420 (10.3)	8.6 (0.09)
Philippines	1 (0.5)	~ ~	95 (1.6)	245 (7.6)	5 (1.5)	291 (22.0)	8.8 (0.09)
Kosovo	0 (0.3)	~ ~	72 (4.2)	413 (4.6)	28 (4.2)	413 (5.6)	7.6 (0.20)
<b>International Average</b>	<b>24 (0.4)</b>	<b>508 (1.4)</b>	<b>69 (0.5)</b>	<b>488 (0.6)</b>	<b>7 (0.3)</b>	<b>472 (3.0)</b>	
<b>Benchmarking Participants</b>							
Moscow City, Russian Fed.	63 (4.3)	592 (3.1)	35 (4.3)	600 (3.2)	2 (1.1)	~ ~	12.5 (0.26)
Dubai, UAE	54 (0.3)	552 (2.7)	30 (0.3)	526 (2.7)	16 (0.2)	566 (4.7)	10.9 (0.02)
Madrid, Spain	51 (3.8)	526 (2.2)	49 (3.8)	519 (3.5)	0 (0.4)	~ ~	11.6 (0.16)
Abu Dhabi, UAE	36 (1.5)	454 (3.4)	48 (1.7)	384 (4.7)	16 (1.3)	405 (12.9)	10.3 (0.10)
Ontario, Canada	29 (3.9)	533 (6.6)	70 (3.9)	520 (3.3)	1 (1.0)	~ ~	10.7 (0.17)
Quebec, Canada	29 (3.7)	526 (3.4)	68 (4.0)	521 (3.3)	4 (1.8)	525 (12.1)	10.6 (0.16)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results 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 6.18: Instruction Affected by Science Resource Shortages – Principals' Reports***Students' Results based on Principals' Reports*

Country	Not Affected		Somewhat Affected		Affected A Lot		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Singapore	75 (0.0)	607 (4.5)	18 (0.0)	607 (8.6)	7 (0.0)	612 (20.3)	12.3 (0.00)
Australia	63 (3.4)	542 (4.6)	35 (3.4)	510 (4.6)	2 (1.2)	~ ~	11.7 (0.13)
France	56 (4.5)	501 (4.4)	43 (4.4)	478 (4.6)	1 (0.8)	~ ~	11.5 (0.15)
Norway (9)	55 (5.1)	499 (4.9)	45 (5.1)	495 (4.9)	0 (0.0)	~ ~	11.4 (0.11)
New Zealand	55 (4.9)	516 (5.6)	41 (5.0)	492 (5.8)	5 (4.0)	464 (66.9)	11.3 (0.33)
Korea, Rep. of	55 (3.9)	564 (3.2)	41 (4.2)	557 (3.4)	4 (1.8)	557 (7.4)	11.5 (0.17)
United States	48 (3.0)	540 (4.5)	50 (3.0)	514 (7.7)	1 (0.7)	~ ~	11.2 (0.12)
Hong Kong SAR	47 (4.6)	517 (7.3)	47 (4.0)	487 (9.1)	7 (2.7)	530 (34.8)	10.7 (0.27)
Qatar	46 (3.5)	499 (7.4)	25 (3.3)	462 (6.8)	28 (3.7)	445 (9.2)	9.9 (0.27)
Cyprus	44 (0.5)	489 (3.5)	51 (0.5)	478 (2.9)	5 (0.2)	497 (7.6)	10.9 (0.02)
Sweden	44 (3.7)	528 (5.5)	55 (3.8)	517 (4.6)	1 (0.8)	~ ~	11.0 (0.09)
United Arab Emirates	41 (1.8)	502 (3.2)	45 (1.8)	449 (3.3)	14 (0.7)	448 (6.2)	10.4 (0.07)
Kazakhstan	40 (4.1)	485 (6.2)	52 (4.2)	476 (5.1)	9 (1.8)	458 (18.5)	10.9 (0.17)
Finland	37 (4.1)	543 (5.8)	62 (4.1)	542 (3.8)	1 (0.9)	~ ~	10.9 (0.12)
England	37 (4.9)	533 (11.7)	62 (4.7)	516 (6.8)	1 (1.4)	~ ~	10.8 (0.19)
Chinese Taipei	36 (3.4)	578 (4.0)	64 (3.5)	573 (2.6)	0 (0.4)	~ ~	10.9 (0.11)
Japan	36 (3.4)	578 (4.6)	64 (3.5)	565 (2.1)	1 (0.7)	~ ~	10.8 (0.09)
Ireland	34 (3.2)	537 (5.2)	65 (3.3)	518 (3.7)	1 (0.6)	~ ~	10.8 (0.12)
Georgia	34 (3.3)	453 (7.5)	65 (3.4)	444 (4.9)	1 (1.0)	~ ~	10.7 (0.12)
Chile	33 (3.1)	491 (5.9)	63 (3.4)	449 (4.3)	4 (1.7)	453 (15.6)	10.4 (0.14)
Hungary	25 (3.9)	527 (7.1)	73 (3.9)	531 (4.3)	2 (1.1)	~ ~	10.3 (0.12)
Russian Federation	25 (3.5)	551 (7.4)	74 (3.6)	542 (4.0)	2 (0.9)	~ ~	10.1 (0.11)
Lebanon	21 (2.9)	439 (10.5)	64 (3.7)	357 (6.3)	15 (2.7)	370 (16.0)	9.5 (0.16)
Egypt	21 (3.4)	410 (10.0)	72 (3.6)	383 (6.9)	7 (2.3)	405 (12.5)	9.9 (0.16)
Bahrain	20 (0.2)	506 (3.0)	52 (0.2)	468 (2.1)	27 (0.2)	505 (4.3)	9.2 (0.01)
Oman	19 (2.9)	475 (8.7)	65 (3.9)	452 (4.1)	17 (2.9)	459 (6.2)	9.5 (0.14)
Kuwait	17 (3.6)	456 (12.1)	58 (4.2)	432 (6.6)	25 (3.6)	459 (9.4)	9.0 (0.18)
Portugal	15 (2.7)	536 (8.0)	82 (3.0)	515 (3.2)	2 (1.3)	~ ~	10.1 (0.11)
Lithuania	15 (3.1)	532 (8.0)	82 (3.6)	532 (3.6)	3 (1.8)	545 (17.8)	10.1 (0.10)
Israel	14 (3.2)	535 (13.5)	82 (3.6)	509 (4.7)	4 (1.7)	539 (23.5)	10.0 (0.12)
Italy	13 (2.7)	500 (9.3)	87 (2.7)	502 (2.6)	0 (0.0)	~ ~	10.0 (0.09)
Saudi Arabia	12 (2.4)	439 (9.7)	64 (3.7)	424 (3.9)	24 (3.2)	448 (6.0)	8.8 (0.14)
Jordan	9 (2.5)	447 (25.1)	77 (3.2)	449 (4.6)	15 (2.4)	471 (15.4)	8.9 (0.12)
Romania	9 (2.2)	507 (13.7)	85 (2.9)	468 (4.4)	6 (1.9)	456 (14.0)	9.5 (0.12)
Turkey	8 (2.4)	550 (18.4)	68 (3.6)	519 (4.7)	23 (3.2)	493 (9.7)	8.5 (0.14)
South Africa (9)	7 (1.1)	488 (22.0)	86 (2.1)	362 (3.4)	7 (1.8)	358 (10.7)	9.3 (0.08)
Iran, Islamic Rep. of	5 (1.4)	528 (18.3)	83 (2.8)	445 (3.5)	11 (2.4)	447 (14.5)	9.0 (0.11)
Morocco	4 (1.4)	457 (16.0)	93 (1.5)	390 (2.8)	3 (1.1)	438 (21.3)	9.6 (0.08)
Malaysia	2 (0.7)	~ ~	77 (3.3)	454 (3.9)	20 (3.3)	479 (8.7)	8.3 (0.10)
<b>International Average</b>	<b>30 (0.5)</b>	<b>510 (1.7)</b>	<b>62 (0.6)</b>	<b>484 (0.8)</b>	<b>8 (0.3)</b>	<b>472 (4.1)</b>	
<b>Benchmarking Participants</b>							
Quebec, Canada	71 (4.3)	538 (3.6)	28 (4.3)	545 (7.9)	2 (1.2)	~ ~	11.9 (0.16)
Moscow City, Russian Fed.	65 (4.1)	566 (4.0)	34 (4.1)	568 (4.4)	1 (0.5)	~ ~	11.9 (0.17)
Dubai, UAE	56 (0.6)	567 (3.4)	35 (0.6)	520 (3.4)	9 (0.3)	531 (6.8)	11.3 (0.02)
Abu Dhabi, UAE	38 (1.9)	450 (5.9)	40 (2.0)	388 (8.1)	22 (1.3)	413 (10.5)	10.1 (0.10)
Ontario, Canada	31 (5.6)	533 (7.2)	68 (5.6)	514 (4.0)	1 (1.1)	~ ~	10.7 (0.18)
Western Cape, RSA (9)	14 (2.4)	575 (11.4)	84 (2.7)	418 (5.7)	3 (1.4)	435 (37.4)	9.8 (0.11)
Gauteng, RSA (9)	11 (2.5)	528 (11.1)	85 (2.7)	406 (4.5)	4 (1.4)	458 (32.0)	9.5 (0.12)

This TIMSS context questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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## Principals' Education and Years of Experience

### Principals' Formal Education

The main education paths for becoming a school principal can vary across countries (as described in the *TIMSS 2019 Encyclopedia*). Some countries focus on formal education or completion of specialized training and certification, while others focus on years of teaching experience and gradual promotion into school leadership roles.

As shown in Exhibit 6.19, on average, more than half of fourth grade students (54%) had a school principal with a postgraduate university degree, 42 percent had a principal with a bachelor's degree, and 5 percent had a principal who had not completed a bachelor's degree. On average, 68 percent of fourth grade students had a principal with an educational leadership certificate or license, and 36 percent with a postgraduate leadership degree.

At the eighth grade (see Exhibit 6.20), the situation with regard to school principals' formal education was rather similar, with 55 percent of students having a school principal with a postgraduate university degree, 43 percent having a principal with a bachelor's degree, and 2 percent with a principal who had not completed a bachelor's degree. On average, 71 percent of eighth grade students had a principal with an educational leadership certificate or license, and 39 percent had a principal with a postgraduate leadership degree.

**Exhibit 6.19: Principals' Formal Education\***

Students' Results based on Principals' Reports

Country	Percent of Students by Principals' Education Level			Percent of Students by Principals' Educational Leadership Qualification or Credential***	
	Completed Postgraduate University Degree**	Completed Bachelor's Degree or Equivalent but Not a Postgraduate Degree	Did Not Complete Bachelor's Degree	Certificate or License	Postgraduate Degree
Albania	57 (4.2)	37 (3.9)	6 (2.1)	51 (4.5)	48 (3.9)
Armenia	77 (3.9)	22 (3.8)	1 (0.7)	92 (2.2)	29 (4.1)
Australia	r 40 (3.0)	59 (2.9)	1 (0.8)	- -	r 31 (2.7)
Austria	18 (2.7)	45 (3.8)	37 (3.5)	91 (2.3)	17 (2.5)
Azerbaijan	34 (3.0)	57 (3.1)	9 (2.1)	68 (3.7)	21 (3.3)
Bahrain	39 (2.0)	61 (2.1)	1 (0.5)	89 (1.7)	25 (2.0)
Belgium (Flemish)	6 (2.2)	94 (2.2)	0 (0.0)	88 (3.6)	6 (2.7)
Bosnia and Herzegovina	17 (3.2)	77 (3.3)	6 (1.6)	44 (4.0)	7 (1.9)
Bulgaria	93 (2.6)	5 (1.7)	2 (2.0)	59 (3.7)	28 (3.9)
Canada	64 (2.1)	36 (2.1)	0 (0.0)	60 (2.9)	45 (2.6)
Chile	67 (3.5)	32 (3.5)	0 (0.3)	73 (3.7)	57 (3.8)
Chinese Taipei	91 (2.5)	9 (2.5)	0 (0.0)	60 (3.8)	77 (3.7)
Croatia	96 (1.8)	2 (1.2)	2 (1.3)	10 (2.8)	41 (4.5)
Cyprus	72 (4.6)	26 (4.4)	2 (1.2)	42 (5.1)	42 (4.9)
Czech Republic	99 (0.6)	1 (0.6)	0 (0.0)	90 (2.8)	21 (3.6)
Denmark	r 22 (3.8)	73 (4.1)	4 (1.9)	r 93 (2.3)	r 18 (3.3)
England	s 22 (4.2)	78 (4.2)	0 (0.0)	s 61 (5.5)	s 17 (3.5)
Finland	98 (1.2)	2 (1.2)	0 (0.0)	89 (2.2)	35 (3.8)
France	32 (3.9)	49 (4.8)	20 (3.6)	23 (3.9)	3 (1.4)
Georgia	94 (2.0)	6 (2.0)	0 (0.0)	r 92 (2.9)	r 77 (4.1)
Germany	91 (2.1)	3 (1.5)	6 (1.6)	49 (3.8)	25 (3.2)
Hong Kong SAR	66 (4.7)	33 (4.7)	1 (0.6)	82 (4.4)	57 (4.4)
Hungary	42 (4.7)	58 (4.7)	0 (0.0)	97 (1.5)	- -
Iran, Islamic Rep. of	28 (3.4)	68 (3.6)	4 (1.7)	55 (3.5)	21 (3.0)
Ireland	53 (4.2)	45 (4.2)	2 (1.3)	31 (4.1)	25 (3.7)
Italy	87 (3.2)	12 (3.2)	1 (0.8)	- -	36 (4.1)
Japan	13 (2.9)	87 (2.9)	0 (0.0)	24 (3.5)	19 (3.5)
Kazakhstan	15 (3.1)	84 (3.2)	1 (1.1)	83 (3.0)	10 (2.4)
Korea, Rep. of	91 (2.4)	9 (2.4)	1 (0.6)	79 (3.4)	88 (2.8)
Kosovo	42 (4.1)	42 (4.3)	16 (3.0)	93 (3.2)	48 (4.5)
Kuwait	22 (2.5)	69 (3.3)	9 (2.4)	64 (4.7)	24 (2.6)
Latvia	91 (2.4)	9 (2.4)	0 (0.1)	54 (3.8)	38 (3.9)
Lithuania	82 (2.7)	18 (2.7)	0 (0.0)	67 (3.7)	63 (4.1)
Malta	77 (0.4)	23 (0.4)	0 (0.0)	67 (0.4)	49 (0.4)
Montenegro	24 (0.5)	74 (0.5)	2 (0.1)	79 (0.6)	15 (0.3)
Morocco	5 (1.4)	70 (3.1)	25 (2.9)	76 (3.7)	1 (0.7)
Netherlands	s 19 (4.9)	69 (5.4)	12 (4.3)	s 85 (4.1)	- -
New Zealand	47 (4.1)	36 (4.0)	17 (2.9)	- -	- -
North Macedonia	24 (3.4)	76 (3.4)	0 (0.3)	90 (2.8)	18 (3.2)
Northern Ireland	r 75 (4.7)	25 (4.7)	0 (0.0)	r 75 (4.4)	r 59 (4.8)
Norway (5)	r 34 (4.3)	64 (4.4)	2 (1.1)	r 77 (4.3)	r 28 (3.8)
Oman	27 (2.9)	58 (3.4)	14 (2.5)	67 (3.4)	22 (3.1)
Pakistan	66 (7.3)	17 (6.8)	17 (3.4)	53 (7.4)	53 (6.7)
Philippines	79 (3.2)	20 (3.2)	1 (0.7)	78 (3.2)	80 (3.1)
Poland	99 (0.8)	0 (0.0)	1 (0.8)	46 (4.6)	63 (4.4)
Portugal	36 (3.9)	62 (3.9)	1 (0.9)	- -	35 (4.1)
Qatar	51 (2.5)	49 (2.6)	1 (0.5)	77 (2.8)	47 (2.8)
Russian Federation	82 (2.6)	18 (2.6)	0 (0.2)	93 (2.1)	16 (2.3)
Saudi Arabia	13 (2.5)	77 (3.2)	11 (2.2)	20 (3.5)	9 (2.4)
Serbia	35 (4.0)	65 (4.0)	0 (0.0)	26 (3.7)	20 (3.5)
Singapore	63 (0.0)	36 (0.0)	1 (0.0)	97 (0.0)	44 (0.0)
Slovak Republic	100 (0.0)	0 (0.0)	0 (0.0)	94 (1.8)	56 (4.2)
South Africa (5)	11 (2.3)	65 (3.3)	24 (2.8)	65 (3.3)	10 (2.2)
Spain	56 (3.5)	43 (3.6)	1 (0.7)	74 (3.0)	18 (2.6)
Sweden	41 (4.2)	55 (4.3)	4 (1.8)	73 (4.2)	49 (4.6)
Turkey (5)	20 (3.2)	78 (3.3)	2 (1.1)	67 (3.9)	17 (3.1)
United Arab Emirates	r 63 (0.7)	36 (0.7)	1 (0.3)	r 76 (1.2)	r 54 (1.1)
United States	98 (0.9)	2 (0.9)	0 (0.0)	91 (1.6)	92 (1.6)
<b>International Average</b>	<b>54 (0.4)</b>	<b>42 (0.4)</b>	<b>5 (0.2)</b>	<b>68 (0.5)</b>	<b>36 (0.5)</b>
<b>Benchmarking Participants</b>					
Ontario, Canada	58 (4.2)	42 (4.2)	0 (0.0)	69 (5.4)	38 (5.1)
Quebec, Canada	63 (4.2)	37 (4.2)	0 (0.0)	44 (4.4)	39 (4.0)
Moscow City, Russian Fed.	95 (1.9)	5 (1.9)	0 (0.0)	97 (1.4)	39 (4.4)
Madrid, Spain	60 (3.9)	40 (3.9)	0 (0.0)	81 (2.8)	21 (3.4)
Abu Dhabi, UAE	r 65 (1.1)	35 (1.1)	0 (0.0)	r 77 (1.2)	r 59 (1.3)
Dubai, UAE	r 65 (0.3)	35 (0.3)	0 (0.0)	r 73 (0.3)	r 55 (0.3)

\* Based on countries' categorizations according to UNESCO's International Standard Classification of Education (Operational Manual for ISCED-2011).

\*\* For example, doctorate, master's, or other postgraduate degree.

\*\*\* Principals could indicate holding more than one qualification or credential.

( ) Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

A dash (-) indicates comparable data 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

**Exhibit 6.20: Principals' Formal Education\***

Students' Results based on Principals' Reports

Country	Percent of Students by Principals' Education Level			Percent of Students by Principals' Educational Leadership Qualification or Credential***	
	Completed Postgraduate University Degree**	Completed Bachelor's Degree or Equivalent but Not a Postgraduate Degree	Did Not Complete Bachelor's Degree	Certificate or License	Postgraduate Degree
Australia	58 (2.9)	42 (2.9)	0 (0.0)	- -	50 (3.0)
Bahrain	39 (0.3)	60 (0.2)	1 (0.0)	89 (0.2)	21 (0.2)
Chile	72 (3.6)	27 (3.6)	0 (0.4)	76 (3.5)	64 (4.1)
Chinese Taipei	90 (2.2)	10 (2.2)	0 (0.0)	60 (3.4)	64 (3.3)
Cyprus	r 78 (0.4)	22 (0.4)	0 (0.0)	r 32 (0.5)	r 40 (0.5)
Egypt	3 (1.3)	90 (2.4)	7 (2.0)	86 (2.6)	4 (1.7)
England	s 51 (5.1)	49 (5.1)	0 (0.0)	s 65 (4.7)	s 43 (4.9)
Finland	99 (0.6)	1 (0.6)	0 (0.0)	97 (1.2)	48 (3.9)
France	r 72 (4.2)	27 (4.3)	1 (0.9)	r 27 (3.9)	r 30 (4.3)
Georgia	96 (1.8)	4 (1.8)	0 (0.0)	r 91 (3.0)	r 75 (4.1)
Hong Kong SAR	93 (2.2)	7 (2.2)	0 (0.0)	85 (3.4)	66 (4.3)
Hungary	50 (4.0)	49 (4.1)	1 (0.8)	98 (1.2)	- -
Iran, Islamic Rep. of	35 (3.1)	64 (3.3)	2 (0.8)	45 (3.3)	24 (3.3)
Ireland	77 (3.5)	23 (3.5)	0 (0.0)	60 (4.1)	58 (4.1)
Israel	98 (1.1)	2 (1.1)	0 (0.0)	88 (2.7)	83 (2.9)
Italy	93 (2.3)	7 (2.2)	1 (0.7)	- -	33 (3.5)
Japan	8 (2.2)	92 (2.2)	0 (0.0)	25 (3.6)	12 (2.7)
Jordan	53 (4.4)	45 (4.4)	2 (0.9)	89 (2.1)	37 (4.0)
Kazakhstan	16 (3.3)	83 (3.4)	2 (1.1)	80 (3.3)	10 (2.7)
Korea, Rep. of	86 (2.9)	14 (2.9)	0 (0.0)	80 (2.9)	83 (3.1)
Kuwait	19 (3.7)	70 (4.4)	11 (2.5)	63 (3.7)	14 (2.8)
Lebanon	56 (4.1)	35 (3.9)	9 (2.0)	62 (3.2)	34 (3.8)
Lithuania	80 (3.2)	19 (3.1)	1 (0.9)	69 (4.3)	48 (4.3)
Malaysia	37 (3.6)	62 (3.6)	0 (0.3)	67 (3.8)	43 (3.9)
Morocco	7 (1.9)	75 (3.0)	18 (3.1)	70 (2.9)	5 (1.5)
New Zealand	79 (4.0)	20 (4.0)	1 (1.0)	- -	- -
Norway (9)	r 42 (4.7)	57 (4.8)	1 (1.2)	r 69 (4.8)	r 34 (4.5)
Oman	29 (3.1)	62 (3.4)	9 (2.2)	64 (3.4)	23 (3.0)
Portugal	42 (3.9)	57 (3.9)	1 (0.9)	- -	34 (3.5)
Qatar	45 (2.3)	54 (2.6)	1 (1.1)	85 (2.1)	42 (2.2)
Romania	59 (3.8)	41 (3.8)	0 (0.0)	81 (2.9)	39 (3.6)
Russian Federation	83 (2.8)	17 (2.8)	0 (0.0)	93 (2.0)	14 (2.1)
Saudi Arabia	8 (2.1)	88 (2.7)	5 (1.6)	19 (2.9)	r 4 (1.5)
Singapore	67 (0.0)	33 (0.0)	0 (0.0)	95 (0.0)	44 (0.0)
South Africa (9)	13 (1.6)	80 (2.3)	7 (1.6)	57 (3.2)	13 (1.7)
Sweden	42 (4.2)	56 (4.3)	2 (1.2)	79 (3.4)	46 (4.4)
Turkey	22 (3.2)	76 (3.4)	2 (1.3)	67 (4.1)	18 (2.9)
United Arab Emirates	61 (1.0)	39 (1.0)	1 (0.2)	75 (1.2)	50 (1.4)
United States	98 (1.3)	2 (1.3)	0 (0.0)	95 (1.4)	95 (1.6)
<b>International Average</b>	<b>55 (0.5)</b>	<b>43 (0.5)</b>	<b>2 (0.2)</b>	<b>71 (0.5)</b>	<b>39 (0.5)</b>
<b>Benchmarking Participants</b>					
Ontario, Canada	r 52 (6.1)	48 (6.1)	0 (0.0)	r 83 (3.5)	r 42 (6.2)
Quebec, Canada	55 (5.0)	45 (5.0)	0 (0.2)	56 (5.4)	29 (4.8)
Moscow City, Russian Fed.	95 (1.7)	5 (1.7)	0 (0.0)	97 (1.5)	38 (4.4)
Gauteng, RSA (9)	18 (3.1)	74 (3.4)	8 (2.0)	53 (3.7)	20 (3.3)
Western Cape, RSA (9)	15 (3.2)	81 (3.5)	4 (1.8)	58 (4.0)	12 (2.9)
Abu Dhabi, UAE	r 63 (1.4)	36 (1.2)	1 (0.6)	r 74 (1.6)	r 55 (1.5)
Dubai, UAE	r 73 (0.4)	27 (0.4)	0 (0.0)	r 68 (0.4)	r 54 (0.5)

\* Based on countries' categorizations according to UNESCO's International Standard Classification of Education (Operational Manual for ISCED-2011).

\*\* For example, doctorate, master's, or other postgraduate degree.

\*\*\* Principals could indicate holding more than one qualification or credential.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

A dash (-) indicates comparable data 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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## Principals' Years of Experience

Exhibit 6.21 presents fourth grade students' school principals' reports about their years of experience. On average, fourth grade students' principals had 10 years of experience as a principal. Thirteen percent of the students had very experienced principals with 20 years or more of experience, 29 percent had principals with at least 10 years of experience, 27 percent had principals with at least 5 years of experience, and 31 percent had principals with less than 5 years of experience.

Exhibit 6.22 shows eighth grade students' school principals' reports about their years of experience. On average, principals of schools with eighth grade students had 9 years of experience as a principal. Eleven percent of the students had principals with 20 years or more of experience, 28 percent had principals with at least 10 years of experience, 28 percent had principals with at least 5 years of experience, and 34 percent had principals with less than 5 years of experience.

**Exhibit 6.21: Principals' Years of Experience***Students' Results based on Principals' Reports*

Country	Percent of Students by Principals' Years of Experience as a Principal				Average Years of Experience as a Principal
	20 Years or More	At Least 10 but Less than 20 Years	At Least 5 but Less than 10 Years	Less than 5 Years	
Albania	10 (2.7)	19 (3.2)	43 (4.3)	28 (4.1)	8 (0.6)
Armenia	25 (4.0)	24 (4.1)	27 (3.5)	24 (3.7)	12 (0.8)
Australia <sup>r</sup>	11 (2.2)	32 (3.0)	21 (3.9)	36 (3.9)	9 (0.5)
Austria	5 (1.5)	39 (3.3)	36 (3.7)	20 (2.9)	10 (0.4)
Azerbaijan	23 (3.2)	26 (3.2)	20 (3.3)	31 (3.7)	13 (0.8)
Bahrain	7 (1.3)	23 (2.1)	30 (2.6)	40 (2.7)	8 (0.4)
Belgium (Flemish)	12 (2.9)	34 (4.7)	26 (4.0)	28 (4.5)	10 (0.7)
Bosnia and Herzegovina	1 (1.0)	12 (2.5)	29 (4.2)	57 (4.2)	5 (0.3)
Bulgaria	30 (3.7)	31 (3.7)	17 (3.3)	22 (3.4)	14 (0.8)
Canada	6 (2.2)	31 (2.2)	30 (2.7)	33 (2.2)	8 (0.5)
Chile	15 (3.0)	25 (3.7)	21 (3.3)	39 (4.4)	10 (0.8)
Chinese Taipei	7 (2.1)	47 (4.3)	32 (4.0)	14 (2.9)	11 (0.5)
Croatia	8 (2.6)	28 (4.0)	25 (3.7)	38 (4.1)	8 (0.6)
Cyprus	5 (1.9)	12 (3.1)	73 (3.9)	10 (2.6)	9 (0.6)
Czech Republic	21 (3.4)	33 (3.8)	26 (3.9)	21 (3.8)	12 (0.7)
Denmark <sup>r</sup>	13 (3.4)	23 (3.8)	27 (4.5)	38 (4.6)	9 (0.7)
England <sup>s</sup>	10 (3.1)	36 (5.6)	32 (5.3)	22 (5.1)	10 (0.7)
Finland	24 (3.6)	35 (3.2)	20 (3.2)	21 (3.1)	13 (0.7)
France	25 (4.1)	31 (3.6)	23 (3.4)	22 (3.5)	12 (0.8)
Georgia	15 (3.2)	35 (4.1)	33 (4.1)	17 (3.4)	11 (0.7)
Germany	9 (2.0)	34 (3.7)	25 (3.1)	32 (3.8)	9 (0.6)
Hong Kong SAR	15 (2.9)	33 (4.6)	22 (3.3)	31 (4.3)	11 (0.7)
Hungary	11 (2.5)	33 (4.1)	25 (3.7)	32 (4.5)	9 (0.6)
Iran, Islamic Rep. of	16 (2.2)	37 (3.8)	27 (3.6)	20 (3.1)	11 (0.5)
Ireland	20 (3.6)	24 (3.9)	24 (3.8)	32 (4.2)	11 (0.8)
Italy	14 (3.1)	31 (3.8)	42 (3.8)	14 (3.3)	10 (0.6)
Japan	0 (0.0)	8 (2.3)	33 (4.0)	59 (3.9)	4 (0.2)
Kazakhstan	8 (2.3)	39 (4.2)	30 (3.7)	24 (3.6)	10 (0.6)
Korea, Rep. of	31 (3.9)	0 (0.5)	21 (3.4)	47 (4.3)	14 (1.3)
Kosovo	3 (2.1)	30 (3.8)	33 (4.3)	34 (4.6)	8 (0.6)
Kuwait	9 (1.9)	20 (3.6)	27 (3.8)	43 (4.3)	8 (0.5)
Latvia	37 (3.5)	31 (3.5)	10 (2.4)	22 (3.4)	15 (0.7)
Lithuania	33 (3.8)	31 (3.6)	13 (2.9)	24 (3.5)	14 (0.7)
Malta	7 (0.2)	35 (0.4)	30 (0.4)	29 (0.4)	9 (0.1)
Montenegro	6 (0.5)	24 (0.4)	26 (0.5)	44 (0.4)	7 (0.1)
Morocco	8 (2.1)	44 (4.0)	18 (2.8)	29 (3.4)	10 (0.5)
Netherlands <sup>s</sup>	18 (4.2)	34 (5.8)	19 (5.5)	28 (6.0)	11 (1.0)
New Zealand	23 (3.0)	38 (4.2)	18 (3.1)	21 (3.5)	13 (0.7)
North Macedonia	2 (1.3)	7 (2.3)	20 (3.6)	71 (4.0)	4 (0.4)
Northern Ireland <sup>r</sup>	14 (3.3)	31 (4.0)	29 (5.0)	27 (4.4)	10 (0.8)
Norway (5) <sup>r</sup>	8 (2.4)	26 (4.2)	28 (4.7)	38 (4.8)	8 (0.5)
Oman	20 (2.7)	28 (3.4)	18 (2.7)	35 (3.1)	11 (0.7)
Pakistan <sup>r</sup>	11 (4.1)	12 (2.8)	37 (5.9)	39 (6.6)	8 (1.1)
Philippines	7 (2.3)	35 (3.7)	30 (3.9)	27 (3.8)	9 (0.5)
Poland	18 (3.0)	37 (4.4)	20 (3.5)	25 (4.2)	12 (0.8)
Portugal	17 (3.0)	41 (3.9)	19 (3.2)	22 (3.0)	12 (0.6)
Qatar	12 (2.6)	28 (4.3)	30 (3.4)	29 (3.8)	10 (0.6)
Russian Federation	26 (3.4)	32 (4.1)	25 (3.4)	17 (3.2)	13 (0.8)
Saudi Arabia	6 (1.6)	34 (2.8)	26 (2.8)	34 (3.5)	9 (0.5)
Serbia	1 (0.7)	31 (3.9)	32 (4.3)	36 (4.5)	8 (0.4)
Singapore	4 (0.0)	43 (0.0)	36 (0.0)	18 (0.0)	10 (0.0)
Slovak Republic	12 (2.5)	36 (4.2)	25 (3.9)	27 (4.1)	10 (0.6)
South Africa (5)	14 (2.3)	23 (3.4)	31 (3.6)	32 (3.4)	9 (0.6)
Spain	5 (1.6)	23 (2.7)	34 (3.5)	39 (3.6)	7 (0.4)
Sweden	5 (2.4)	31 (4.9)	25 (4.2)	38 (4.6)	8 (0.6)
Turkey (5)	7 (2.1)	15 (2.3)	28 (3.5)	49 (4.1)	7 (0.5)
United Arab Emirates <sup>r</sup>	15 (1.1)	31 (1.6)	24 (1.6)	30 (2.0)	10 (0.3)
United States	5 (1.4)	28 (2.9)	32 (2.9)	35 (3.2)	8 (0.4)
<b>International Average</b>	<b>13 (0.4)</b>	<b>29 (0.5)</b>	<b>27 (0.5)</b>	<b>31 (0.5)</b>	<b>10 (0.1)</b>
<b>Benchmarking Participants</b>					
Ontario, Canada	8 (4.2)	27 (3.8)	30 (4.9)	36 (3.9)	8 (0.9)
Quebec, Canada	4 (1.9)	36 (4.4)	32 (4.3)	27 (4.3)	9 (0.5)
Moscow City, Russian Fed.	15 (3.1)	29 (4.1)	21 (3.1)	35 (4.1)	11 (0.8)
Madrid, Spain	5 (1.9)	31 (3.8)	31 (4.3)	33 (4.4)	8 (0.5)
Abu Dhabi, UAE <sup>r</sup>	14 (1.7)	33 (1.5)	20 (1.2)	33 (1.6)	10 (0.3)
Dubai, UAE <sup>r</sup>	6 (0.2)	29 (0.3)	33 (0.4)	31 (0.2)	8 (0.0)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019  
Downloaded from <http://timss2019.org/download>

**Exhibit 6.22: Principals' Years of Experience***Students' Results based on Principals' Reports*

Country	Percent of Students by Principals' Years of Experience as a Principal				Average Years of Experience as a Principal
	20 Years or More	At Least 10 but Less than 20 Years	At Least 5 but Less than 10 Years	Less than 5 Years	
Australia	8 (1.9)	35 (4.5)	30 (4.1)	27 (3.2)	9 (0.5)
Bahrain	6 (0.2)	13 (0.2)	41 (0.2)	39 (0.2)	7 (0.0)
Chile	13 (2.9)	21 (3.5)	25 (3.5)	40 (4.4)	9 (0.9)
Chinese Taipei	5 (1.6)	36 (3.0)	35 (3.5)	23 (2.9)	9 (0.5)
Cyprus	11 (0.4)	9 (0.3)	37 (0.5)	43 (0.5)	8 (0.1)
Egypt	3 (0.8)	15 (3.1)	26 (3.5)	56 (3.9)	6 (0.4)
England	4 (2.0)	29 (4.9)	41 (5.6)	26 (4.8)	8 (0.6)
Finland	21 (3.5)	35 (3.9)	23 (3.6)	21 (3.3)	12 (0.8)
France	6 (2.2)	23 (3.9)	34 (4.6)	37 (4.0)	7 (0.5)
Georgia	18 (3.7)	38 (4.0)	29 (4.3)	15 (3.3)	12 (0.8)
Hong Kong SAR	6 (1.6)	28 (4.4)	32 (4.3)	35 (4.3)	8 (0.5)
Hungary	13 (2.9)	39 (4.2)	22 (3.8)	26 (4.0)	10 (0.6)
Iran, Islamic Rep. of	19 (3.0)	28 (3.1)	26 (3.0)	27 (3.4)	11 (0.6)
Ireland	4 (1.5)	37 (3.9)	31 (4.1)	29 (3.5)	8 (0.5)
Israel	8 (2.2)	33 (3.8)	25 (3.8)	34 (4.0)	9 (0.7)
Italy	11 (2.8)	33 (3.9)	41 (3.7)	15 (3.0)	10 (0.6)
Japan	0 (0.0)	7 (2.1)	39 (4.2)	54 (4.4)	5 (0.2)
Jordan	6 (1.7)	39 (4.2)	31 (4.0)	24 (3.2)	9 (0.5)
Kazakhstan	7 (2.1)	40 (4.2)	26 (3.5)	27 (3.7)	9 (0.6)
Korea, Rep. of	23 (3.3)	1 (0.8)	17 (3.1)	59 (3.8)	11 (1.1)
Kuwait	11 (2.9)	19 (3.1)	22 (3.2)	48 (3.1)	8 (0.7)
Lebanon	19 (3.6)	32 (3.8)	24 (3.2)	24 (3.6)	12 (0.8)
Lithuania	32 (4.4)	34 (4.2)	9 (2.5)	24 (3.9)	15 (0.9)
Malaysia	5 (1.6)	15 (2.9)	21 (3.9)	60 (4.4)	6 (0.5)
Morocco	4 (1.2)	32 (3.1)	33 (3.3)	32 (3.4)	8 (0.4)
New Zealand	7 (2.6)	32 (4.8)	23 (4.0)	38 (5.0)	8 (0.6)
Norway (9)	5 (2.3)	19 (3.6)	35 (4.9)	40 (5.0)	7 (0.5)
Oman	27 (2.9)	25 (3.5)	18 (2.7)	30 (3.2)	12 (0.6)
Portugal	16 (3.2)	38 (3.9)	19 (3.5)	27 (4.2)	11 (0.8)
Qatar	13 (2.0)	35 (4.0)	25 (2.7)	27 (2.9)	10 (0.5)
Romania	14 (2.9)	27 (3.4)	32 (3.3)	26 (3.9)	10 (0.7)
Russian Federation	19 (2.6)	31 (3.5)	27 (3.0)	22 (2.5)	12 (0.6)
Saudi Arabia	11 (2.7)	21 (3.0)	26 (3.5)	43 (3.3)	8 (0.6)
Singapore	5 (0.0)	39 (0.0)	31 (0.0)	24 (0.0)	9 (0.0)
South Africa (9)	14 (2.2)	27 (2.8)	22 (3.0)	36 (3.1)	9 (0.5)
Sweden	5 (1.7)	38 (3.8)	26 (3.9)	31 (3.5)	8 (0.4)
Turkey	7 (2.1)	15 (2.3)	29 (3.3)	48 (3.6)	7 (0.5)
United Arab Emirates	19 (1.5)	33 (1.1)	17 (1.6)	31 (1.7)	11 (0.4)
United States	4 (1.4)	27 (2.7)	29 (3.4)	39 (3.4)	7 (0.4)
<b>International Average</b>	<b>11 (0.4)</b>	<b>28 (0.6)</b>	<b>28 (0.6)</b>	<b>34 (0.6)</b>	<b>9 (0.1)</b>
<b>Benchmarking Participants</b>					
Ontario, Canada	4 (1.8)	33 (5.0)	21 (4.9)	42 (5.6)	8 (0.6)
Quebec, Canada	4 (2.2)	35 (5.0)	20 (3.7)	41 (5.6)	8 (0.7)
Moscow City, Russian Fed.	15 (3.0)	28 (3.8)	22 (3.4)	36 (4.2)	11 (0.7)
Gauteng, RSA (9)	10 (2.9)	26 (4.0)	22 (3.8)	42 (4.0)	8 (0.7)
Western Cape, RSA (9)	14 (2.5)	32 (4.2)	18 (3.3)	36 (4.5)	9 (0.6)
Abu Dhabi, UAE	21 (1.7)	33 (1.6)	15 (1.8)	31 (2.2)	11 (0.3)
Dubai, UAE	8 (0.2)	37 (0.5)	25 (0.6)	30 (0.4)	9 (0.0)

( ) Standard errors appear in parentheses. Because of rounding some results 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.

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