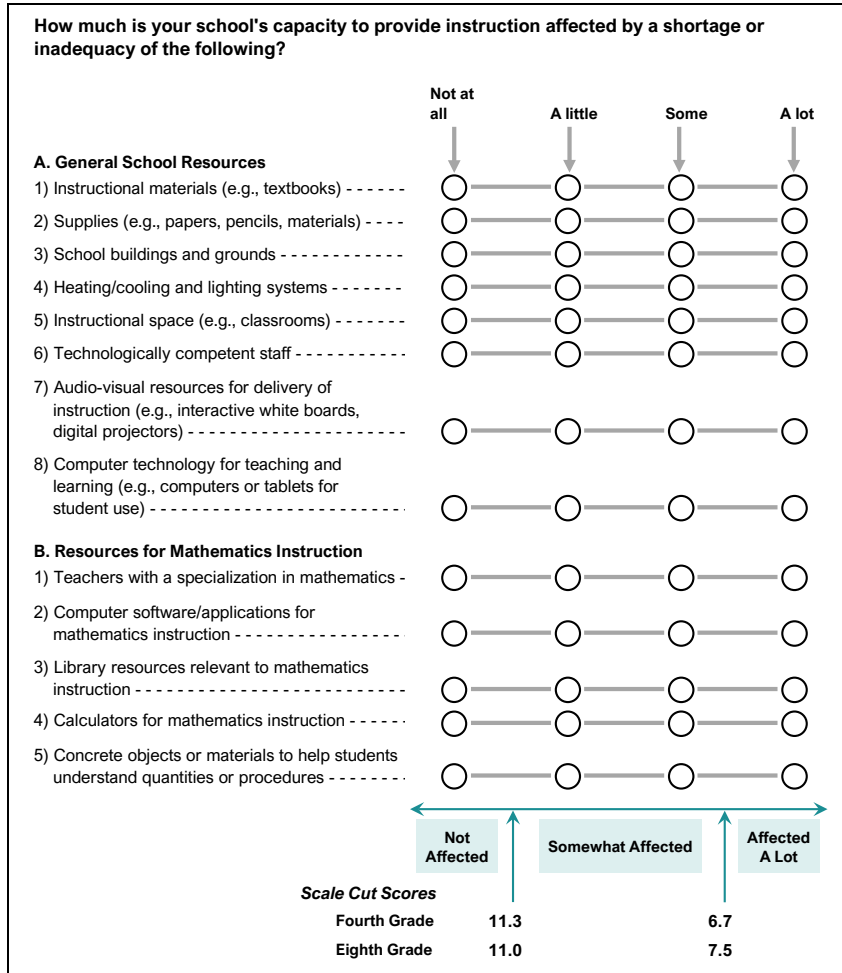


Exhibit 6.13: Instruction Affected by Mathematics Resource Shortages – Principals’ Reports

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
Downloaded from <http://timss2019.org/download>

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)
International Average	26 (0.4)	514 (1.3)	68 (0.5)	499 (0.6)	6 (0.2)	473 (3.2)	
Benchmarking Participants							
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.

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)
International Average	30 (0.5)	509 (1.6)	63 (0.6)	483 (0.7)	7 (0.3)	476 (4.1)	
Benchmarking Participants							
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.