

Exhibit 5.1: Home Resources for Learning

Students' Results based on Students' and Parents' Reports

About the Scale

Students were scored according to their own and their parents' reports regarding the availability of five resources on the *Home Resources for Learning* scale. Cut scores divide the scale into three categories. Students with **Many Resources** had a score at or above the cut score corresponding to students reporting they had more than 100 books and both home study supports in their home and their parents reporting they had more than 25 children's books in their home, that at least one parent finished university, and that at least one parent had a professional occupation, on average. Students with **Few Resources** had a score at or below the cut score corresponding to students reporting they had 25 or fewer books and neither of the home study supports in their home and their parents reporting they had 10 or fewer children's books in the home, that neither parent had gone beyond upper secondary education, and that neither parent was a small business owner or worked in a clerical or professional occupation, on average. All other students had **Some Resources**.

Number of books in the home (students):

- 1) 0-10
- 2) 11-25
- 3) 26-100
- 4) 101-200
- 5) More than 200

Number of children's books in the home (parents):

- 1) 0-10
- 2) 11-25
- 3) 26-50
- 4) 51-100
- 5) More than 100

Number of home study supports (students):

- 1) None
- 2) Internet connection or own room
- 3) Both internet connection and own room

Highest level of education of either parent (parents):

- 1) Finished some primary or lower secondary or did not go to school
- 2) Finished lower secondary
- 3) Finished upper secondary
- 4) Finished post-secondary education
- 5) Finished university or higher

Highest level of occupation of either parent (parents):

- 1) Has never worked outside home for pay, general laborer, or semi-professional (skilled agricultural or fishery worker, craft or trade worker, plant or machine operator)
- 2) Clerical (clerk or service or sales worker)
- 3) Small business owner
- 4) Professional (corporate manager or senior official, professional, or technician or associate professional)



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

Exhibit 5.2: Home Resources for Learning

Students' Results based on Students' and Parents' Reports

Country	Many Resources		Some Resources		Few Resources		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Korea, Rep. of	53 (1.6)	624 (2.1)	47 (1.6)	574 (2.4)	0 (0.1)	~ ~	11.9 (0.06)
Sweden	r 39 (1.9)	562 (3.0)	60 (1.8)	510 (2.8)	2 (0.4)	~ ~	11.2 (0.08)
Denmark	s 37 (1.5)	564 (2.9)	62 (1.5)	526 (3.1)	1 (0.2)	~ ~	11.3 (0.04)
Canada	s 36 (1.7)	546 (2.1)	64 (1.7)	511 (3.8)	0 (0.1)	~ ~	11.3 (0.05)
Northern Ireland	s 35 (1.8)	626 (4.5)	63 (1.7)	565 (3.6)	1 (0.3)	~ ~	11.1 (0.07)
Finland	35 (1.1)	567 (2.5)	65 (1.1)	520 (2.5)	1 (0.1)	~ ~	11.2 (0.04)
Ireland	34 (1.4)	587 (2.6)	64 (1.5)	535 (2.7)	1 (0.3)	~ ~	11.1 (0.05)
Norway (5)	s 33 (1.5)	583 (3.9)	66 (1.5)	540 (3.1)	1 (0.2)	~ ~	11.5 (0.05)
Singapore	31 (1.0)	665 (3.4)	67 (1.0)	612 (4.0)	1 (0.2)	~ ~	11.0 (0.04)
Cyprus	29 (1.4)	570 (3.1)	70 (1.3)	522 (2.7)	1 (0.2)	~ ~	10.9 (0.05)
France	28 (1.5)	538 (2.8)	69 (1.4)	471 (2.9)	3 (0.3)	419 (9.3)	10.8 (0.06)
Germany	s 27 (1.4)	572 (3.1)	72 (1.4)	521 (2.7)	1 (0.3)	~ ~	10.8 (0.05)
Hungary	27 (1.4)	574 (3.0)	68 (1.4)	513 (2.5)	5 (0.8)	432 (7.6)	10.6 (0.07)
Belgium (Flemish)	27 (1.1)	567 (2.5)	71 (1.1)	525 (2.1)	3 (0.4)	472 (6.9)	10.7 (0.04)
Hong Kong SAR	27 (1.6)	636 (4.3)	67 (1.5)	595 (3.0)	6 (0.6)	561 (7.4)	10.5 (0.08)
Malta	r 27 (0.7)	553 (2.8)	72 (0.7)	504 (1.7)	1 (0.2)	~ ~	10.8 (0.03)
Czech Republic	r 24 (1.1)	582 (3.2)	75 (1.1)	530 (2.7)	1 (0.2)	~ ~	10.8 (0.04)
Austria	22 (1.0)	584 (2.7)	75 (1.0)	531 (2.0)	2 (0.3)	~ ~	10.6 (0.04)
Poland	22 (1.1)	568 (3.9)	77 (1.0)	509 (2.6)	1 (0.2)	~ ~	10.6 (0.05)
Spain	20 (1.2)	547 (2.8)	75 (1.2)	500 (2.8)	4 (0.6)	447 (9.4)	10.4 (0.06)
Chinese Taipei	20 (1.1)	637 (2.5)	74 (1.1)	593 (1.9)	5 (0.5)	542 (8.2)	10.4 (0.05)
Latvia	19 (1.0)	578 (3.4)	79 (1.0)	541 (2.5)	2 (0.3)	~ ~	10.6 (0.04)
Portugal	19 (1.1)	574 (3.3)	76 (1.1)	521 (2.7)	5 (0.5)	466 (6.3)	10.2 (0.06)
Slovak Republic	19 (1.2)	560 (4.2)	74 (1.4)	507 (2.6)	7 (1.3)	416 (8.5)	10.2 (0.08)
Lithuania	r 16 (1.1)	592 (5.1)	82 (1.0)	535 (2.8)	2 (0.3)	~ ~	10.4 (0.05)
Georgia	15 (1.0)	513 (5.5)	82 (1.1)	478 (4.1)	4 (0.6)	445 (15.7)	10.3 (0.06)
Russian Federation	14 (1.1)	597 (3.8)	84 (1.1)	564 (3.4)	3 (0.5)	537 (12.2)	10.3 (0.06)
Bulgaria	13 (0.8)	578 (3.1)	69 (1.9)	526 (2.7)	18 (2.1)	440 (12.5)	9.6 (0.09)
Serbia	13 (1.0)	574 (3.9)	83 (1.1)	506 (2.5)	4 (0.6)	387 (13.9)	10.0 (0.05)
Japan	12 (0.7)	637 (3.8)	87 (0.7)	589 (1.7)	1 (0.2)	~ ~	10.3 (0.04)
Qatar	r 11 (0.9)	512 (7.4)	87 (1.0)	451 (3.6)	2 (0.3)	~ ~	10.2 (0.04)
Croatia	10 (0.7)	549 (3.6)	87 (1.0)	508 (2.2)	3 (0.9)	448 (15.2)	9.9 (0.05)
Italy	10 (0.8)	552 (4.4)	83 (0.9)	515 (2.5)	7 (0.8)	491 (5.3)	9.8 (0.06)
Montenegro	r 9 (0.5)	507 (5.2)	87 (0.6)	454 (2.1)	4 (0.3)	384 (9.8)	10.0 (0.03)
Bahrain	8 (0.5)	520 (5.9)	88 (0.6)	480 (2.7)	4 (0.3)	461 (6.1)	9.9 (0.03)
North Macedonia	7 (0.9)	550 (7.6)	78 (1.5)	485 (4.7)	15 (1.6)	406 (9.4)	9.3 (0.09)
Kazakhstan	6 (1.0)	552 (9.5)	90 (1.0)	511 (2.4)	4 (0.5)	491 (5.8)	9.8 (0.06)
Turkey (5)	6 (0.7)	625 (5.9)	68 (1.6)	543 (3.8)	26 (1.6)	450 (6.1)	8.7 (0.08)
Armenia	5 (0.6)	534 (5.4)	86 (0.8)	500 (2.4)	9 (0.7)	469 (6.1)	9.5 (0.05)
Albania	5 (0.7)	577 (6.4)	65 (1.7)	505 (3.3)	30 (1.9)	467 (6.0)	8.6 (0.08)
Bosnia and Herzegovina	5 (0.5)	517 (6.0)	89 (0.7)	453 (2.2)	6 (0.5)	410 (6.7)	9.3 (0.05)
Iran, Islamic Rep. of	5 (0.7)	537 (8.7)	70 (1.5)	453 (3.4)	25 (1.4)	405 (7.2)	8.7 (0.07)
Oman	4 (0.4)	505 (6.8)	86 (0.6)	436 (4.0)	10 (0.6)	391 (7.4)	9.4 (0.04)
Chile	4 (0.4)	516 (6.4)	86 (0.7)	444 (2.9)	10 (0.6)	401 (4.6)	9.3 (0.04)
Kuwait	r 4 (0.5)	447 (14.3)	93 (0.5)	388 (4.9)	2 (0.4)	~ ~	9.8 (0.04)
Kosovo	4 (0.6)	503 (7.4)	84 (0.8)	448 (2.7)	12 (0.8)	415 (6.1)	9.1 (0.05)
Saudi Arabia	3 (0.3)	466 (8.2)	88 (0.7)	403 (3.5)	9 (0.7)	383 (7.4)	9.4 (0.05)
Azerbaijan	2 (0.3)	~ ~	86 (0.8)	525 (2.5)	12 (0.8)	495 (5.3)	9.1 (0.04)
South Africa (5)	r 2 (0.3)	~ ~	74 (1.0)	385 (3.7)	24 (1.0)	349 (3.4)	8.5 (0.05)
Morocco	1 (0.2)	~ ~	39 (1.4)	413 (6.5)	60 (1.4)	369 (5.8)	6.9 (0.08)
Pakistan	r 0 (0.2)	~ ~	62 (2.7)	333 (14.5)	38 (2.8)	325 (12.4)	8.0 (0.14)
Philippines	0 (0.1)	~ ~	66 (1.8)	313 (6.8)	34 (1.8)	270 (5.8)	8.1 (0.07)
Australia	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--
New Zealand	x 42 (1.6)	549 (3.6)	57 (1.6)	486 (4.1)	1 (0.2)	~ ~	11.4 (0.06)
United Arab Emirates	x 12 (0.4)	557 (2.5)	87 (0.4)	495 (2.3)	1 (0.1)	~ ~	10.4 (0.02)
International Average	17 (0.1)	562 (0.7)	75 (0.2)	498 (0.5)	8 (0.1)	433 (1.5)	
Benchmarking Participants							
Moscow City, Russian Fed.	39 (1.3)	611 (2.3)	60 (1.3)	581 (2.4)	0 (0.1)	~ ~	11.4 (0.05)
Ontario, Canada	s 36 (3.1)	548 (3.9)	64 (3.1)	512 (7.4)	0 (0.1)	~ ~	11.3 (0.09)
Quebec, Canada	s 35 (2.0)	562 (3.1)	65 (1.9)	525 (3.2)	0 (0.2)	~ ~	11.2 (0.07)
Madrid, Spain	32 (1.3)	550 (2.4)	66 (1.3)	510 (2.4)	3 (0.4)	457 (10.1)	10.9 (0.06)
Dubai, UAE	s 19 (0.7)	594 (2.9)	81 (0.7)	549 (2.2)	0 (0.1)	~ ~	10.8 (0.02)
Abu Dhabi, UAE	y --	--	--	--	--	--	--

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 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.

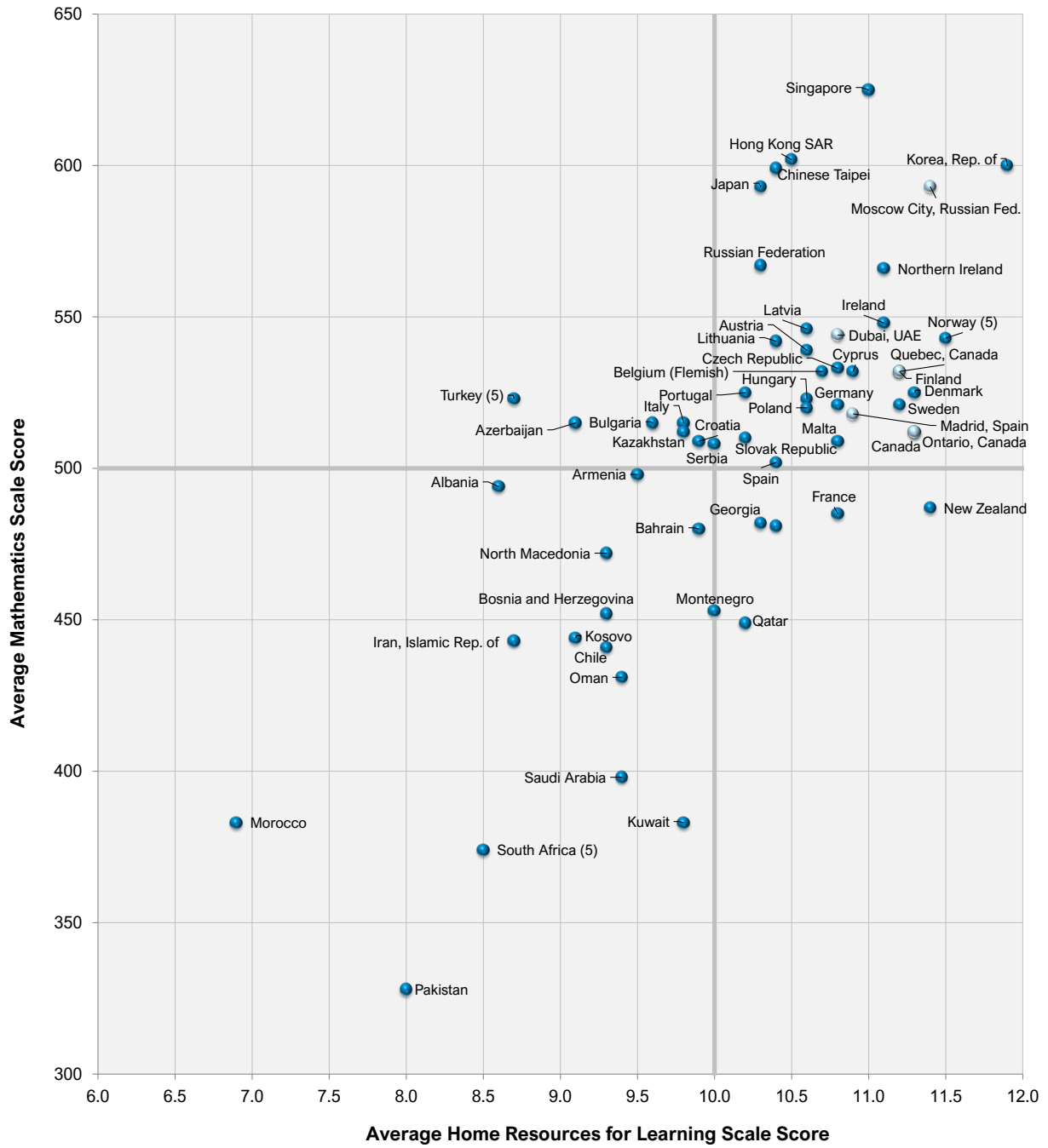
An "x" indicates data are available for at least 40% but less than 50% of the students—interpret with caution. A "y" indicates data are available for less than 40% of the students.

Exhibit 5.2: Home Resources for Learning

Students' Results based on Students' and Parents' Reports

(Continued)

Average Mathematics Achievement by Home Resources for Learning



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Exhibit 5.3: Home Resources for Learning

Students' Results based on Students' and Parents' Reports

Country	Many Resources		Some Resources		Few Resources		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Korea, Rep. of	53 (1.6)	610 (1.9)	47 (1.6)	564 (2.7)	0 (0.1)	~ ~	11.9 (0.06)
Sweden	r 39 (1.9)	580 (3.2)	60 (1.8)	524 (3.3)	2 (0.4)	~ ~	11.2 (0.08)
Denmark	s 37 (1.5)	560 (2.9)	62 (1.5)	521 (3.1)	1 (0.2)	~ ~	11.3 (0.04)
Canada	s 36 (1.7)	558 (2.2)	64 (1.7)	520 (3.1)	0 (0.1)	~ ~	11.3 (0.05)
Northern Ireland	s 35 (1.8)	565 (3.3)	63 (1.7)	515 (2.6)	1 (0.3)	~ ~	11.1 (0.07)
Finland	35 (1.1)	585 (3.2)	65 (1.1)	545 (2.6)	1 (0.1)	~ ~	11.2 (0.04)
Ireland	34 (1.4)	567 (3.4)	64 (1.5)	514 (3.3)	1 (0.3)	~ ~	11.1 (0.05)
Norway (5)	s 33 (1.5)	579 (3.5)	66 (1.5)	534 (3.5)	1 (0.2)	~ ~	11.5 (0.05)
Singapore	31 (1.0)	640 (3.1)	67 (1.0)	579 (3.4)	1 (0.2)	~ ~	11.0 (0.04)
Cyprus	29 (1.4)	551 (3.8)	70 (1.3)	501 (2.8)	1 (0.2)	~ ~	10.9 (0.05)
France	28 (1.5)	541 (2.8)	69 (1.4)	473 (2.9)	3 (0.3)	417 (10.2)	10.8 (0.06)
Germany	s 27 (1.4)	577 (3.0)	72 (1.4)	519 (2.4)	1 (0.3)	~ ~	10.8 (0.05)
Hungary	27 (1.4)	579 (2.5)	68 (1.4)	519 (2.4)	5 (0.8)	442 (10.3)	10.6 (0.07)
Belgium (Flemish)	27 (1.1)	540 (2.4)	71 (1.1)	493 (2.1)	3 (0.4)	432 (6.3)	10.7 (0.04)
Hong Kong SAR	27 (1.6)	570 (3.9)	67 (1.5)	521 (3.3)	6 (0.6)	492 (8.0)	10.5 (0.08)
Malta	r 27 (0.7)	547 (2.7)	72 (0.7)	488 (1.8)	1 (0.2)	~ ~	10.8 (0.03)
Czech Republic	r 24 (1.1)	578 (3.4)	75 (1.1)	531 (3.0)	1 (0.2)	~ ~	10.8 (0.04)
Austria	22 (1.0)	578 (3.1)	75 (1.0)	514 (2.8)	2 (0.3)	~ ~	10.6 (0.04)
Poland	22 (1.1)	577 (3.6)	77 (1.0)	520 (2.5)	1 (0.2)	~ ~	10.6 (0.05)
Spain	20 (1.2)	553 (2.9)	75 (1.2)	509 (2.2)	4 (0.6)	463 (8.8)	10.4 (0.06)
Chinese Taipei	20 (1.1)	598 (2.7)	74 (1.1)	552 (1.6)	5 (0.5)	496 (7.0)	10.4 (0.05)
Latvia	19 (1.0)	573 (2.7)	79 (1.0)	537 (2.3)	2 (0.3)	~ ~	10.6 (0.04)
Portugal	19 (1.1)	547 (3.3)	76 (1.1)	500 (2.6)	5 (0.5)	453 (5.3)	10.2 (0.06)
Slovak Republic	19 (1.2)	574 (3.6)	74 (1.4)	520 (2.6)	7 (1.3)	396 (11.9)	10.2 (0.08)
Lithuania	r 16 (1.1)	587 (5.5)	82 (1.0)	531 (2.5)	2 (0.3)	~ ~	10.4 (0.05)
Georgia	15 (1.0)	487 (5.1)	82 (1.1)	449 (4.5)	4 (0.6)	432 (20.7)	10.3 (0.06)
Russian Federation	14 (1.1)	599 (4.0)	84 (1.1)	564 (3.0)	3 (0.5)	522 (11.1)	10.3 (0.06)
Bulgaria	13 (0.8)	602 (4.0)	69 (1.9)	536 (3.5)	18 (2.1)	420 (11.7)	9.6 (0.09)
Serbia	13 (1.0)	576 (3.4)	83 (1.1)	517 (2.9)	4 (0.6)	389 (17.0)	10.0 (0.05)
Japan	12 (0.7)	606 (4.4)	87 (0.7)	558 (1.7)	1 (0.2)	~ ~	10.3 (0.04)
Qatar	r 11 (0.9)	513 (7.6)	87 (1.0)	454 (4.4)	2 (0.3)	~ ~	10.2 (0.04)
Croatia	10 (0.7)	562 (3.5)	87 (1.0)	522 (2.2)	3 (0.9)	468 (11.6)	9.9 (0.05)
Italy	10 (0.8)	551 (4.0)	83 (0.9)	511 (2.9)	7 (0.8)	478 (5.8)	9.8 (0.06)
Montenegro	r 9 (0.5)	515 (5.2)	87 (0.6)	454 (2.7)	4 (0.3)	378 (11.6)	10.0 (0.03)
Bahrain	8 (0.5)	552 (6.4)	88 (0.6)	495 (3.4)	4 (0.3)	451 (8.4)	9.9 (0.03)
North Macedonia	7 (0.9)	511 (7.6)	78 (1.5)	439 (5.6)	15 (1.6)	352 (10.1)	9.3 (0.09)
Kazakhstan	6 (1.0)	557 (12.0)	90 (1.0)	492 (2.9)	4 (0.5)	466 (6.2)	9.8 (0.06)
Turkey (5)	6 (0.7)	612 (5.1)	68 (1.6)	546 (3.6)	26 (1.6)	459 (6.4)	8.7 (0.08)
Armenia	5 (0.6)	511 (6.4)	86 (0.8)	467 (3.3)	9 (0.7)	434 (7.3)	9.5 (0.05)
Albania	5 (0.7)	570 (6.3)	65 (1.7)	499 (3.4)	30 (1.9)	464 (5.7)	8.6 (0.08)
Bosnia and Herzegovina	5 (0.5)	518 (6.1)	89 (0.7)	459 (2.9)	6 (0.5)	420 (8.3)	9.3 (0.05)
Iran, Islamic Rep. of	5 (0.7)	541 (6.4)	70 (1.5)	453 (3.6)	25 (1.4)	395 (7.1)	8.7 (0.07)
Oman	4 (0.4)	526 (7.9)	86 (0.6)	443 (4.2)	10 (0.6)	376 (6.5)	9.4 (0.04)
Chile	4 (0.4)	543 (5.9)	86 (0.7)	473 (2.6)	10 (0.6)	424 (3.9)	9.3 (0.04)
Kuwait	r 4 (0.5)	449 (17.7)	93 (0.5)	402 (6.0)	2 (0.4)	~ ~	9.8 (0.04)
Kosovo	4 (0.6)	485 (8.3)	84 (0.8)	417 (3.2)	12 (0.8)	383 (7.7)	9.1 (0.05)
Saudi Arabia	3 (0.3)	477 (9.6)	88 (0.7)	409 (3.9)	9 (0.7)	382 (8.9)	9.4 (0.05)
Azerbaijan	2 (0.3)	~ ~	86 (0.8)	438 (3.0)	12 (0.8)	403 (5.6)	9.1 (0.04)
South Africa (5)	r 2 (0.3)	~ ~	74 (1.0)	340 (5.2)	24 (1.0)	287 (4.7)	8.5 (0.05)
Morocco	1 (0.2)	~ ~	39 (1.4)	404 (7.3)	60 (1.4)	361 (7.4)	6.9 (0.08)
Pakistan	r 0 (0.2)	~ ~	62 (2.7)	295 (15.3)	38 (2.8)	289 (14.4)	8.0 (0.14)
Philippines	0 (0.1)	~ ~	66 (1.8)	269 (7.8)	34 (1.8)	214 (7.2)	8.1 (0.07)
Australia	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--
New Zealand	x 42 (1.6)	563 (3.3)	57 (1.6)	501 (3.6)	1 (0.2)	~ ~	11.4 (0.06)
United Arab Emirates	x 12 (0.4)	554 (3.2)	87 (0.4)	492 (2.9)	1 (0.1)	~ ~	10.4 (0.02)
International Average	17 (0.1)	557 (0.8)	75 (0.2)	488 (0.5)	8 (0.1)	414 (1.7)	
Benchmarking Participants							
Moscow City, Russian Fed.	39 (1.3)	615 (2.7)	60 (1.3)	582 (2.3)	0 (0.1)	~ ~	11.4 (0.05)
Ontario, Canada	s 36 (3.1)	560 (3.9)	64 (3.1)	523 (5.4)	0 (0.1)	~ ~	11.3 (0.09)
Quebec, Canada	s 35 (2.0)	554 (3.1)	65 (1.9)	514 (3.3)	0 (0.2)	~ ~	11.2 (0.07)
Madrid, Spain	32 (1.3)	552 (2.3)	66 (1.3)	514 (2.2)	3 (0.4)	472 (9.7)	10.9 (0.06)
Dubai, UAE	s 19 (0.7)	593 (3.8)	81 (0.7)	553 (2.4)	0 (0.1)	~ ~	10.8 (0.02)
Abu Dhabi, UAE	y --	--	--	--	--	--	--

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 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.

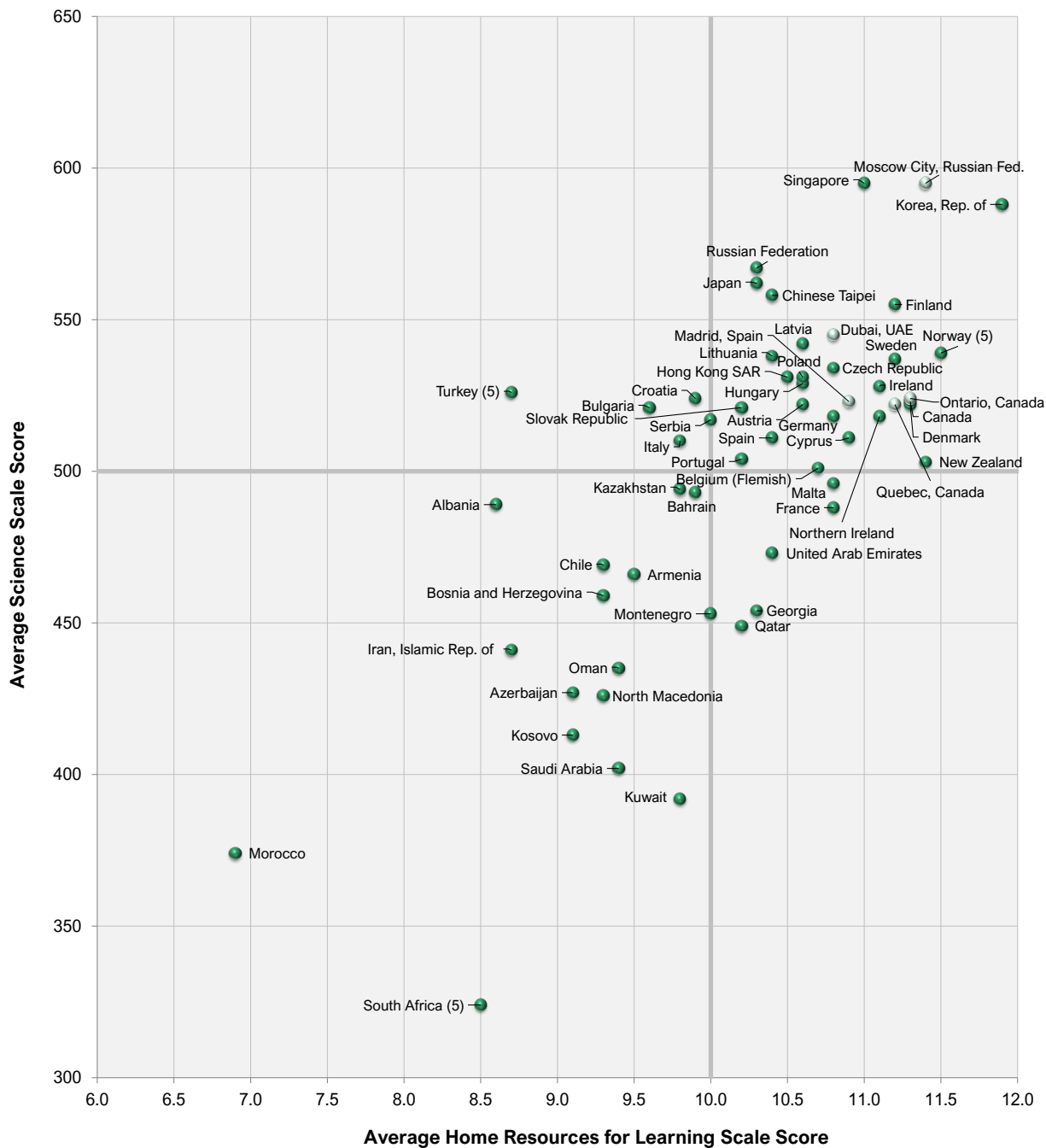
An "x" indicates data are available for at least 40% but less than 50% of the students—interpret with caution. A "y" indicates data are available for less than 40% of the students.

Exhibit 5.3: Home Resources for Learning

Students' Results based on Students' and Parents' Reports

(Continued)

Average Science Achievement by Home Resources for Learning



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