

Home Environment Support

Home Resources

Home Resources for Learning

With information from both parents and students, the TIMSS 2019 results add to the already extensive body of research showing a powerful positive relationship between students' socioeconomic environment and their educational achievement.

The *Home Resources for Learning* scale combines data reported by fourth grade students and their parents. The parents' data were collected using the TIMSS 2019 Early Learning Survey (also called the "Home Questionnaire"), which asked parents to provide information about their child's learning experiences before the child began primary school. As explained in Exhibit 5.1, students provided information about the number of books in their homes and other study supports, while parents provided information about the number of children's books, the parents' levels of education, and the parents' occupations (see About the Scale). As also explained, students were assigned a score on the scale according to the availability of these five home resources for learning.

Exhibit 5.2 presents, for each country, the percentage of students in three categories of the scale, together with average student achievement in mathematics. Countries are ordered by the percentage of students in the "many resources" category, with an average percentage across countries of 17 percent. The majority of students (75%, on average) were assigned to the "some resources" category, with just 8 percent in the "few resources" category. There was a 129-point difference in average mathematics achievement of students in the "many resources" category compared with the "few resources" category (562 vs. 433). Average mathematics achievement for the students in the "some resources" category was in between, at 498 points.

The second panel of Exhibit 5.2 presents a scatterplot showing a modest positive association between countries' average *Home Resources for Learning* and average mathematics achievement.

Exhibit 5.3 presents the same *Home Resources for Learning* data, but this time in conjunction with average science achievement. The overall pattern of results is similar to mathematics, with an average science achievement gap of 143 score points between students in the "many resources" and "few resources" categories (557 vs. 414). Average science achievement for the students in the "some resources" category was again in between, at 488 points. Also similar to mathematics, the scatterplot in the second panel of Exhibit 5.3 shows a modest positive relationship between average *Home Resources for Learning* scores and average science achievement across countries.

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.

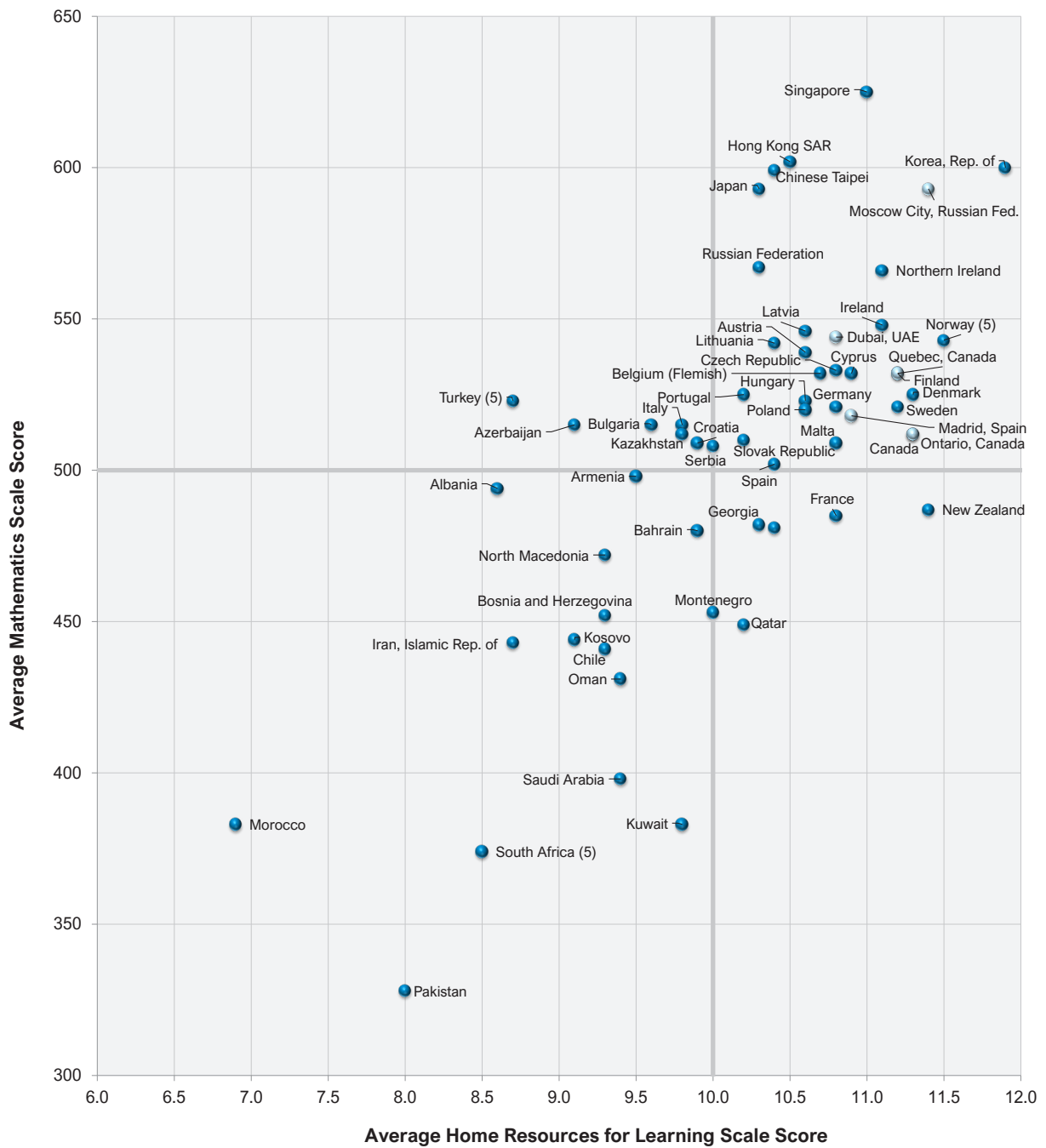
An "x" indicates data are available for at least 40% but less than 50% of the students—interpret with caution. A "y" indicates data are available for less than 40% of the students.

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

(Continued)

Average Mathematics Achievement by Home Resources for Learning



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

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.

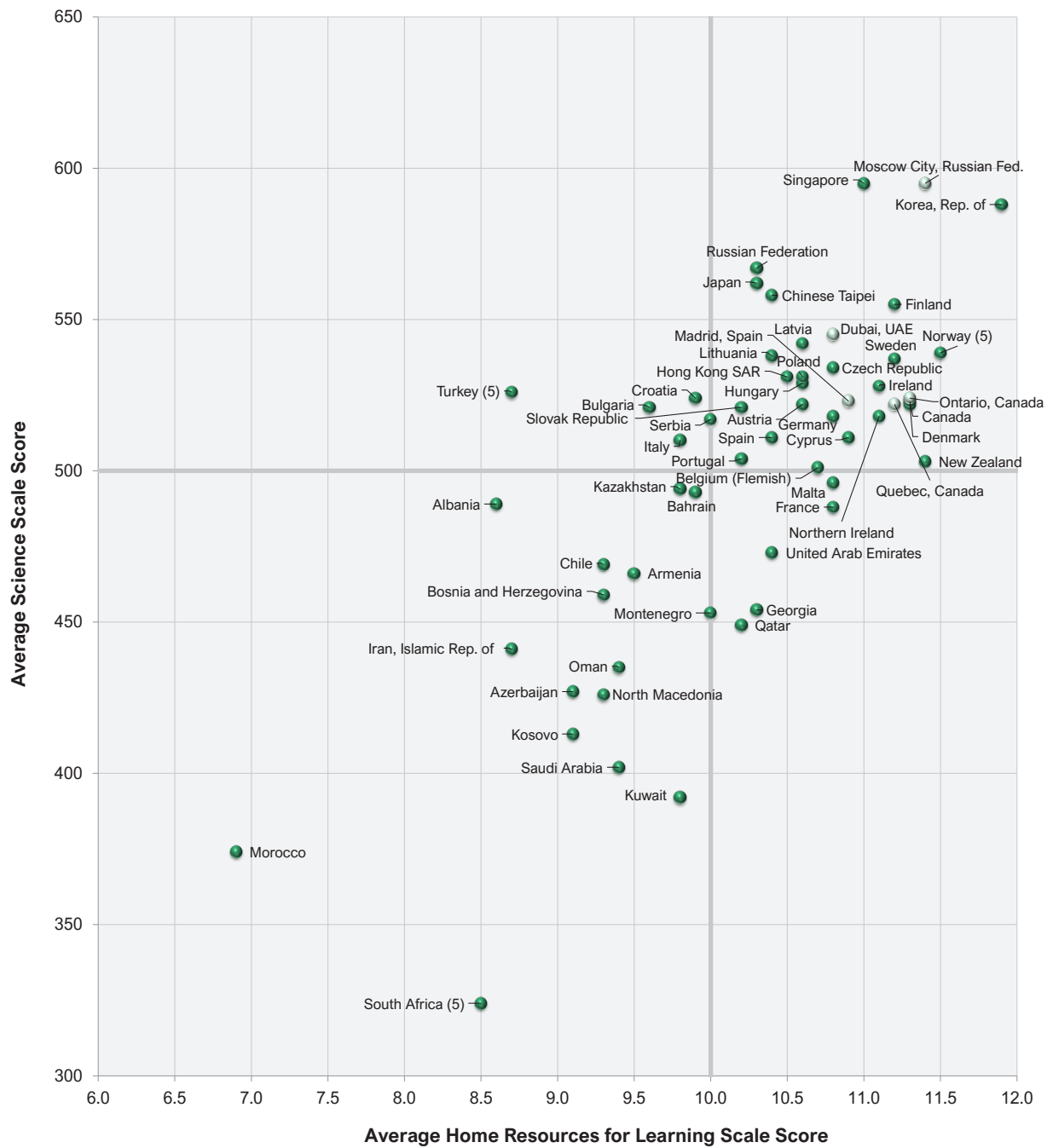
An "r" indicates data are available for at least 70% but less than 85% of the students. An "s" indicates data are available for at least 50% but less than 70% of the students.

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

Home Educational Resources

The TIMSS 2019 results reinforce the already extensive body of research showing a powerful positive relationship between students' socioeconomic environment and their educational achievement. As shown in Exhibit 5.4, the eighth grade *Home Educational Resources* scale is based on students' reports about the number of books and other study supports in their homes, as well as the highest level of their parents' education (see About the Scale). As also explained, students were assigned a score on the scale according to the availability of these three home educational resources.

Exhibit 5.5 presents for each country the percentage of students in three categories of the scale, together with average student achievement in mathematics. Countries are ordered by the percentage of students in the “many resources” category, with an average percentage across countries of 14 percent. Educational resource availability varied widely across countries, with the percentage of students in the “many resources” category ranging from 2 percent in South Africa and Morocco to 40 percent in the Korea. The majority of students (73%, on average) were assigned to the “some resources” category, with 13 percent in the “few resources” category. There was a 113-point difference in the average mathematics achievement of students in the “many resources” category compared with the “few resources” category (546 vs. 433). Average mathematics achievement for the students in the “some resources” category was in between, at 488 points.

The second panel of Exhibit 5.5 presents a scatterplot showing the relationship between average *Home Educational Resources* and average mathematics achievement across countries. There is a modest positive association between *Home Educational Resources* and average mathematics achievement at the country level.

Exhibit 5.6 presents the same *Home Educational Resources* data, but this time in conjunction with average science achievement. The overall pattern of results is similar to mathematics, with an average science achievement gap of 118 score points between students in the “many resources” and “few resources” categories (549 vs. 431). Average science achievement for the students in the “some resources” category was again in between, at 489 points. Also similar to mathematics, the scatterplot in the second panel of Exhibit 5.6 shows a modest positive relationship between average *Home Educational Resources* scores and average science achievement across countries.

Exhibit 5.4: Home Educational Resources
Students' Reports

About the Scale

Students were scored according to their reports regarding the availability of three resources on the *Home Educational Resources* scale. Cut scores divide the scale into three categories. Students with **Many Resources** had a score at or above the cut score corresponding to reporting they had more than 100 books and both home study supports in their home and that at least one parent finished university, on average. Students with **Few Resources** had a score at or below the cut score corresponding to reporting they had 25 or fewer books and neither of the home study supports in the home and that neither parent had gone beyond upper secondary education, on average. All other students had **Some Resources**.

Number of books in the home:

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

Number of home study supports:

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

Highest level of education of either parent:

- 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



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

Exhibit 5.5: Home Educational Resources

Students' 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	40 (1.4)	643 (3.5)	58 (1.3)	586 (2.9)	2 (0.2)	~ ~	11.6 (0.04)
Norway (9)	31 (0.9)	538 (3.1)	68 (1.0)	491 (2.6)	2 (0.3)	~ ~	11.4 (0.04)
Australia	25 (1.1)	564 (5.0)	71 (1.0)	507 (3.3)	4 (0.3)	424 (6.1)	11.1 (0.04)
Hungary	25 (1.3)	585 (4.6)	70 (1.4)	500 (3.1)	5 (0.7)	411 (8.4)	10.9 (0.04)
Finland	23 (1.0)	545 (2.9)	75 (1.0)	500 (2.5)	2 (0.3)	~ ~	11.2 (0.04)
Sweden	23 (1.1)	554 (3.3)	73 (1.1)	491 (2.3)	4 (0.4)	442 (6.8)	11.0 (0.05)
Cyprus	22 (0.9)	549 (3.1)	74 (0.9)	492 (1.7)	4 (0.4)	425 (8.2)	10.9 (0.03)
Ireland	20 (1.0)	572 (3.6)	74 (1.0)	517 (2.3)	6 (0.5)	451 (9.0)	10.8 (0.04)
United States	20 (0.9)	583 (4.5)	72 (0.9)	506 (4.4)	8 (0.5)	451 (6.9)	10.7 (0.04)
Georgia	20 (1.2)	495 (6.1)	74 (1.3)	455 (4.3)	6 (1.1)	430 (15.4)	10.8 (0.06)
Japan	18 (0.8)	637 (4.9)	79 (0.7)	587 (2.3)	3 (0.4)	526 (10.2)	10.9 (0.03)
New Zealand	17 (0.9)	540 (4.0)	77 (0.8)	475 (3.4)	6 (0.4)	414 (7.2)	10.8 (0.04)
England	17 (1.3)	575 (8.6)	78 (1.2)	508 (5.1)	5 (0.5)	453 (11.3)	10.7 (0.05)
Chinese Taipei	16 (0.7)	671 (4.7)	70 (0.8)	612 (2.7)	13 (0.6)	543 (4.1)	10.4 (0.03)
Lithuania	16 (0.9)	580 (5.1)	81 (0.9)	513 (3.0)	3 (0.4)	437 (8.2)	10.8 (0.03)
Israel	16 (1.2)	583 (6.7)	82 (1.2)	523 (4.7)	2 (0.3)	~ ~	11.1 (0.05)
Italy	15 (0.9)	536 (4.4)	72 (1.0)	498 (2.5)	13 (1.0)	452 (5.3)	10.3 (0.05)
France	15 (0.9)	534 (4.2)	78 (0.8)	478 (2.3)	7 (0.5)	432 (4.7)	10.6 (0.04)
Singapore	14 (0.5)	661 (3.8)	78 (0.6)	616 (3.9)	8 (0.6)	536 (8.4)	10.6 (0.03)
Portugal	14 (1.2)	553 (4.1)	70 (1.2)	499 (3.2)	16 (1.0)	460 (4.3)	10.2 (0.06)
Romania	14 (0.9)	559 (5.6)	76 (1.1)	477 (3.9)	10 (1.0)	401 (7.1)	10.3 (0.06)
Hong Kong SAR	13 (0.7)	625 (7.8)	74 (0.9)	577 (4.1)	13 (0.7)	540 (7.0)	10.3 (0.04)
Russian Federation	13 (0.9)	583 (6.9)	81 (0.9)	540 (4.6)	6 (0.7)	503 (8.1)	10.6 (0.05)
United Arab Emirates	12 (0.3)	529 (3.3)	79 (0.3)	473 (1.9)	10 (0.3)	426 (4.2)	10.4 (0.02)
Qatar	11 (0.7)	495 (8.5)	79 (0.8)	445 (4.1)	10 (0.7)	380 (5.5)	10.3 (0.05)
Bahrain	9 (0.4)	507 (5.1)	79 (0.7)	481 (2.0)	12 (0.5)	461 (4.3)	10.2 (0.02)
Turkey	9 (0.7)	605 (5.7)	59 (1.5)	510 (4.4)	32 (1.7)	439 (5.3)	9.5 (0.07)
Iran, Islamic Rep. of	8 (0.7)	530 (8.1)	61 (1.2)	457 (3.8)	31 (1.3)	403 (3.4)	9.5 (0.05)
Kazakhstan	7 (0.6)	519 (7.1)	83 (1.0)	490 (3.2)	10 (0.8)	451 (6.5)	10.2 (0.04)
Oman	7 (0.4)	466 (6.5)	71 (0.8)	420 (2.8)	22 (0.8)	372 (4.2)	9.7 (0.03)
Kuwait	6 (0.4)	432 (10.5)	80 (0.7)	406 (4.9)	14 (0.7)	380 (6.6)	9.9 (0.03)
Lebanon	6 (0.5)	473 (6.0)	73 (1.3)	436 (3.2)	22 (1.3)	396 (3.9)	9.7 (0.05)
Chile	5 (0.4)	519 (6.6)	79 (0.9)	444 (2.8)	16 (0.9)	399 (4.8)	9.9 (0.04)
Saudi Arabia	4 (0.4)	432 (7.2)	69 (1.0)	402 (2.3)	27 (1.1)	369 (3.9)	9.5 (0.05)
Malaysia	4 (0.3)	550 (4.9)	75 (0.8)	468 (2.9)	21 (0.8)	415 (4.9)	9.6 (0.04)
Jordan	4 (0.4)	455 (8.9)	74 (1.1)	428 (3.7)	22 (1.2)	394 (7.1)	9.6 (0.05)
Egypt	4 (0.4)	437 (10.2)	71 (1.1)	424 (4.8)	25 (1.3)	388 (7.0)	9.4 (0.06)
South Africa (9)	2 (0.2)	~ ~	63 (0.7)	396 (2.4)	35 (0.7)	373 (2.5)	9.1 (0.03)
Morocco	2 (0.3)	~ ~	43 (1.0)	400 (3.0)	55 (1.0)	376 (2.3)	8.3 (0.05)
International Average	14 (0.1)	546 (1.0)	73 (0.2)	488 (0.5)	13 (0.1)	433 (1.2)	
Benchmarking Participants							
Moscow City, Russian Fed.	29 (1.4)	602 (6.0)	69 (1.3)	566 (3.7)	2 (0.3)	~ ~	11.3 (0.04)
Ontario, Canada	25 (1.3)	567 (5.6)	73 (1.3)	520 (4.0)	1 (0.3)	~ ~	11.2 (0.04)
Quebec, Canada	18 (1.1)	581 (4.8)	80 (1.1)	537 (3.8)	2 (0.3)	~ ~	10.9 (0.05)
Dubai, UAE	17 (0.5)	578 (4.2)	77 (0.6)	532 (2.0)	6 (0.3)	478 (4.6)	10.8 (0.02)
Abu Dhabi, UAE	10 (0.4)	497 (5.2)	79 (0.5)	438 (3.0)	12 (0.5)	388 (7.3)	10.2 (0.03)
Western Cape, RSA (9)	6 (0.8)	571 (9.0)	60 (0.9)	448 (4.7)	34 (1.1)	407 (3.5)	9.3 (0.06)
Gauteng, RSA (9)	4 (0.5)	497 (10.3)	72 (0.9)	424 (3.2)	24 (0.9)	399 (3.1)	9.5 (0.05)

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.

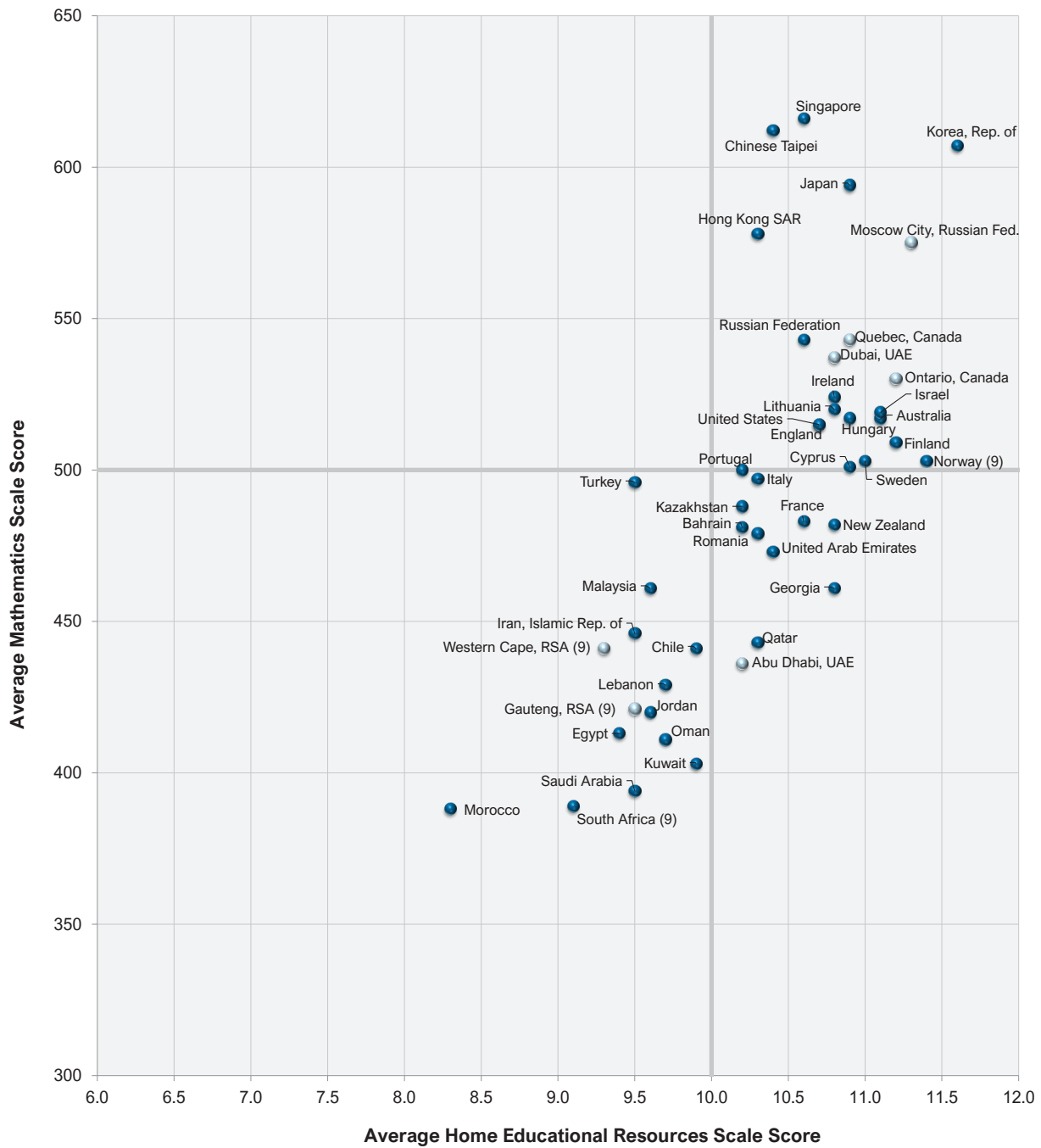
SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019

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

Exhibit 5.5: Home Educational Resources
Students' Reports

(Continued)

Average Mathematics Achievement by Home Educational Resources



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

Exhibit 5.6: Home Educational Resources
Students' 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	40 (1.4)	588 (2.8)	58 (1.3)	545 (2.2)	2 (0.2)	~ ~	11.6 (0.04)
Norway (9)	31 (0.9)	536 (2.9)	68 (1.0)	480 (3.5)	2 (0.3)	~ ~	11.4 (0.04)
Australia	25 (1.1)	580 (3.8)	71 (1.0)	517 (2.8)	4 (0.3)	430 (6.5)	11.1 (0.04)
Hungary	25 (1.3)	589 (4.0)	70 (1.4)	516 (2.7)	5 (0.7)	431 (8.7)	10.9 (0.04)
Finland	23 (1.0)	587 (3.1)	75 (1.0)	532 (3.1)	2 (0.3)	~ ~	11.2 (0.04)
Sweden	23 (1.1)	587 (4.2)	73 (1.1)	509 (3.1)	4 (0.4)	423 (10.2)	11.0 (0.05)
Cyprus	22 (0.9)	531 (3.0)	74 (0.9)	475 (2.2)	4 (0.4)	409 (8.5)	10.9 (0.03)
Ireland	20 (1.0)	581 (3.6)	74 (1.0)	514 (2.6)	6 (0.5)	442 (11.6)	10.8 (0.04)
United States	20 (0.9)	588 (4.3)	72 (0.9)	513 (4.4)	8 (0.5)	455 (7.2)	10.7 (0.04)
Georgia	20 (1.2)	478 (5.7)	74 (1.3)	442 (3.8)	6 (1.1)	415 (16.2)	10.8 (0.06)
Japan	18 (0.8)	607 (3.8)	79 (0.7)	563 (1.8)	3 (0.4)	515 (8.4)	10.9 (0.03)
New Zealand	17 (0.9)	570 (3.5)	77 (0.8)	490 (3.3)	6 (0.4)	418 (9.4)	10.8 (0.04)
England	17 (1.3)	582 (7.6)	78 (1.2)	509 (4.8)	5 (0.5)	444 (10.7)	10.7 (0.05)
Chinese Taipei	16 (0.7)	623 (3.3)	70 (0.8)	574 (1.9)	13 (0.6)	515 (3.6)	10.4 (0.03)
Lithuania	16 (0.9)	589 (4.2)	81 (0.9)	527 (3.2)	3 (0.4)	457 (7.9)	10.8 (0.03)
Israel	16 (1.2)	572 (6.3)	82 (1.2)	519 (4.3)	2 (0.3)	~ ~	11.1 (0.05)
Italy	15 (0.9)	546 (3.4)	72 (1.0)	501 (2.4)	13 (1.0)	449 (5.5)	10.3 (0.05)
France	15 (0.9)	547 (4.0)	78 (0.8)	483 (2.5)	7 (0.5)	422 (5.6)	10.6 (0.04)
Singapore	14 (0.5)	659 (3.5)	78 (0.6)	607 (3.7)	8 (0.6)	525 (8.4)	10.6 (0.03)
Portugal	14 (1.2)	568 (3.7)	70 (1.2)	518 (2.9)	16 (1.0)	481 (4.6)	10.2 (0.06)
Romania	14 (0.9)	537 (5.7)	76 (1.1)	468 (4.0)	10 (1.0)	404 (6.6)	10.3 (0.06)
Hong Kong SAR	13 (0.7)	553 (9.1)	74 (0.9)	500 (5.2)	13 (0.7)	473 (8.1)	10.3 (0.04)
Russian Federation	13 (0.9)	576 (5.3)	81 (0.9)	541 (4.3)	6 (0.7)	504 (8.6)	10.6 (0.05)
United Arab Emirates	12 (0.3)	538 (3.3)	79 (0.3)	474 (2.3)	10 (0.3)	409 (5.6)	10.4 (0.02)
Qatar	11 (0.7)	524 (7.8)	79 (0.8)	477 (4.5)	10 (0.7)	411 (6.3)	10.3 (0.05)
Bahrain	9 (0.4)	531 (5.0)	79 (0.7)	490 (2.0)	12 (0.5)	433 (5.4)	10.2 (0.02)
Turkey	9 (0.7)	612 (5.7)	59 (1.5)	527 (3.6)	32 (1.7)	467 (5.1)	9.5 (0.07)
Iran, Islamic Rep. of	8 (0.7)	535 (7.4)	61 (1.2)	459 (3.5)	31 (1.3)	409 (3.8)	9.5 (0.05)
Kazakhstan	7 (0.6)	512 (6.9)	83 (1.0)	480 (3.0)	10 (0.8)	441 (5.8)	10.2 (0.04)
Oman	7 (0.4)	513 (5.9)	71 (0.8)	466 (2.9)	22 (0.8)	421 (4.5)	9.7 (0.03)
Kuwait	6 (0.4)	474 (9.4)	80 (0.7)	448 (5.5)	14 (0.7)	420 (7.9)	9.9 (0.03)
Lebanon	6 (0.5)	449 (8.9)	73 (1.3)	389 (4.8)	22 (1.3)	322 (6.4)	9.7 (0.05)
Chile	5 (0.4)	537 (6.0)	79 (0.9)	466 (2.9)	16 (0.9)	420 (4.8)	9.9 (0.04)
Saudi Arabia	4 (0.4)	471 (7.9)	69 (1.0)	441 (2.7)	27 (1.1)	405 (3.6)	9.5 (0.05)
Malaysia	4 (0.3)	549 (4.9)	75 (0.8)	469 (3.1)	21 (0.8)	413 (5.4)	9.6 (0.04)
Jordan	4 (0.4)	489 (11.1)	74 (1.1)	462 (4.2)	22 (1.2)	420 (6.2)	9.6 (0.05)
Egypt	4 (0.4)	422 (9.4)	71 (1.1)	402 (4.9)	25 (1.3)	361 (7.8)	9.4 (0.06)
South Africa (9)	2 (0.2)	~ ~	63 (0.7)	381 (3.2)	35 (0.7)	345 (3.6)	9.1 (0.03)
Morocco	2 (0.3)	~ ~	43 (1.0)	401 (3.2)	55 (1.0)	386 (3.1)	8.3 (0.05)
International Average	14 (0.1)	549 (1.0)	73 (0.2)	489 (0.6)	13 (0.1)	431 (1.2)	
Benchmarking Participants							
Moscow City, Russian Fed.	29 (1.4)	589 (3.6)	69 (1.3)	559 (2.7)	2 (0.3)	~ ~	11.3 (0.04)
Ontario, Canada	25 (1.3)	563 (4.4)	73 (1.3)	510 (2.7)	1 (0.3)	~ ~	11.2 (0.04)
Quebec, Canada	18 (1.1)	581 (5.0)	80 (1.1)	528 (3.6)	2 (0.3)	~ ~	10.9 (0.05)
Dubai, UAE	17 (0.5)	592 (4.0)	77 (0.6)	544 (2.2)	6 (0.3)	477 (5.7)	10.8 (0.02)
Abu Dhabi, UAE	10 (0.4)	499 (6.2)	79 (0.5)	423 (3.7)	12 (0.5)	353 (9.7)	10.2 (0.03)
Western Cape, RSA (9)	6 (0.8)	598 (10.0)	60 (0.9)	450 (5.4)	34 (1.1)	393 (4.0)	9.3 (0.06)
Gauteng, RSA (9)	4 (0.5)	516 (10.8)	72 (0.9)	428 (4.2)	24 (0.9)	391 (4.2)	9.5 (0.05)

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.

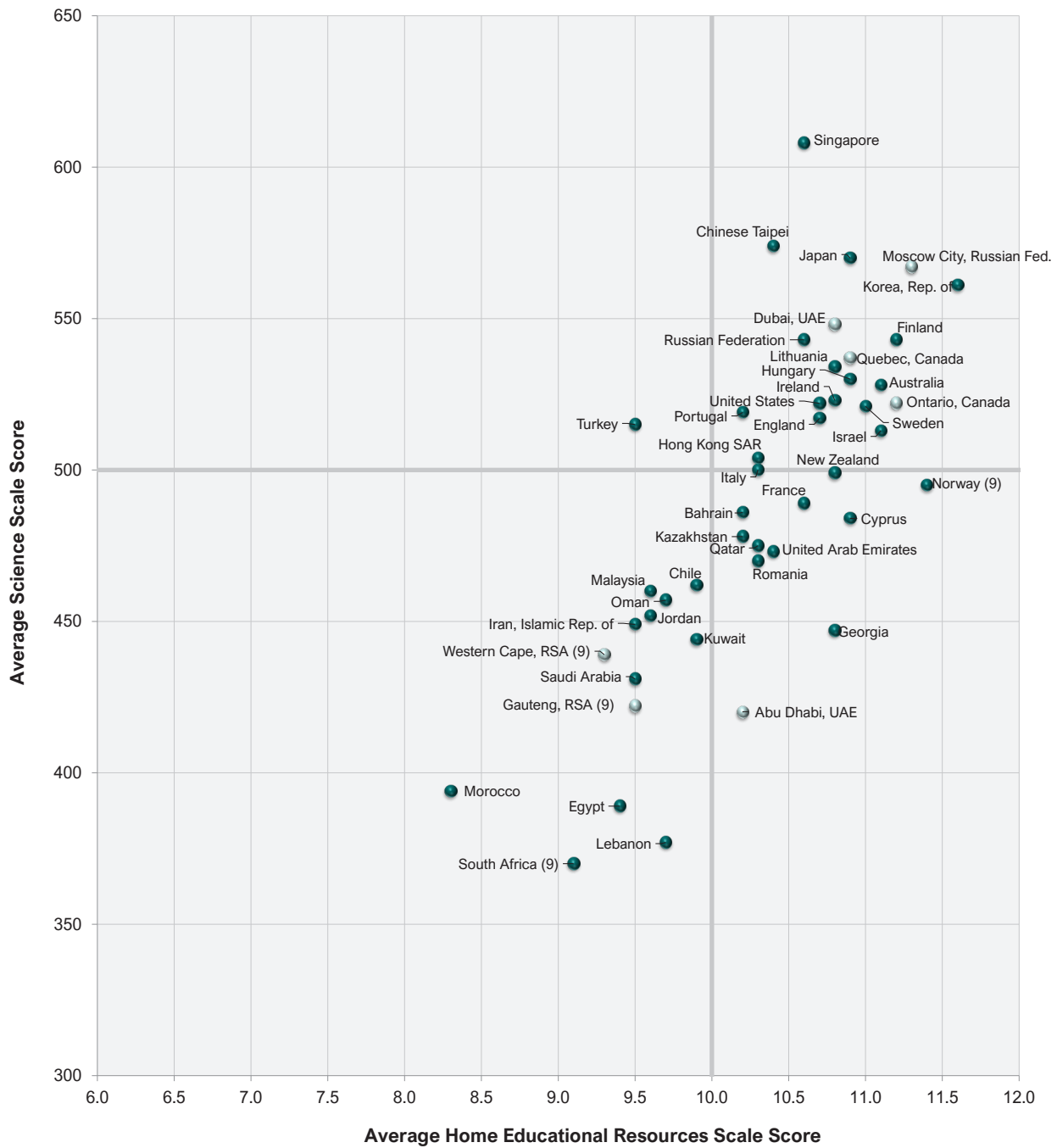
An "r" indicates data are available for at least 70% but less than 85% of the students.

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

Exhibit 5.6: Home Educational Resources
Students' Reports

(Continued)

Average Science Achievement by Home Educational Resources



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

Students Speak the Language of Test

Exhibits 5.7 and 5.8 show the percentages of fourth grade students that “always,” “almost always,” “sometimes,” or “never” speak the language of the TIMSS test at home, together with average achievement in mathematics (Exhibit 5.7) and science (Exhibit 5.8). Exhibits 5.9 and 5.10 provide comparable information for eighth grade students.

About two-thirds of students (63% at fourth grade and 66% at eighth grade), on average, reported “always” speaking the language of the test at home, and most of the remaining students (32% at fourth grade and 30% at eighth grade) reported speaking it “almost always” or “sometimes.” There was relatively little variation in average achievement across these categories. However, the few students (5% at fourth grade and 4% at eighth grade, on average) who “never” spoke the language of the test at home had much lower average achievement in both mathematics (442 for both fourth and eighth grades) and science (418 and 428, respectively).

Exhibit 5.7: Students Speak the Language of the Test at Home

Students' Reports

Country	Always		Almost Always		Sometimes		Never	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	87 (1.0)	496 (3.7)	6 (0.6)	508 (8.4)	6 (0.5)	507 (6.7)	1 (0.7)	~ ~
Armenia	74 (1.0)	497 (2.6)	26 (1.0)	502 (4.0)	0 (0.0)	~ ~	0 (0.0)	~ ~
Australia	67 (1.5)	514 (2.8)	13 (0.7)	530 (5.0)	18 (1.2)	515 (6.8)	1 (0.2)	~ ~
Austria	63 (1.2)	549 (2.4)	12 (0.7)	534 (3.2)	21 (0.9)	519 (3.3)	4 (0.4)	517 (6.5)
Azerbaijan	69 (1.5)	520 (2.8)	14 (0.9)	524 (4.1)	16 (1.0)	527 (4.1)	1 (0.3)	~ ~
Bahrain	52 (1.1)	481 (3.0)	12 (0.6)	484 (5.2)	31 (0.8)	482 (3.1)	5 (0.4)	468 (7.8)
Belgium (Flemish)	63 (1.1)	544 (1.8)	11 (0.6)	530 (3.2)	22 (0.9)	503 (3.4)	4 (0.3)	515 (6.4)
Bosnia and Herzegovina	84 (0.9)	450 (2.3)	8 (0.5)	474 (6.0)	6 (0.5)	462 (5.5)	1 (0.2)	~ ~
Bulgaria	69 (1.9)	528 (4.3)	10 (0.8)	536 (9.5)	15 (1.5)	483 (7.3)	6 (1.0)	419 (12.4)
Canada	56 (1.6)	503 (2.3)	19 (0.5)	528 (2.5)	22 (1.2)	518 (5.0)	2 (0.3)	~ ~
Chile	82 (0.8)	441 (2.7)	9 (0.5)	469 (4.8)	8 (0.5)	440 (6.3)	1 (0.2)	~ ~
Chinese Taipei	51 (1.1)	601 (2.1)	17 (0.6)	611 (3.4)	31 (1.0)	595 (2.5)	1 (0.1)	~ ~
Croatia	68 (1.2)	510 (2.3)	20 (0.8)	519 (3.4)	10 (0.7)	504 (5.7)	1 (0.7)	~ ~
Cyprus	56 (1.2)	534 (2.6)	15 (0.7)	542 (4.7)	25 (1.0)	528 (4.7)	5 (0.4)	510 (9.8)
Czech Republic	75 (0.9)	533 (2.6)	15 (0.8)	542 (4.2)	9 (0.5)	520 (5.0)	1 (0.2)	~ ~
Denmark	65 (1.1)	530 (2.2)	22 (0.9)	528 (3.4)	12 (0.8)	500 (4.4)	1 (0.2)	~ ~
England	70 (1.7)	553 (3.7)	13 (0.7)	568 (5.9)	15 (1.3)	560 (5.6)	2 (0.5)	~ ~
Finland	74 (1.2)	538 (2.2)	14 (0.7)	533 (3.9)	10 (0.8)	501 (5.7)	2 (0.3)	~ ~
France	68 (1.3)	490 (3.4)	13 (0.6)	500 (4.4)	18 (1.0)	461 (5.0)	1 (0.2)	~ ~
Georgia	78 (1.1)	480 (4.0)	10 (0.7)	501 (6.4)	11 (0.7)	487 (5.4)	1 (0.6)	~ ~
Germany	62 (1.2)	532 (2.5)	17 (0.7)	531 (4.3)	18 (0.9)	497 (4.1)	2 (0.3)	~ ~
Hong Kong SAR	56 (0.9)	604 (3.2)	14 (0.6)	590 (6.0)	29 (0.8)	607 (3.6)	2 (0.3)	~ ~
Hungary	75 (1.0)	522 (2.8)	16 (0.7)	544 (4.4)	8 (0.6)	509 (5.2)	0 (0.1)	~ ~
Iran, Islamic Rep. of	58 (2.0)	448 (3.6)	10 (0.7)	458 (6.9)	20 (1.2)	446 (6.5)	11 (1.3)	413 (12.5)
Ireland	68 (1.3)	556 (2.7)	14 (0.9)	539 (5.2)	15 (0.8)	540 (3.7)	4 (0.4)	500 (7.5)
Italy	74 (1.1)	519 (2.4)	13 (0.7)	514 (5.4)	11 (0.8)	496 (4.7)	2 (0.4)	~ ~
Japan	92 (0.5)	595 (1.8)	6 (0.4)	572 (4.8)	1 (0.2)	~ ~	0 (0.1)	~ ~
Kazakhstan	66 (1.0)	512 (2.8)	18 (0.8)	512 (4.1)	15 (0.9)	515 (3.7)	1 (0.1)	~ ~
Korea, Rep. of	68 (1.2)	597 (2.3)	17 (0.8)	620 (3.7)	14 (0.8)	590 (3.9)	0 (0.0)	~ ~
Kosovo	87 (0.8)	447 (2.7)	6 (0.5)	461 (7.7)	6 (0.5)	466 (6.9)	0 (0.1)	~ ~
Kuwait	47 (1.9)	375 (5.7)	13 (0.9)	396 (8.7)	29 (1.3)	414 (6.3)	11 (1.2)	381 (9.3)
Latvia	64 (1.0)	545 (3.0)	22 (0.8)	560 (3.3)	13 (0.7)	535 (4.0)	2 (0.3)	~ ~
Lithuania	68 (1.1)	540 (3.1)	21 (0.8)	556 (3.9)	11 (0.8)	528 (4.4)	0 (0.1)	~ ~
Malta	15 (0.6)	497 (3.4)	18 (0.7)	514 (2.9)	51 (0.7)	519 (1.9)	16 (0.6)	490 (4.3)
Montenegro	71 (0.9)	454 (2.3)	12 (0.6)	469 (4.7)	11 (0.4)	457 (4.0)	6 (0.4)	465 (6.7)
Morocco	32 (2.3)	370 (7.0)	15 (1.0)	381 (8.4)	23 (1.5)	416 (7.3)	30 (2.4)	382 (5.7)
Netherlands	64 (1.5)	542 (2.4)	17 (0.9)	544 (3.5)	16 (1.2)	518 (4.1)	3 (0.4)	535 (10.2)
New Zealand	69 (1.0)	486 (2.8)	13 (0.6)	504 (5.5)	17 (0.8)	491 (5.3)	2 (0.2)	~ ~
North Macedonia	79 (1.5)	478 (5.3)	8 (0.7)	501 (8.5)	10 (0.9)	460 (10.8)	3 (0.7)	433 (23.9)
Northern Ireland	83 (1.1)	565 (2.9)	8 (0.6)	586 (5.0)	8 (0.8)	563 (7.1)	2 (0.3)	~ ~
Norway (5)	64 (1.0)	550 (2.4)	25 (0.9)	541 (4.0)	8 (0.6)	517 (5.0)	2 (0.3)	~ ~
Oman	58 (1.6)	436 (4.3)	15 (0.7)	422 (5.6)	20 (1.0)	439 (4.8)	8 (1.0)	429 (12.4)
Pakistan	22 (2.9)	313 (15.0)	10 (1.4)	330 (21.6)	32 (2.9)	347 (14.7)	36 (3.2)	321 (13.4)
Philippines	9 (0.7)	253 (7.4)	16 (0.9)	263 (7.3)	41 (1.4)	337 (6.7)	33 (1.4)	284 (6.9)
Poland	77 (0.9)	515 (2.8)	19 (0.8)	546 (3.7)	5 (0.4)	524 (7.6)	0 (0.1)	~ ~
Portugal	78 (0.6)	526 (2.6)	12 (0.5)	537 (5.0)	9 (0.6)	515 (5.4)	1 (0.2)	~ ~
Qatar	37 (1.8)	429 (3.6)	15 (0.8)	465 (4.6)	39 (1.4)	473 (4.7)	9 (0.6)	444 (6.4)
Russian Federation	81 (0.9)	566 (3.7)	11 (0.6)	575 (5.0)	7 (0.5)	567 (5.1)	1 (0.2)	~ ~
Saudi Arabia	63 (1.2)	402 (3.6)	12 (0.6)	387 (5.9)	19 (0.9)	410 (5.9)	7 (0.6)	398 (7.6)
Serbia	85 (0.9)	509 (3.1)	10 (0.8)	524 (6.4)	5 (0.4)	480 (10.5)	1 (0.2)	~ ~
Singapore	36 (0.6)	625 (4.1)	23 (0.5)	643 (3.7)	39 (0.7)	620 (4.5)	3 (0.2)	578 (11.4)
Slovak Republic	68 (1.4)	514 (3.2)	17 (0.8)	528 (3.7)	12 (1.0)	477 (7.1)	3 (0.6)	438 (20.9)
South Africa (5)	22 (1.1)	406 (6.3)	13 (0.7)	409 (8.4)	53 (1.0)	369 (3.1)	12 (0.8)	315 (4.0)
Spain	62 (1.1)	505 (2.7)	13 (0.6)	521 (3.3)	17 (0.8)	498 (3.2)	9 (0.6)	478 (4.9)
Sweden	63 (1.8)	532 (2.9)	18 (0.8)	524 (4.2)	17 (1.3)	491 (4.9)	2 (0.4)	~ ~
Turkey (5)	74 (1.5)	538 (3.7)	12 (0.6)	540 (6.7)	11 (1.1)	445 (9.3)	3 (0.4)	401 (11.4)
United Arab Emirates	36 (0.4)	467 (2.4)	16 (0.5)	502 (2.7)	41 (0.6)	494 (2.1)	8 (0.2)	467 (3.3)
United States	65 (1.1)	541 (2.9)	13 (0.5)	544 (3.7)	20 (0.8)	521 (4.0)	3 (0.2)	484 (8.0)
International Average	63 (0.2)	502 (0.5)	14 (0.1)	511 (0.8)	18 (0.1)	495 (0.8)	5 (0.1)	442 (2.1)
Benchmarking Participants								
Ontario, Canada	55 (3.0)	501 (4.2)	21 (1.1)	533 (4.3)	23 (2.1)	523 (8.6)	2 (0.4)	~ ~
Quebec, Canada	53 (1.8)	529 (3.0)	21 (0.9)	536 (3.4)	23 (1.8)	530 (3.7)	3 (0.4)	549 (10.8)
Moscow City, Russian Fed.	78 (0.8)	592 (2.3)	15 (0.7)	601 (3.6)	7 (0.4)	586 (4.7)	1 (0.1)	~ ~
Madrid, Spain	72 (1.0)	517 (2.2)	15 (0.8)	533 (3.3)	12 (0.6)	516 (4.2)	1 (0.3)	~ ~
Abu Dhabi, UAE	39 (0.6)	415 (3.4)	14 (0.4)	455 (3.5)	39 (0.7)	467 (2.6)	9 (0.5)	437 (5.0)
Dubai, UAE	29 (0.6)	535 (2.3)	21 (0.7)	555 (2.9)	43 (0.7)	547 (2.6)	7 (0.4)	530 (5.5)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent. A tilde (~) indicates insufficient data to report achievement.

Exhibit 5.8: Students Speak the Language of the Test at Home

Students' Reports

Country	Always		Almost Always		Sometimes		Never	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Albania	87 (1.0)	491 (3.8)	6 (0.6)	504 (8.6)	6 (0.5)	503 (6.9)	1 (0.7)	~ ~
Armenia	74 (1.0)	465 (3.6)	26 (1.0)	471 (4.4)	0 (0.0)	~ ~	0 (0.0)	~ ~
Australia	67 (1.5)	536 (2.5)	13 (0.7)	540 (4.4)	18 (1.2)	519 (5.0)	1 (0.2)	~ ~
Austria	63 (1.2)	543 (2.5)	12 (0.7)	511 (3.9)	21 (0.9)	479 (4.1)	4 (0.4)	477 (8.0)
Azerbaijan	69 (1.5)	430 (3.5)	14 (0.9)	444 (4.4)	16 (1.0)	445 (4.6)	1 (0.3)	~ ~
Bahrain	52 (1.1)	496 (4.0)	12 (0.6)	502 (6.3)	31 (0.8)	497 (3.3)	5 (0.4)	463 (7.6)
Belgium (Flemish)	63 (1.1)	515 (1.9)	11 (0.6)	501 (4.1)	22 (0.9)	464 (3.4)	4 (0.3)	469 (6.8)
Bosnia and Herzegovina	84 (0.9)	457 (2.8)	8 (0.5)	483 (7.0)	6 (0.5)	474 (6.4)	1 (0.2)	~ ~
Bulgaria	69 (1.9)	542 (4.8)	10 (0.8)	543 (11.4)	15 (1.5)	474 (8.8)	6 (1.0)	383 (14.6)
Canada	56 (1.6)	523 (2.3)	19 (0.5)	537 (2.4)	22 (1.2)	516 (4.5)	2 (0.3)	~ ~
Chile	82 (0.8)	469 (2.6)	9 (0.5)	493 (5.8)	8 (0.5)	475 (5.1)	1 (0.2)	~ ~
Chinese Taipei	51 (1.1)	559 (2.4)	17 (0.6)	574 (3.5)	31 (1.0)	552 (2.4)	1 (0.1)	~ ~
Croatia	68 (1.2)	525 (2.0)	20 (0.8)	528 (4.6)	10 (0.7)	524 (4.7)	1 (0.7)	~ ~
Cyprus	56 (1.2)	516 (2.6)	15 (0.7)	517 (5.0)	25 (1.0)	504 (4.6)	5 (0.4)	481 (9.7)
Czech Republic	75 (0.9)	534 (2.6)	15 (0.8)	543 (4.3)	9 (0.5)	520 (5.5)	1 (0.2)	~ ~
Denmark	65 (1.1)	529 (2.4)	22 (0.9)	522 (3.5)	12 (0.8)	495 (5.3)	1 (0.2)	~ ~
England	70 (1.7)	537 (3.3)	13 (0.7)	552 (4.9)	15 (1.3)	529 (5.1)	2 (0.5)	~ ~
Finland	74 (1.2)	563 (2.3)	14 (0.7)	556 (4.3)	10 (0.8)	507 (6.0)	2 (0.3)	~ ~
France	68 (1.3)	494 (3.3)	13 (0.6)	498 (4.3)	18 (1.0)	466 (5.4)	1 (0.2)	~ ~
Georgia	78 (1.1)	452 (4.3)	10 (0.7)	478 (6.4)	11 (0.7)	460 (5.8)	1 (0.6)	~ ~
Germany	62 (1.2)	536 (2.4)	17 (0.7)	529 (3.7)	18 (0.9)	478 (4.7)	2 (0.3)	~ ~
Hong Kong SAR	56 (0.9)	531 (3.2)	14 (0.6)	519 (6.3)	29 (0.8)	542 (4.1)	2 (0.3)	~ ~
Hungary	75 (1.0)	529 (2.9)	16 (0.7)	549 (4.4)	8 (0.6)	512 (5.4)	0 (0.1)	~ ~
Iran, Islamic Rep. of	58 (2.0)	452 (3.5)	10 (0.7)	457 (7.9)	20 (1.2)	434 (7.1)	11 (1.3)	395 (13.5)
Ireland	68 (1.3)	536 (3.2)	14 (0.9)	513 (7.4)	15 (0.8)	521 (4.2)	4 (0.4)	481 (8.6)
Italy	74 (1.1)	514 (2.9)	13 (0.7)	510 (6.1)	11 (0.8)	492 (4.9)	2 (0.4)	~ ~
Japan	92 (0.5)	564 (1.8)	6 (0.4)	547 (5.8)	1 (0.2)	~ ~	0 (0.1)	~ ~
Kazakhstan	66 (1.0)	497 (3.5)	18 (0.8)	489 (4.4)	15 (0.9)	493 (4.0)	1 (0.1)	~ ~
Korea, Rep. of	68 (1.2)	585 (2.4)	17 (0.8)	606 (3.3)	14 (0.8)	579 (4.0)	0 (0.0)	~ ~
Kosovo	87 (0.8)	417 (3.4)	6 (0.5)	434 (9.8)	6 (0.5)	430 (6.1)	0 (0.1)	~ ~
Kuwait	47 (1.9)	388 (7.0)	13 (0.9)	411 (9.1)	29 (1.3)	418 (7.9)	11 (1.2)	382 (11.5)
Latvia	64 (1.0)	542 (2.7)	22 (0.8)	554 (3.5)	13 (0.7)	530 (4.5)	2 (0.3)	~ ~
Lithuania	68 (1.1)	538 (2.9)	21 (0.8)	548 (3.6)	11 (0.8)	522 (5.0)	0 (0.1)	~ ~
Malta	15 (0.6)	498 (4.0)	18 (0.7)	505 (3.4)	51 (0.7)	504 (2.2)	16 (0.6)	463 (4.1)
Montenegro	71 (0.9)	455 (2.8)	12 (0.6)	467 (5.4)	11 (0.4)	459 (4.6)	6 (0.4)	467 (6.7)
Morocco	32 (2.3)	362 (9.0)	15 (1.0)	375 (9.8)	23 (1.5)	416 (7.6)	30 (2.4)	365 (7.8)
Netherlands	64 (1.5)	525 (3.0)	17 (0.9)	524 (4.2)	16 (1.2)	495 (4.7)	3 (0.4)	501 (11.8)
New Zealand	69 (1.0)	506 (2.4)	13 (0.6)	512 (5.3)	17 (0.8)	495 (4.7)	2 (0.2)	~ ~
North Macedonia	79 (1.5)	434 (6.5)	8 (0.7)	453 (10.1)	10 (0.9)	408 (10.8)	3 (0.7)	399 (23.4)
Northern Ireland	83 (1.1)	518 (2.5)	8 (0.6)	534 (4.9)	8 (0.8)	519 (5.8)	2 (0.3)	~ ~
Norway (5)	64 (1.0)	548 (2.5)	25 (0.9)	535 (4.0)	8 (0.6)	509 (5.2)	2 (0.3)	~ ~
Oman	58 (1.6)	443 (4.7)	15 (0.7)	426 (7.7)	20 (1.0)	450 (4.7)	8 (1.0)	412 (10.4)
Pakistan	22 (2.9)	280 (16.6)	10 (1.4)	282 (23.7)	32 (2.9)	314 (17.3)	36 (3.2)	280 (17.6)
Philippines	9 (0.7)	196 (8.0)	16 (0.9)	219 (9.4)	41 (1.4)	294 (8.1)	33 (1.4)	231 (8.7)
Poland	77 (0.9)	527 (2.7)	19 (0.8)	551 (3.7)	5 (0.4)	530 (8.2)	0 (0.1)	~ ~
Portugal	78 (0.6)	503 (2.5)	12 (0.5)	521 (5.0)	9 (0.6)	500 (4.2)	1 (0.2)	~ ~
Qatar	37 (1.8)	431 (4.2)	15 (0.8)	468 (5.4)	39 (1.4)	475 (4.8)	9 (0.6)	433 (7.8)
Russian Federation	81 (0.9)	568 (3.3)	11 (0.6)	571 (5.1)	7 (0.5)	559 (4.5)	1 (0.2)	~ ~
Saudi Arabia	63 (1.2)	409 (4.1)	12 (0.6)	391 (6.3)	19 (0.9)	411 (7.2)	7 (0.6)	391 (9.0)
Serbia	85 (0.9)	519 (3.3)	10 (0.8)	532 (6.5)	5 (0.4)	482 (12.4)	1 (0.2)	~ ~
Singapore	36 (0.6)	598 (3.8)	23 (0.5)	611 (3.7)	39 (0.7)	586 (4.0)	3 (0.2)	542 (11.2)
Slovak Republic	68 (1.4)	530 (2.9)	17 (0.8)	535 (3.9)	12 (1.0)	477 (9.4)	3 (0.6)	402 (27.1)
South Africa (5)	22 (1.1)	383 (8.6)	13 (0.7)	374 (11.0)	53 (1.0)	315 (4.1)	12 (0.8)	230 (5.2)
Spain	62 (1.1)	516 (2.5)	13 (0.6)	529 (4.0)	17 (0.8)	503 (3.3)	9 (0.6)	480 (5.1)
Sweden	63 (1.8)	552 (2.7)	18 (0.8)	536 (4.9)	17 (1.3)	496 (5.6)	2 (0.4)	~ ~
Turkey (5)	74 (1.5)	543 (3.4)	12 (0.6)	541 (5.8)	11 (1.1)	445 (8.3)	3 (0.4)	411 (12.6)
United Arab Emirates	36 (0.4)	460 (3.1)	16 (0.5)	498 (3.3)	41 (0.6)	486 (2.6)	8 (0.2)	444 (4.0)
United States	65 (1.1)	547 (3.2)	13 (0.5)	547 (3.6)	20 (0.8)	518 (3.9)	3 (0.2)	477 (7.9)
International Average	63 (0.2)	494 (0.6)	14 (0.1)	500 (0.9)	18 (0.1)	482 (0.8)	5 (0.1)	418 (2.4)
Benchmarking Participants								
Ontario, Canada	55 (3.0)	522 (3.7)	21 (1.1)	541 (4.0)	23 (2.1)	520 (7.3)	2 (0.4)	~ ~
Quebec, Canada	53 (1.8)	522 (3.2)	21 (0.9)	529 (3.8)	23 (1.8)	513 (3.8)	3 (0.4)	531 (10.6)
Moscow City, Russian Fed.	78 (0.8)	595 (2.2)	15 (0.7)	599 (4.0)	7 (0.4)	586 (4.9)	1 (0.1)	~ ~
Madrid, Spain	72 (1.0)	522 (2.2)	15 (0.8)	536 (3.0)	12 (0.6)	519 (3.9)	1 (0.3)	~ ~
Abu Dhabi, UAE	39 (0.6)	386 (4.6)	14 (0.4)	441 (4.1)	39 (0.7)	452 (3.4)	9 (0.5)	405 (5.3)
Dubai, UAE	29 (0.6)	538 (2.5)	21 (0.7)	556 (3.2)	43 (0.7)	547 (2.7)	7 (0.4)	521 (5.6)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A tilde (~) indicates insufficient data to report achievement.

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

Exhibit 5.9: Students Speak the Language of the Test at Home

Students' Reports

Country	Always		Almost Always		Sometimes		Never	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	77 (1.6)	512 (3.2)	14 (0.9)	534 (6.8)	8 (0.7)	542 (11.3)	1 (0.2)	~ ~
Bahrain	55 (0.8)	480 (2.2)	19 (0.5)	494 (3.4)	21 (0.6)	477 (3.6)	4 (0.4)	460 (9.2)
Chile	87 (0.5)	439 (2.9)	11 (0.5)	461 (4.8)	2 (0.3)	~ ~	1 (0.2)	~ ~
Chinese Taipei	66 (1.0)	615 (3.1)	27 (0.9)	624 (3.7)	7 (0.4)	552 (6.1)	0 (0.1)	~ ~
Cyprus	63 (0.9)	501 (1.9)	17 (0.7)	498 (4.5)	15 (0.6)	511 (4.2)	5 (0.4)	492 (7.6)
Egypt	66 (1.9)	408 (5.6)	13 (1.0)	437 (9.5)	16 (1.2)	429 (6.4)	5 (0.8)	398 (9.5)
England	81 (1.6)	516 (5.8)	12 (1.1)	523 (8.4)	6 (0.6)	516 (10.8)	1 (0.2)	~ ~
Finland	83 (0.8)	511 (2.6)	12 (0.6)	505 (3.7)	4 (0.4)	491 (7.1)	1 (0.1)	~ ~
France	75 (1.2)	489 (2.5)	17 (0.9)	472 (3.5)	6 (0.6)	442 (7.4)	1 (0.2)	~ ~
Georgia	83 (1.3)	461 (4.6)	12 (0.8)	478 (6.8)	5 (0.9)	436 (15.9)	1 (0.2)	~ ~
Hong Kong SAR	73 (1.4)	574 (4.1)	11 (0.8)	584 (8.0)	12 (1.0)	597 (8.9)	3 (0.5)	595 (12.5)
Hungary	76 (1.0)	513 (3.3)	18 (0.8)	539 (4.7)	6 (0.5)	499 (8.2)	0 (0.1)	~ ~
Iran, Islamic Rep. of	53 (2.0)	461 (4.4)	15 (0.7)	466 (5.7)	20 (1.5)	419 (6.6)	12 (1.2)	404 (9.0)
Ireland	83 (0.8)	526 (2.6)	7 (0.5)	524 (6.5)	7 (0.6)	513 (6.1)	3 (0.3)	495 (8.1)
Israel	78 (1.1)	518 (4.3)	16 (0.8)	528 (6.6)	5 (0.5)	516 (10.7)	2 (0.2)	~ ~
Italy	76 (1.1)	505 (2.6)	16 (0.7)	482 (4.1)	7 (0.6)	464 (7.2)	1 (0.4)	~ ~
Japan	96 (0.3)	596 (2.7)	3 (0.2)	568 (10.4)	1 (0.2)	~ ~	0 (0.1)	~ ~
Jordan	77 (1.4)	420 (4.4)	12 (1.0)	442 (7.0)	8 (0.6)	412 (7.7)	3 (0.5)	387 (12.9)
Kazakhstan	76 (1.0)	488 (3.5)	17 (0.8)	498 (4.7)	7 (0.5)	460 (6.4)	1 (0.1)	~ ~
Korea, Rep. of	88 (0.6)	606 (2.8)	12 (0.6)	616 (5.3)	0 (0.1)	~ ~	0 (0.1)	~ ~
Kuwait	51 (1.4)	391 (5.8)	11 (0.7)	417 (7.4)	29 (1.0)	418 (5.6)	9 (1.0)	408 (6.7)
Lebanon	7 (0.6)	436 (5.9)	12 (0.7)	454 (4.7)	58 (1.2)	432 (3.3)	23 (1.2)	408 (4.4)
Lithuania	77 (1.1)	523 (2.8)	20 (0.9)	521 (4.5)	3 (0.6)	486 (9.7)	0 (0.1)	~ ~
Malaysia	44 (1.5)	477 (3.1)	16 (0.7)	465 (4.0)	32 (1.1)	442 (4.6)	8 (0.9)	437 (7.7)
Morocco	17 (1.3)	382 (4.9)	15 (0.6)	388 (3.2)	48 (1.2)	390 (2.4)	20 (1.0)	389 (3.5)
New Zealand	74 (2.0)	483 (3.2)	16 (1.0)	481 (4.6)	8 (1.2)	481 (11.3)	1 (0.2)	~ ~
Norway (9)	76 (1.2)	508 (2.3)	14 (0.8)	496 (5.8)	8 (0.6)	487 (5.6)	3 (0.4)	483 (14.7)
Oman	50 (1.5)	409 (3.1)	19 (0.7)	424 (4.1)	25 (1.0)	414 (4.1)	7 (0.7)	389 (8.2)
Portugal	88 (0.6)	501 (3.1)	9 (0.6)	510 (4.8)	2 (0.3)	~ ~	0 (0.1)	~ ~
Qatar	45 (1.2)	416 (4.8)	20 (0.8)	480 (5.1)	28 (1.3)	466 (5.7)	7 (0.5)	427 (7.7)
Romania	87 (1.0)	480 (4.4)	9 (0.7)	504 (7.3)	3 (0.5)	446 (10.9)	1 (0.4)	~ ~
Russian Federation	79 (2.2)	547 (4.1)	14 (1.0)	546 (6.5)	6 (1.3)	500 (16.3)	1 (0.4)	~ ~
Saudi Arabia	69 (1.2)	393 (2.7)	11 (0.6)	416 (3.8)	14 (0.7)	393 (4.9)	6 (0.6)	371 (5.9)
Singapore	44 (0.9)	627 (3.7)	31 (0.8)	617 (4.4)	22 (0.7)	593 (5.8)	3 (0.2)	603 (10.9)
South Africa (9)	14 (0.7)	432 (4.4)	13 (0.4)	430 (3.2)	65 (0.8)	377 (2.5)	8 (0.4)	354 (4.0)
Sweden	71 (1.4)	513 (2.4)	16 (0.9)	489 (4.3)	9 (0.7)	464 (6.7)	3 (0.3)	469 (10.5)
Turkey	77 (1.5)	508 (4.3)	11 (0.7)	499 (7.2)	10 (1.1)	411 (10.5)	2 (0.3)	~ ~
United Arab Emirates	35 (0.4)	466 (2.8)	24 (0.6)	510 (3.3)	34 (0.5)	468 (2.1)	7 (0.3)	431 (5.1)
United States	72 (1.1)	521 (4.9)	18 (0.7)	516 (5.1)	9 (0.5)	493 (7.4)	1 (0.2)	~ ~
International Average	66 (0.2)	491 (0.6)	15 (0.1)	498 (0.9)	15 (0.1)	470 (1.4)	4 (0.1)	442 (2.0)
Benchmarking Participants								
Ontario, Canada	64 (1.9)	522 (4.3)	21 (1.1)	547 (5.3)	12 (0.9)	546 (5.5)	2 (0.3)	~ ~
Quebec, Canada	64 (2.3)	540 (3.9)	22 (1.0)	547 (4.3)	11 (1.2)	554 (6.3)	4 (0.7)	566 (11.1)
Moscow City, Russian Fed.	80 (0.8)	574 (4.3)	18 (0.7)	585 (5.4)	2 (0.2)	~ ~	0 (0.2)	~ ~
Gauteng, RSA (9)	17 (1.4)	470 (7.0)	22 (0.8)	444 (3.6)	55 (1.4)	400 (3.0)	6 (0.4)	391 (4.7)
Western Cape, RSA (9)	47 (2.8)	454 (6.7)	18 (0.7)	473 (5.9)	32 (2.3)	409 (3.8)	3 (0.4)	397 (8.6)
Abu Dhabi, UAE	20 (0.6)	457 (5.9)	23 (0.7)	465 (3.8)	46 (0.8)	426 (3.5)	11 (0.6)	391 (6.3)
Dubai, UAE	35 (0.9)	517 (3.7)	32 (0.8)	559 (4.0)	29 (1.0)	538 (3.3)	4 (0.4)	520 (8.7)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent. A tilde (~) indicates insufficient data to report achievement.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019
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Exhibit 5.10: Students Speak the Language of the Test at Home

Students' Reports

Country	Always		Almost Always		Sometimes		Never	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	77 (1.6)	530 (2.8)	14 (0.9)	534 (5.7)	8 (0.7)	522 (10.3)	1 (0.2)	~ ~
Bahrain	55 (0.8)	478 (2.0)	19 (0.5)	517 (3.7)	21 (0.6)	491 (4.2)	4 (0.4)	445 (10.4)
Chile	87 (0.5)	460 (2.8)	11 (0.5)	489 (4.5)	2 (0.3)	~ ~	1 (0.2)	~ ~
Chinese Taipei	66 (1.0)	576 (2.4)	27 (0.9)	586 (2.9)	7 (0.4)	526 (5.0)	0 (0.1)	~ ~
Cyprus	63 (0.9)	485 (2.3)	17 (0.7)	483 (4.4)	15 (0.6)	483 (4.6)	5 (0.4)	465 (7.6)
Egypt	66 (1.9)	385 (6.0)	13 (1.0)	415 (8.5)	16 (1.2)	406 (6.2)	5 (0.8)	370 (10.5)
England	81 (1.6)	520 (5.3)	12 (1.1)	519 (7.8)	6 (0.6)	504 (12.0)	1 (0.2)	~ ~
Finland	83 (0.8)	548 (3.0)	12 (0.6)	532 (4.6)	4 (0.4)	494 (9.1)	1 (0.1)	~ ~
France	75 (1.2)	496 (2.7)	17 (0.9)	473 (3.8)	6 (0.6)	439 (8.2)	1 (0.2)	~ ~
Georgia	83 (1.3)	445 (4.1)	12 (0.8)	466 (6.0)	5 (0.9)	434 (16.2)	1 (0.2)	~ ~
Hong Kong SAR	73 (1.4)	496 (5.5)	11 (0.8)	525 (9.5)	12 (1.0)	526 (9.9)	3 (0.5)	507 (12.8)
Hungary	76 (1.0)	526 (3.0)	18 (0.8)	550 (4.4)	6 (0.5)	518 (7.5)	0 (0.1)	~ ~
Iran, Islamic Rep. of	53 (2.0)	465 (4.0)	15 (0.7)	473 (5.4)	20 (1.5)	417 (6.1)	12 (1.2)	403 (9.0)
Ireland	83 (0.8)	526 (3.0)	7 (0.5)	521 (7.6)	7 (0.6)	510 (7.0)	3 (0.3)	498 (9.8)
Israel	78 (1.1)	512 (4.2)	16 (0.8)	527 (7.1)	5 (0.5)	519 (10.4)	2 (0.2)	~ ~
Italy	76 (1.1)	510 (2.4)	16 (0.7)	487 (4.3)	7 (0.6)	451 (7.7)	1 (0.4)	~ ~
Japan	96 (0.3)	571 (2.2)	3 (0.2)	552 (8.4)	1 (0.2)	~ ~	0 (0.1)	~ ~
Jordan	77 (1.4)	452 (4.6)	12 (1.0)	480 (7.3)	8 (0.6)	438 (9.6)	3 (0.5)	414 (15.5)
Kazakhstan	76 (1.0)	478 (3.3)	17 (0.8)	492 (4.4)	7 (0.5)	447 (6.8)	1 (0.1)	~ ~
Korea, Rep. of	88 (0.6)	561 (2.2)	12 (0.6)	564 (4.1)	0 (0.1)	~ ~	0 (0.1)	~ ~
Kuwait	51 (1.4)	433 (6.4)	11 (0.7)	465 (7.5)	29 (1.0)	462 (6.5)	9 (1.0)	438 (9.2)
Lebanon	7 (0.6)	397 (8.0)	12 (0.7)	424 (7.1)	58 (1.2)	381 (5.2)	23 (1.2)	337 (6.6)
Lithuania	77 (1.1)	535 (2.9)	20 (0.9)	538 (4.8)	3 (0.6)	498 (10.3)	0 (0.1)	~ ~
Malaysia	44 (1.5)	491 (3.3)	16 (0.7)	468 (3.9)	32 (1.1)	434 (4.2)	8 (0.9)	379 (9.2)
Morocco	17 (1.3)	398 (4.7)	15 (0.6)	405 (3.6)	48 (1.2)	405 (3.0)	20 (1.0)	405 (3.2)
New Zealand	74 (2.0)	506 (3.1)	16 (1.0)	490 (4.4)	8 (1.2)	464 (11.5)	1 (0.2)	~ ~
Norway (9)	76 (1.2)	502 (2.9)	14 (0.8)	488 (6.4)	8 (0.6)	460 (9.0)	3 (0.4)	470 (18.9)
Oman	50 (1.5)	460 (3.3)	19 (0.7)	473 (3.7)	25 (1.0)	454 (4.4)	7 (0.7)	427 (8.8)
Portugal	88 (0.6)	518 (2.8)	9 (0.6)	536 (4.9)	2 (0.3)	~ ~	0 (0.1)	~ ~
Qatar	45 (1.2)	459 (4.8)	20 (0.8)	511 (5.9)	28 (1.3)	482 (6.3)	7 (0.5)	448 (9.1)
Romania	87 (1.0)	471 (4.2)	9 (0.7)	494 (7.9)	3 (0.5)	428 (15.9)	1 (0.4)	~ ~
Russian Federation	79 (2.2)	548 (3.5)	14 (1.0)	544 (5.8)	6 (1.3)	486 (14.3)	1 (0.4)	~ ~
Saudi Arabia	69 (1.2)	431 (2.7)	11 (0.6)	461 (4.4)	14 (0.7)	429 (5.3)	6 (0.6)	404 (6.9)
Singapore	44 (0.9)	623 (3.4)	31 (0.8)	610 (4.5)	22 (0.7)	578 (5.9)	3 (0.2)	579 (11.8)
South Africa (9)	14 (0.7)	436 (5.5)	13 (0.4)	431 (3.7)	65 (0.8)	351 (3.3)	8 (0.4)	311 (5.9)
Sweden	71 (1.4)	540 (2.8)	16 (0.9)	508 (5.7)	9 (0.7)	447 (8.7)	3 (0.3)	443 (12.6)
Turkey	77 (1.5)	527 (3.8)	11 (0.7)	519 (5.5)	10 (1.1)	434 (9.2)	2 (0.3)	~ ~
United Arab Emirates	35 (0.4)	473 (3.0)	24 (0.6)	519 (3.9)	34 (0.5)	460 (2.7)	7 (0.3)	396 (7.0)
United States	72 (1.1)	530 (4.8)	18 (0.7)	523 (4.6)	9 (0.5)	487 (7.1)	1 (0.2)	~ ~
International Average	66 (0.2)	495 (0.6)	15 (0.1)	502 (0.9)	15 (0.1)	465 (1.4)	4 (0.1)	428 (2.4)
Benchmarking Participants								
Ontario, Canada	64 (1.9)	520 (3.4)	21 (1.1)	534 (4.4)	12 (0.9)	518 (5.1)	2 (0.3)	~ ~
Quebec, Canada	64 (2.3)	535 (4.1)	22 (1.0)	540 (4.5)	11 (1.2)	536 (6.5)	4 (0.7)	543 (11.2)
Moscow City, Russian Fed.	80 (0.8)	566 (3.0)	18 (0.7)	571 (4.1)	2 (0.2)	~ ~	0 (0.2)	~ ~
Gauteng, RSA (9)	17 (1.4)	489 (7.3)	22 (0.8)	459 (4.4)	55 (1.4)	394 (4.0)	6 (0.4)	371 (6.1)
Western Cape, RSA (9)	47 (2.8)	460 (7.6)	18 (0.7)	481 (6.9)	32 (2.3)	392 (5.0)	3 (0.4)	370 (12.7)
Abu Dhabi, UAE	20 (0.6)	461 (7.4)	23 (0.7)	463 (5.2)	46 (0.8)	404 (4.2)	11 (0.6)	340 (8.4)
Dubai, UAE	35 (0.9)	529 (4.0)	32 (0.8)	574 (4.3)	29 (1.0)	547 (3.8)	4 (0.4)	512 (9.9)

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.
A tilde (~) indicates insufficient data to report achievement.

SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019
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Emphasis on Early Literacy and Numeracy Development

Early Literacy and Numeracy Activities Before Primary School

Considerable research, including results from TIMSS and PIRLS, has documented the importance of early childhood learning activities for fostering student achievement during later school years. The *Early Literacy and Numeracy Activities* scale focuses specifically on literacy and numeracy activities, summarizing parents' reports about how often they engaged with their child in nine literacy activities and nine numeracy activities before their child began primary school (see About the Scale in Exhibit 5.11).

Exhibit 5.12 presents the percentage of students whose parents reported “often,” “sometimes,” and “never or almost never” engaging them in early literacy and numeracy activities, together with average fourth grade mathematics achievement. Countries are ordered by the percentage of students whose parents “often” engaged them in early literacy and numeracy activities. In general, parents reported a good deal of early interaction with their children, with 42 percent of the students having parents who “often” engaged them in such activities and an additional 55 percent with parents who “sometimes” engaged them, on average. Just 3 percent of students had parents who reported “never or almost never” engaging them in early literacy or numeracy activities.

There was a modest positive relationship between the frequency of engagement reported and later mathematics achievement, with the students in the “often” category having higher average achievement than students in the “sometimes” category (516 vs. 495, respectively). In several countries, a small percentage of students (3%, on average) had parents who “never or almost never” engaged them in early literacy and numeracy activities, and these students typically had lower average mathematics achievement (456).

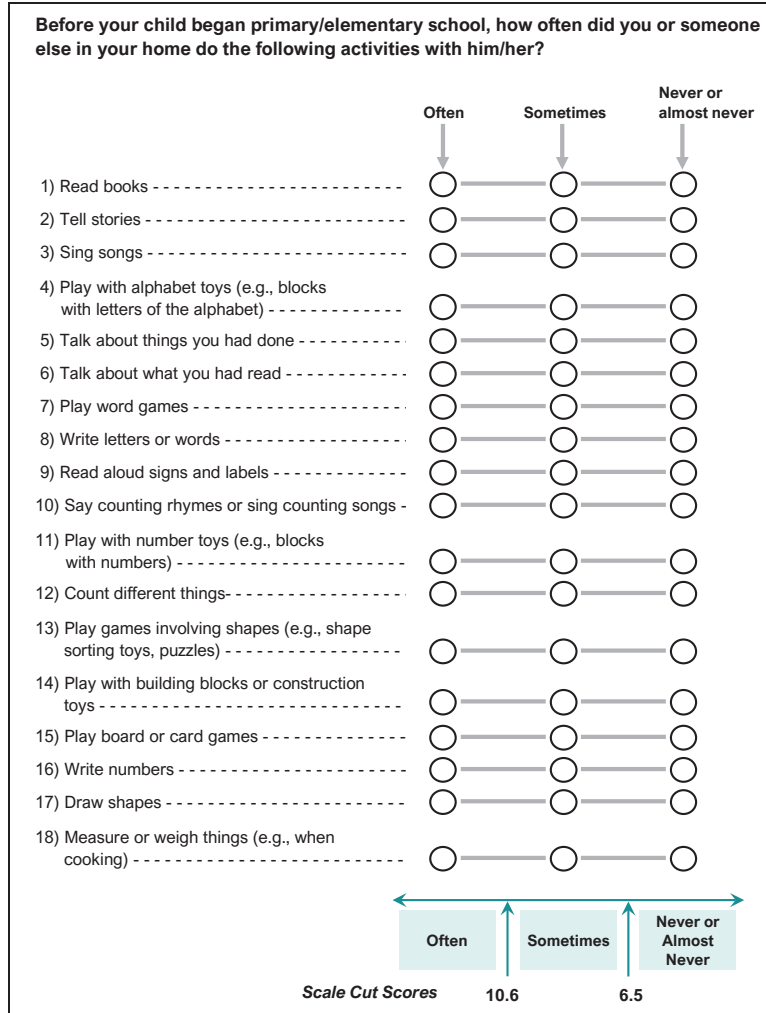
Exhibit 5.13 shows the same student percentages for the *Early Literacy and Numeracy Activities* scale as Exhibit 5.12, but this time together with average fourth grade science achievement. The activities-science achievement relationship was similar to the activities-mathematics achievement relationship, with highest achievement for those whose parents “often” engaged them (507), next for those who were “sometimes” engaged (484), and lowest for those who were “never or almost never” engaged (421).

Exhibit 5.11: Home Early Literacy and Numeracy Activities Before Primary School

Students' Results based on Parents' Reports

About the Scale

Students were scored according to their parents' reports regarding the frequency they or someone in the home engaged their children in the eighteen activities on the *Early Literacy and Numeracy Activities* scale. Cut scores divide the scale into three categories. Students **Often** engaged in early literacy and numeracy activities before primary school had a score at or above the cut score corresponding to their parents reporting they "often" did nine of the eighteen activities and "sometimes" did the other nine, on average. Students **Never or Almost Never** engaged in early literacy and numeracy activities before primary school had a score at or below the cut score corresponding to their parents reporting they "never or almost never" did nine of the eighteen activities and "sometimes" did the other nine, on average. All other students **Sometimes** engaged in early literacy and numeracy activities.



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

Exhibit 5.12: Home Early Literacy and Numeracy Activities Before Primary School

Students' Results based on Parents' Reports

Country	Often		Sometimes		Never or Almost Never		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Russian Federation	67 (1.0)	571 (3.1)	32 (1.0)	561 (4.4)	1 (0.2)	~ ~	11.4 (0.05)
Northern Ireland s	65 (1.4)	592 (4.0)	34 (1.4)	572 (5.3)	1 (0.2)	~ ~	11.6 (0.07)
Serbia	60 (1.2)	523 (3.0)	39 (1.2)	491 (4.3)	1 (0.2)	~ ~	11.1 (0.05)
Malta r	59 (0.9)	525 (1.9)	40 (0.9)	502 (2.3)	1 (0.2)	~ ~	11.2 (0.04)
Montenegro	59 (0.9)	464 (2.3)	41 (0.9)	444 (2.8)	1 (0.1)	~ ~	11.1 (0.04)
Poland	58 (0.9)	525 (3.1)	42 (0.9)	517 (3.0)	0 (0.1)	~ ~	11.0 (0.03)
Albania	58 (1.8)	508 (3.8)	40 (1.7)	481 (4.0)	2 (0.5)	~ ~	10.9 (0.09)
Ireland	57 (0.9)	563 (2.6)	42 (0.9)	537 (3.1)	1 (0.1)	~ ~	11.2 (0.04)
Kazakhstan	56 (1.7)	519 (3.1)	44 (1.7)	504 (2.8)	0 (0.1)	~ ~	11.0 (0.07)
Canada s	56 (0.8)	530 (2.1)	43 (0.8)	515 (2.6)	1 (0.2)	~ ~	11.1 (0.04)
Croatia	56 (1.1)	519 (2.3)	44 (1.1)	499 (2.9)	1 (0.2)	~ ~	11.0 (0.05)
Hungary	55 (0.9)	530 (2.9)	44 (0.8)	522 (3.0)	1 (0.5)	~ ~	10.8 (0.05)
Slovak Republic	55 (1.3)	519 (3.2)	44 (1.1)	504 (3.8)	2 (0.6)	~ ~	10.9 (0.07)
North Macedonia	53 (1.4)	488 (5.8)	45 (1.3)	461 (6.1)	1 (0.4)	~ ~	10.9 (0.07)
Bosnia and Herzegovina	53 (0.8)	460 (2.6)	46 (0.8)	443 (2.9)	1 (0.1)	~ ~	10.8 (0.04)
Czech Republic r	51 (1.1)	546 (3.0)	48 (1.1)	536 (2.8)	0 (0.1)	~ ~	10.7 (0.04)
Cyprus	50 (0.9)	547 (2.6)	49 (0.9)	523 (3.7)	1 (0.2)	~ ~	10.8 (0.05)
Kosovo	49 (1.2)	454 (3.2)	50 (1.2)	439 (3.7)	1 (0.2)	~ ~	10.6 (0.05)
United Arab Emirates s	48 (0.6)	512 (2.2)	50 (0.6)	490 (2.5)	1 (0.1)	~ ~	10.6 (0.03)
Latvia	48 (1.1)	553 (2.8)	51 (1.0)	541 (2.9)	1 (0.2)	~ ~	10.6 (0.04)
Korea, Rep. of	48 (1.1)	613 (2.6)	50 (1.0)	589 (2.6)	2 (0.2)	~ ~	10.7 (0.05)
Lithuania r	46 (1.0)	550 (3.2)	53 (1.0)	537 (3.3)	1 (0.2)	~ ~	10.5 (0.04)
Armenia	46 (1.1)	504 (2.6)	52 (1.1)	495 (2.9)	2 (0.4)	~ ~	10.5 (0.05)
Georgia	46 (1.1)	483 (4.2)	53 (1.0)	484 (3.8)	2 (0.4)	~ ~	10.5 (0.05)
Italy	45 (1.1)	524 (3.1)	54 (1.1)	510 (2.6)	1 (0.2)	~ ~	10.5 (0.04)
France	44 (1.0)	503 (3.5)	55 (1.0)	477 (3.4)	1 (0.2)	~ ~	10.4 (0.03)
Spain	43 (0.8)	518 (2.7)	56 (0.8)	498 (3.0)	1 (0.1)	~ ~	10.4 (0.03)
Bahrain	42 (1.0)	492 (3.5)	57 (1.0)	473 (2.8)	1 (0.1)	~ ~	10.3 (0.03)
Germany s	40 (1.4)	541 (3.1)	59 (1.3)	526 (2.9)	1 (0.2)	~ ~	10.4 (0.05)
Portugal	40 (0.9)	541 (3.0)	59 (0.9)	519 (2.9)	1 (0.4)	~ ~	10.3 (0.04)
Austria	39 (0.9)	550 (2.7)	60 (0.9)	536 (2.3)	1 (0.2)	~ ~	10.2 (0.03)
Bulgaria	39 (1.4)	545 (2.9)	52 (1.3)	512 (5.2)	10 (1.5)	432 (12.7)	9.8 (0.11)
Chile	38 (1.0)	459 (3.1)	60 (1.1)	433 (3.0)	2 (0.3)	~ ~	10.2 (0.04)
Denmark s	37 (1.3)	548 (3.0)	62 (1.3)	533 (3.0)	1 (0.2)	~ ~	10.2 (0.05)
Norway (5) s	37 (1.0)	563 (3.6)	62 (1.1)	546 (2.8)	1 (0.3)	~ ~	10.2 (0.04)
Singapore	34 (0.8)	641 (4.0)	62 (0.8)	620 (4.0)	4 (0.2)	605 (8.0)	9.9 (0.04)
Qatar r	34 (1.0)	473 (4.0)	64 (1.0)	445 (4.0)	2 (0.3)	~ ~	10.0 (0.04)
Kuwait r	33 (1.2)	405 (6.0)	64 (1.2)	379 (4.7)	2 (0.2)	~ ~	9.9 (0.04)
Finland	32 (0.8)	547 (3.0)	68 (0.9)	530 (2.7)	1 (0.1)	~ ~	10.0 (0.03)
Azerbaijan	29 (1.4)	535 (3.6)	66 (1.4)	519 (2.8)	4 (0.5)	483 (7.5)	9.7 (0.06)
Sweden r	29 (0.9)	533 (3.7)	69 (0.9)	526 (3.1)	2 (0.3)	~ ~	9.8 (0.04)
Saudi Arabia	28 (0.9)	416 (4.7)	68 (0.9)	394 (4.0)	3 (0.5)	388 (11.2)	9.7 (0.05)
Philippines	28 (1.0)	327 (7.4)	70 (1.0)	287 (6.4)	2 (0.2)	~ ~	9.8 (0.05)
South Africa (5) r	28 (0.9)	405 (5.1)	68 (0.9)	366 (3.2)	4 (0.5)	344 (8.5)	9.7 (0.05)
Turkey (5)	28 (1.4)	565 (4.5)	56 (1.6)	525 (4.8)	16 (1.8)	443 (9.9)	9.0 (0.14)
Belgium (Flemish)	27 (0.8)	545 (2.5)	71 (0.8)	530 (2.1)	2 (0.3)	~ ~	9.7 (0.04)
Oman	26 (0.8)	460 (6.0)	71 (0.8)	424 (3.8)	2 (0.3)	~ ~	9.8 (0.05)
Chinese Taipei	25 (0.7)	619 (3.3)	71 (0.8)	595 (1.9)	5 (0.4)	572 (5.4)	9.4 (0.03)
Iran, Islamic Rep. of	23 (0.9)	459 (5.1)	71 (1.0)	443 (3.7)	6 (1.1)	396 (18.9)	9.3 (0.08)
Hong Kong SAR	20 (1.2)	622 (4.5)	75 (1.2)	601 (3.7)	4 (0.4)	569 (7.2)	9.3 (0.05)
Japan	20 (0.7)	616 (3.1)	74 (0.7)	590 (1.9)	6 (0.4)	577 (4.5)	9.2 (0.03)
Morocco	13 (0.7)	424 (8.3)	61 (1.7)	387 (5.1)	27 (1.8)	359 (7.1)	7.9 (0.12)
Pakistan r	12 (1.5)	351 (15.9)	73 (3.2)	333 (14.1)	16 (3.1)	298 (14.1)	8.6 (0.16)
Australia	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--
New Zealand x	60 (1.6)	520 (4.1)	40 (1.6)	499 (3.9)	0 (0.1)	~ ~	11.4 (0.07)
International Average	42 (0.1)	516 (0.6)	55 (0.2)	495 (0.5)	3 (0.1)	456 (3.0)	
Benchmarking Participants							
Moscow City, Russian Fed.	70 (1.1)	596 (2.2)	29 (1.1)	587 (3.2)	1 (0.1)	~ ~	11.7 (0.04)
Ontario, Canada s	60 (1.4)	530 (3.8)	39 (1.3)	514 (5.0)	1 (0.3)	~ ~	11.3 (0.08)
Dubai, UAE s	51 (0.9)	564 (2.4)	48 (0.9)	548 (2.7)	1 (0.2)	~ ~	10.8 (0.04)
Madrid, Spain	48 (1.1)	528 (2.9)	51 (1.1)	514 (2.6)	1 (0.2)	~ ~	10.6 (0.05)
Quebec, Canada r	48 (1.2)	547 (2.9)	51 (1.2)	531 (3.3)	1 (0.3)	~ ~	10.6 (0.05)
Abu Dhabi, UAE x	46 (1.2)	474 (3.7)	53 (1.1)	449 (3.2)	2 (0.2)	~ ~	10.5 (0.05)

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.

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

Exhibit 5.13: Home Early Literacy and Numeracy Activities Before Primary School

Students' Results based on Parents' Reports

Country	Often		Sometimes		Never or Almost Never		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Russian Federation	67 (1.0)	571 (2.9)	32 (1.0)	560 (4.0)	1 (0.2)	~ ~	11.4 (0.05)
Northern Ireland s	65 (1.4)	538 (2.9)	34 (1.4)	519 (4.3)	1 (0.2)	~ ~	11.6 (0.07)
Serbia	60 (1.2)	533 (3.2)	39 (1.2)	498 (4.6)	1 (0.2)	~ ~	11.1 (0.05)
Malta r	59 (0.9)	511 (1.9)	40 (0.9)	490 (2.6)	1 (0.2)	~ ~	11.2 (0.04)
Montenegro	59 (0.9)	466 (2.7)	41 (0.9)	443 (3.5)	1 (0.1)	~ ~	11.1 (0.04)
Poland	58 (0.9)	535 (3.1)	42 (0.9)	527 (2.7)	0 (0.1)	~ ~	11.0 (0.03)
Albania	58 (1.8)	503 (4.1)	40 (1.7)	477 (4.1)	2 (0.5)	~ ~	10.9 (0.09)
Ireland	57 (0.9)	542 (3.3)	42 (0.9)	516 (3.6)	1 (0.1)	~ ~	11.2 (0.04)
Kazakhstan	56 (1.7)	506 (3.8)	44 (1.7)	481 (3.5)	0 (0.1)	~ ~	11.0 (0.07)
Canada s	56 (0.8)	541 (2.2)	43 (0.8)	522 (2.6)	1 (0.2)	~ ~	11.1 (0.04)
Croatia	56 (1.1)	533 (2.5)	44 (1.1)	514 (2.7)	1 (0.2)	~ ~	11.0 (0.05)
Hungary	55 (0.9)	536 (2.8)	44 (0.8)	528 (3.1)	1 (0.5)	~ ~	10.8 (0.05)
Slovak Republic	55 (1.3)	531 (3.4)	44 (1.1)	514 (4.0)	2 (0.6)	~ ~	10.9 (0.07)
North Macedonia	53 (1.4)	444 (6.3)	45 (1.3)	412 (7.2)	1 (0.4)	~ ~	10.9 (0.07)
Bosnia and Herzegovina	53 (0.8)	468 (3.3)	46 (0.8)	448 (3.2)	1 (0.1)	~ ~	10.8 (0.04)
Czech Republic r	51 (1.1)	544 (3.0)	48 (1.1)	537 (2.8)	0 (0.1)	~ ~	10.7 (0.04)
Cyprus	50 (0.9)	527 (2.8)	49 (0.9)	502 (3.7)	1 (0.2)	~ ~	10.8 (0.05)
Kosovo	49 (1.2)	427 (4.1)	50 (1.2)	403 (4.4)	1 (0.2)	~ ~	10.6 (0.05)
United Arab Emirates s	48 (0.6)	512 (2.7)	50 (0.6)	484 (3.0)	1 (0.1)	~ ~	10.6 (0.03)
Latvia	48 (1.1)	550 (2.5)	51 (1.0)	536 (2.7)	1 (0.2)	~ ~	10.6 (0.04)
Korea, Rep. of	48 (1.1)	599 (2.7)	50 (1.0)	579 (2.6)	2 (0.2)	~ ~	10.7 (0.05)
Lithuania r	46 (1.0)	546 (2.8)	53 (1.0)	532 (3.2)	1 (0.2)	~ ~	10.5 (0.04)
Armenia	46 (1.1)	474 (3.5)	52 (1.1)	461 (3.9)	2 (0.4)	~ ~	10.5 (0.05)
Georgia	46 (1.1)	454 (4.1)	53 (1.0)	457 (4.5)	2 (0.4)	~ ~	10.5 (0.05)
Italy	45 (1.1)	519 (3.4)	54 (1.1)	505 (2.9)	1 (0.2)	~ ~	10.5 (0.04)
France	44 (1.0)	506 (3.1)	55 (1.0)	479 (3.6)	1 (0.2)	~ ~	10.4 (0.03)
Spain	43 (0.8)	525 (2.4)	56 (0.8)	508 (2.6)	1 (0.1)	~ ~	10.4 (0.03)
Bahrain	42 (1.0)	514 (3.9)	57 (1.0)	483 (3.5)	1 (0.1)	~ ~	10.3 (0.03)
Germany s	40 (1.4)	538 (3.2)	59 (1.3)	526 (2.8)	1 (0.2)	~ ~	10.4 (0.05)
Portugal	40 (0.9)	518 (2.9)	59 (0.9)	498 (2.9)	1 (0.4)	~ ~	10.3 (0.04)
Austria	39 (0.9)	535 (3.3)	60 (0.9)	520 (3.1)	1 (0.2)	~ ~	10.2 (0.03)
Bulgaria	39 (1.4)	560 (3.6)	52 (1.3)	518 (5.9)	10 (1.5)	407 (12.6)	9.8 (0.11)
Chile	38 (1.0)	488 (3.1)	60 (1.1)	460 (2.8)	2 (0.3)	~ ~	10.2 (0.04)
Denmark s	37 (1.3)	548 (3.2)	62 (1.3)	525 (2.9)	1 (0.2)	~ ~	10.2 (0.05)
Norway (5) s	37 (1.0)	559 (3.3)	62 (1.1)	541 (3.2)	1 (0.3)	~ ~	10.2 (0.04)
Singapore	34 (0.8)	613 (3.4)	62 (0.8)	587 (3.6)	4 (0.2)	577 (7.0)	9.9 (0.04)
Qatar r	34 (1.0)	480 (4.8)	64 (1.0)	444 (4.6)	2 (0.3)	~ ~	10.0 (0.04)
Kuwait r	33 (1.2)	422 (7.1)	64 (1.2)	389 (6.0)	2 (0.2)	~ ~	9.9 (0.04)
Finland	32 (0.8)	566 (2.9)	68 (0.9)	554 (2.9)	1 (0.1)	~ ~	10.0 (0.03)
Azerbaijan	29 (1.4)	451 (4.1)	66 (1.4)	430 (3.3)	4 (0.5)	386 (9.5)	9.7 (0.06)
Sweden r	29 (0.9)	545 (4.4)	69 (0.9)	542 (3.2)	2 (0.3)	~ ~	9.8 (0.04)
Saudi Arabia	28 (0.9)	426 (5.8)	68 (0.9)	397 (4.6)	3 (0.5)	382 (13.2)	9.7 (0.05)
Philippines	28 (1.0)	286 (9.0)	70 (1.0)	236 (7.5)	2 (0.2)	~ ~	9.8 (0.05)
South Africa (5) r	28 (0.9)	366 (6.9)	68 (0.9)	312 (4.4)	4 (0.5)	282 (12.1)	9.7 (0.05)
Turkey (5)	28 (1.4)	568 (3.9)	56 (1.6)	529 (4.5)	16 (1.8)	442 (10.4)	9.0 (0.14)
Belgium (Flemish)	27 (0.8)	513 (2.6)	71 (0.8)	499 (2.4)	2 (0.3)	~ ~	9.7 (0.04)
Oman	26 (0.8)	471 (6.3)	71 (0.8)	426 (4.2)	2 (0.3)	~ ~	9.8 (0.05)
Chinese Taipei	25 (0.7)	577 (2.5)	71 (0.8)	553 (2.2)	5 (0.4)	532 (5.2)	9.4 (0.03)
Iran, Islamic Rep. of	23 (0.9)	462 (5.0)	71 (1.0)	442 (4.0)	6 (1.1)	374 (14.1)	9.3 (0.08)
Hong Kong SAR	20 (1.2)	553 (5.1)	75 (1.2)	529 (3.6)	4 (0.4)	503 (8.1)	9.3 (0.05)
Japan	20 (0.7)	583 (2.8)	74 (0.7)	559 (2.0)	6 (0.4)	545 (5.3)	9.2 (0.03)
Morocco	13 (0.7)	421 (9.4)	61 (1.7)	379 (6.4)	27 (1.8)	344 (8.8)	7.9 (0.12)
Pakistan r	12 (1.5)	329 (20.3)	73 (3.2)	289 (15.2)	16 (3.1)	274 (17.7)	8.6 (0.16)
Australia	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--
New Zealand x	60 (1.6)	535 (3.6)	40 (1.6)	512 (3.7)	0 (0.1)	~ ~	11.4 (0.07)
International Average	42 (0.1)	507 (0.7)	55 (0.2)	484 (0.6)	3 (0.1)	421 (3.2)	
Benchmarking Participants							
Moscow City, Russian Fed.	70 (1.1)	598 (2.3)	29 (1.1)	590 (3.2)	1 (0.1)	~ ~	11.7 (0.04)
Ontario, Canada s	60 (1.4)	541 (3.7)	39 (1.3)	525 (4.7)	1 (0.3)	~ ~	11.3 (0.08)
Dubai, UAE s	51 (0.9)	569 (2.7)	48 (0.9)	549 (2.9)	1 (0.2)	~ ~	10.8 (0.04)
Madrid, Spain	48 (1.1)	531 (2.8)	51 (1.1)	519 (2.4)	1 (0.2)	~ ~	10.6 (0.05)
Quebec, Canada r	48 (1.2)	538 (3.4)	51 (1.2)	519 (3.0)	1 (0.3)	~ ~	10.6 (0.05)
Abu Dhabi, UAE x	46 (1.2)	461 (4.7)	53 (1.1)	431 (4.1)	2 (0.2)	~ ~	10.5 (0.05)

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.

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

Students Attended Preprimary Education

There was a positive relationship for fourth grade students between the number of years they attended preprimary education and their mathematics achievement (Exhibit 5.14) and science achievement (Exhibit 5.15). According to their parents, a majority of fourth grade students across countries had attended three years or more of preprimary school—56 percent. Beyond that, on average, 17 percent had attended two years, 15 percent attended one year or less, and 12 percent did not attend preprimary school.

The students who attended three years or more had the highest average mathematics achievement (509), and those with less preprimary school attendance had successively lower average achievement (495, 483, and 464, respectively). There was a similar pattern with regard to science achievement, with an average of 500 for those who attended three years or more, and successively lower science achievement for those with less preprimary attendance (489, 472, and 452, respectively).

Exhibit 5.14: Students Attended Preprimary Education

Students' Results based on Parents' Reports

Country	Attended 3 Years or More		Attended 2 Years		Attended 1 Year or Less		Did Not Attend	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Hungary	95 (0.4)	527 (2.7)	3 (0.4)	506 (9.0)	1 (0.2)	~ ~	0 (0.0)	~ ~
Denmark	95 (0.5)	541 (2.6)	3 (0.4)	513 (9.6)	1 (0.2)	~ ~	0 (0.2)	~ ~
Norway (5)	94 (0.6)	553 (2.6)	3 (0.4)	536 (10.5)	2 (0.3)	~ ~	1 (0.3)	~ ~
Korea, Rep. of	92 (0.5)	601 (2.3)	6 (0.5)	596 (6.9)	1 (0.2)	~ ~	1 (0.2)	~ ~
Sweden	90 (0.9)	532 (2.8)	3 (0.4)	502 (11.7)	3 (0.4)	491 (8.2)	3 (0.5)	484 (9.2)
Belgium (Flemish)	90 (0.6)	539 (1.9)	5 (0.4)	513 (6.0)	3 (0.4)	501 (5.5)	2 (0.2)	~ ~
Italy	89 (0.9)	519 (2.5)	8 (0.8)	499 (4.8)	2 (0.3)	~ ~	1 (0.2)	~ ~
France	88 (0.8)	492 (2.9)	5 (0.5)	469 (8.5)	5 (0.5)	461 (8.2)	2 (0.3)	~ ~
Latvia	84 (0.7)	551 (2.5)	9 (0.5)	531 (5.2)	4 (0.4)	534 (6.7)	3 (0.4)	523 (7.7)
Czech Republic	84 (0.8)	543 (2.4)	11 (0.7)	537 (4.9)	4 (0.4)	518 (9.1)	1 (0.2)	~ ~
Singapore	83 (0.6)	633 (3.7)	10 (0.4)	601 (5.5)	4 (0.3)	598 (7.3)	3 (0.2)	585 (8.9)
Portugal	82 (0.9)	533 (2.4)	10 (0.7)	517 (5.4)	5 (0.3)	497 (6.3)	3 (0.3)	484 (8.8)
Austria	80 (1.2)	546 (2.2)	13 (1.1)	537 (5.0)	4 (0.4)	512 (6.0)	2 (0.4)	~ ~
Slovak Republic	77 (1.7)	523 (2.5)	11 (0.7)	500 (7.1)	7 (0.7)	478 (9.4)	6 (0.8)	418 (10.6)
Bulgaria	75 (2.2)	532 (3.0)	13 (1.7)	480 (10.4)	10 (1.0)	469 (12.3)	3 (0.6)	456 (20.3)
Finland	74 (1.1)	535 (2.5)	10 (0.6)	540 (4.7)	15 (0.8)	540 (5.1)	1 (0.2)	~ ~
Lithuania	74 (1.2)	550 (3.0)	8 (0.7)	531 (7.0)	15 (0.9)	514 (5.2)	2 (0.4)	~ ~
Georgia	71 (1.3)	485 (3.9)	16 (0.8)	478 (5.0)	7 (0.7)	488 (8.1)	6 (0.8)	464 (7.8)
Poland	70 (1.1)	531 (2.7)	16 (0.8)	510 (4.0)	14 (1.2)	498 (4.8)	1 (0.2)	~ ~
Hong Kong SAR	69 (0.9)	608 (3.7)	6 (0.6)	602 (7.6)	14 (0.8)	603 (5.0)	10 (0.8)	587 (5.3)
Spain	68 (0.8)	518 (2.5)	13 (0.7)	499 (4.3)	9 (0.6)	479 (7.1)	10 (0.5)	476 (5.3)
Germany	64 (1.2)	540 (2.6)	8 (0.6)	518 (6.0)	16 (0.8)	534 (4.3)	12 (0.8)	507 (4.8)
Albania	61 (1.6)	508 (3.4)	19 (1.2)	489 (5.8)	13 (0.8)	472 (6.4)	8 (0.9)	475 (11.7)
Croatia	60 (1.8)	520 (2.4)	9 (0.7)	500 (5.6)	14 (1.3)	498 (5.0)	16 (1.4)	494 (4.6)
Chinese Taipei	59 (1.1)	603 (2.1)	36 (0.9)	596 (3.0)	5 (0.5)	594 (6.4)	0 (0.1)	~ ~
Ireland	56 (1.2)	565 (2.6)	25 (1.1)	539 (4.3)	18 (0.9)	532 (3.6)	1 (0.2)	~ ~
Cyprus	56 (1.0)	544 (3.1)	23 (0.7)	530 (3.9)	12 (0.5)	525 (4.6)	9 (0.5)	513 (5.1)
Serbia	55 (1.4)	529 (2.9)	12 (1.3)	499 (8.9)	32 (1.8)	486 (4.5)	1 (0.2)	~ ~
Russian Federation	55 (1.4)	573 (3.9)	10 (0.8)	570 (4.8)	16 (0.8)	564 (3.9)	19 (1.1)	557 (4.7)
Chile	53 (1.2)	447 (3.1)	32 (1.0)	443 (4.0)	12 (0.7)	432 (5.4)	4 (0.3)	420 (8.1)
South Africa (5)	51 (1.1)	388 (5.1)	17 (0.8)	383 (4.7)	24 (0.9)	359 (3.8)	8 (0.5)	368 (6.7)
Armenia	51 (1.8)	503 (3.2)	19 (1.1)	492 (3.9)	13 (0.9)	493 (4.0)	17 (1.1)	498 (3.7)
Kazakhstan	49 (1.6)	519 (3.0)	17 (0.8)	507 (3.9)	14 (0.8)	509 (4.6)	20 (1.3)	503 (4.1)
Montenegro	48 (0.9)	469 (2.5)	14 (0.6)	451 (4.4)	15 (0.7)	445 (3.8)	23 (0.8)	435 (3.4)
Canada	45 (1.4)	533 (2.5)	25 (0.8)	519 (2.7)	18 (1.0)	519 (6.0)	11 (0.7)	504 (6.9)
Bahrain	39 (1.0)	491 (3.2)	32 (0.8)	483 (3.6)	16 (0.8)	473 (4.9)	13 (0.6)	463 (3.9)
North Macedonia	36 (2.0)	505 (5.4)	9 (0.8)	492 (8.0)	13 (1.0)	478 (8.7)	42 (2.1)	446 (7.0)
Malta	35 (0.9)	527 (2.3)	54 (0.9)	515 (2.5)	8 (0.5)	494 (6.1)	3 (0.4)	500 (11.5)
Philippines	33 (1.5)	305 (7.4)	29 (1.8)	300 (8.2)	36 (1.7)	293 (6.9)	2 (0.3)	~ ~
Morocco	31 (0.9)	413 (6.3)	24 (1.1)	391 (5.7)	15 (0.9)	378 (8.2)	30 (1.7)	358 (5.9)
Kuwait	29 (0.9)	396 (5.0)	43 (1.0)	384 (5.8)	18 (1.2)	387 (8.1)	10 (0.9)	379 (10.3)
Qatar	24 (1.1)	467 (5.3)	38 (1.0)	459 (4.8)	22 (1.0)	461 (6.0)	16 (0.9)	430 (6.2)
Pakistan	24 (3.2)	317 (12.3)	4 (0.9)	315 (27.7)	8 (1.5)	333 (15.2)	63 (4.8)	339 (18.4)
Bosnia and Herzegovina	23 (1.3)	473 (3.6)	8 (0.5)	464 (4.6)	50 (1.4)	447 (2.8)	19 (1.2)	445 (4.0)
Azerbaijan	20 (1.1)	533 (3.8)	13 (0.6)	538 (4.0)	28 (1.2)	526 (4.0)	40 (1.6)	513 (3.8)
Oman	17 (0.7)	448 (5.5)	36 (0.9)	448 (5.0)	28 (0.8)	426 (4.4)	19 (0.9)	404 (7.5)
Iran, Islamic Rep. of	16 (1.0)	478 (6.9)	18 (1.0)	458 (5.7)	40 (1.1)	441 (3.9)	26 (1.4)	423 (7.4)
Kosovo	12 (1.1)	465 (6.2)	6 (0.6)	463 (7.0)	49 (1.6)	450 (3.2)	33 (1.6)	432 (4.6)
Saudi Arabia	12 (0.7)	424 (6.8)	18 (1.0)	418 (4.5)	39 (1.0)	399 (4.0)	30 (1.5)	387 (5.6)
Turkey (5)	8 (0.9)	577 (8.4)	16 (1.0)	570 (5.0)	48 (1.6)	521 (5.1)	28 (1.7)	490 (6.4)
Australia	--	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--	--
Japan	--	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--	--
Northern Ireland	--	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--	--
New Zealand	57 (1.3)	510 (3.7)	33 (1.2)	517 (5.4)	7 (0.9)	515 (11.7)	3 (0.4)	470 (16.2)
United Arab Emirates	19 (0.5)	516 (3.4)	38 (0.6)	500 (2.2)	24 (0.7)	514 (3.5)	19 (0.5)	482 (3.4)
International Average	56 (0.2)	509 (0.6)	17 (0.1)	495 (1.0)	15 (0.1)	483 (1.0)	12 (0.2)	464 (1.4)
Benchmarking Participants								
Madrid, Spain	74 (1.3)	530 (2.1)	11 (0.8)	517 (4.1)	8 (0.5)	492 (6.1)	8 (0.8)	487 (6.1)
Quebec, Canada	65 (1.3)	543 (2.9)	14 (0.8)	531 (5.5)	15 (0.9)	532 (4.8)	6 (0.5)	518 (7.2)
Moscow City, Russian Fed.	55 (1.1)	597 (2.2)	14 (0.6)	593 (3.3)	18 (0.6)	588 (3.9)	13 (0.7)	581 (4.6)
Ontario, Canada	38 (2.6)	535 (4.1)	29 (1.3)	522 (4.3)	17 (2.0)	528 (11.8)	16 (1.3)	506 (9.6)
Dubai, UAE	23 (0.9)	569 (2.8)	36 (1.0)	560 (2.9)	26 (0.7)	562 (2.9)	15 (1.0)	536 (5.2)
Abu Dhabi, UAE	--	--	--	--	--	--	--	--

() 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 5.15: Students Attended Preprimary Education

Students' Results based on Parents' Reports

Country	Attended 3 Years or More		Attended 2 Years		Attended 1 Year or Less		Did Not Attend	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Hungary	95 (0.4)	533 (2.8)	3 (0.4)	525 (10.3)	1 (0.2)	--	0 (0.0)	--
Denmark	95 (0.5)	535 (2.7)	3 (0.4)	512 (9.4)	1 (0.2)	--	0 (0.2)	--
Norway (5)	94 (0.6)	550 (2.6)	3 (0.4)	525 (13.5)	2 (0.3)	--	1 (0.3)	--
Korea, Rep. of	92 (0.5)	588 (2.2)	6 (0.5)	597 (5.9)	1 (0.2)	--	1 (0.2)	--
Sweden	90 (0.9)	549 (3.0)	3 (0.4)	511 (12.6)	3 (0.4)	504 (8.8)	3 (0.5)	473 (9.4)
Belgium (Flemish)	90 (0.6)	508 (2.1)	5 (0.4)	485 (5.5)	3 (0.4)	462 (6.8)	2 (0.2)	--
Italy	89 (0.9)	515 (3.0)	8 (0.8)	493 (5.3)	2 (0.3)	--	1 (0.2)	--
France	88 (0.8)	494 (2.8)	5 (0.5)	479 (8.4)	5 (0.5)	461 (9.3)	2 (0.3)	--
Latvia	84 (0.7)	545 (2.3)	9 (0.5)	533 (5.4)	4 (0.4)	530 (7.1)	3 (0.4)	530 (6.3)
Czech Republic	84 (0.8)	542 (2.7)	11 (0.7)	539 (5.2)	4 (0.4)	527 (8.9)	1 (0.2)	--
Singapore	83 (0.6)	603 (3.2)	10 (0.4)	571 (5.2)	4 (0.3)	562 (7.3)	3 (0.2)	549 (8.7)
Portugal	82 (0.9)	509 (2.5)	10 (0.7)	507 (4.8)	5 (0.3)	484 (5.4)	3 (0.3)	478 (8.4)
Austria	80 (1.2)	532 (2.9)	13 (1.1)	523 (5.1)	4 (0.4)	478 (7.7)	2 (0.4)	--
Slovak Republic	77 (1.7)	537 (2.4)	11 (0.7)	504 (7.3)	7 (0.7)	482 (10.5)	6 (0.8)	421 (12.0)
Bulgaria	75 (2.2)	543 (3.8)	13 (1.7)	479 (11.0)	10 (1.0)	460 (12.9)	3 (0.6)	427 (25.0)
Finland	74 (1.1)	557 (2.7)	10 (0.6)	561 (4.7)	15 (0.8)	562 (4.7)	1 (0.2)	--
Lithuania	74 (1.2)	545 (2.6)	8 (0.7)	531 (6.5)	15 (0.9)	513 (5.1)	2 (0.4)	--
Georgia	71 (1.3)	455 (4.1)	16 (0.8)	451 (6.0)	7 (0.7)	467 (9.8)	6 (0.8)	456 (9.4)
Poland	70 (1.1)	540 (2.6)	16 (0.8)	523 (3.9)	14 (1.2)	511 (4.4)	1 (0.2)	--
Hong Kong SAR	69 (0.9)	536 (3.6)	6 (0.6)	543 (6.4)	14 (0.8)	529 (5.2)	10 (0.8)	516 (5.7)
Spain	68 (0.8)	525 (2.1)	13 (0.7)	510 (4.4)	9 (0.6)	493 (7.2)	10 (0.5)	488 (5.7)
Germany	64 (1.2)	540 (2.4)	8 (0.6)	525 (7.3)	16 (0.8)	533 (4.4)	12 (0.8)	497 (7.1)
Albania	61 (1.6)	503 (3.8)	19 (1.2)	490 (5.7)	13 (0.8)	470 (6.2)	8 (0.9)	464 (11.5)
Croatia	60 (1.8)	533 (2.8)	9 (0.7)	515 (5.8)	14 (1.3)	509 (4.9)	16 (1.4)	515 (4.2)
Chinese Taipei	59 (1.1)	559 (2.1)	36 (0.9)	557 (2.4)	5 (0.5)	556 (6.3)	0 (0.1)	--
Ireland	56 (1.2)	543 (3.4)	25 (1.1)	523 (4.8)	18 (0.9)	511 (4.4)	1 (0.2)	--
Cyprus	56 (1.0)	523 (3.1)	23 (0.7)	511 (4.3)	12 (0.5)	504 (4.7)	9 (0.5)	493 (5.1)
Serbia	55 (1.4)	536 (3.1)	12 (1.3)	512 (9.3)	32 (1.8)	497 (4.9)	1 (0.2)	--
Russian Federation	55 (1.4)	572 (3.4)	10 (0.8)	571 (5.2)	16 (0.8)	565 (4.3)	19 (1.1)	559 (4.5)
Chile	53 (1.2)	477 (2.8)	32 (1.0)	469 (4.0)	12 (0.7)	458 (4.5)	4 (0.3)	440 (8.4)
South Africa (5)	51 (1.1)	343 (6.9)	17 (0.8)	339 (6.6)	24 (0.9)	304 (5.3)	8 (0.5)	313 (10.1)
Armenia	51 (1.8)	471 (4.1)	19 (1.1)	463 (4.6)	13 (0.9)	455 (5.4)	17 (1.1)	466 (4.6)
Kazakhstan	49 (1.6)	503 (3.8)	17 (0.8)	490 (4.6)	14 (0.8)	491 (5.1)	20 (1.3)	480 (4.3)
Montenegro	48 (0.9)	469 (2.9)	14 (0.6)	457 (6.2)	15 (0.7)	443 (4.7)	23 (0.8)	439 (4.0)
Canada	45 (1.4)	537 (2.5)	25 (0.8)	533 (3.1)	18 (1.0)	535 (4.7)	11 (0.7)	521 (5.1)
Bahrain	39 (1.0)	512 (4.1)	32 (0.8)	499 (4.7)	16 (0.8)	484 (4.9)	13 (0.6)	465 (4.6)
North Macedonia	36 (2.0)	461 (6.2)	9 (0.8)	445 (8.2)	13 (1.0)	428 (9.9)	42 (2.1)	400 (8.5)
Malta	35 (0.9)	518 (2.9)	54 (0.9)	499 (2.4)	8 (0.5)	483 (7.0)	3 (0.4)	488 (11.2)
Philippines	33 (1.5)	260 (9.0)	29 (1.8)	253 (9.2)	36 (1.7)	242 (8.0)	2 (0.3)	--
Morocco	31 (0.9)	406 (7.8)	24 (1.1)	386 (7.3)	15 (0.9)	365 (10.5)	30 (1.7)	345 (8.1)
Kuwait	29 (0.9)	409 (5.9)	43 (1.0)	400 (6.5)	18 (1.2)	397 (10.6)	10 (0.9)	390 (13.4)
Qatar	24 (1.1)	468 (5.6)	38 (1.0)	464 (5.6)	22 (1.0)	466 (6.5)	16 (0.9)	426 (6.3)
Pakistan	24 (3.2)	281 (15.1)	4 (0.9)	312 (31.2)	8 (1.5)	300 (17.1)	63 (4.8)	300 (18.6)
Bosnia and Herzegovina	23 (1.3)	475 (4.4)	8 (0.5)	474 (5.2)	50 (1.4)	453 (3.1)	19 (1.2)	457 (5.2)
Azerbaijan	20 (1.1)	445 (5.2)	13 (0.6)	452 (4.9)	28 (1.2)	442 (4.5)	40 (1.6)	425 (4.1)
Oman	17 (0.7)	459 (5.8)	36 (0.9)	461 (5.5)	28 (0.8)	433 (4.6)	19 (0.9)	389 (6.7)
Iran, Islamic Rep. of	16 (1.0)	475 (6.9)	18 (1.0)	462 (5.1)	40 (1.1)	440 (4.5)	26 (1.4)	418 (7.1)
Kosovo	12 (1.1)	433 (7.5)	6 (0.6)	436 (8.8)	49 (1.6)	419 (4.1)	33 (1.6)	399 (5.0)
Saudi Arabia	12 (0.7)	423 (7.2)	18 (1.0)	429 (5.8)	39 (1.0)	406 (4.1)	30 (1.5)	389 (7.0)
Turkey (5)	8 (0.9)	572 (7.1)	16 (1.0)	568 (4.4)	48 (1.6)	524 (5.2)	28 (1.7)	496 (6.8)
Australia	--	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--	--
Japan	--	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--	--
Northern Ireland	--	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--	--
New Zealand	57 (1.3)	525 (3.4)	33 (1.2)	531 (5.1)	7 (0.9)	525 (8.3)	3 (0.4)	481 (12.7)
United Arab Emirates	19 (0.5)	511 (3.4)	38 (0.6)	497 (3.1)	24 (0.7)	514 (4.2)	19 (0.5)	479 (4.2)
International Average	56 (0.2)	500 (0.7)	17 (0.1)	489 (1.1)	15 (0.1)	472 (1.0)	12 (0.2)	452 (1.5)
Benchmarking Participants								
Madrid, Spain	74 (1.3)	533 (2.1)	11 (0.8)	517 (4.3)	8 (0.5)	503 (5.5)	8 (0.8)	494 (5.4)
Quebec, Canada	65 (1.3)	530 (3.4)	14 (0.8)	524 (5.9)	15 (0.9)	525 (4.5)	6 (0.5)	510 (7.7)
Moscow City, Russian Fed.	55 (1.1)	601 (2.5)	14 (0.6)	587 (3.3)	18 (0.6)	594 (3.6)	13 (0.7)	582 (4.9)
Ontario, Canada	38 (2.6)	543 (3.8)	29 (1.3)	531 (4.5)	17 (2.0)	541 (9.0)	16 (1.3)	523 (7.1)
Dubai, UAE	23 (0.9)	566 (4.0)	36 (1.0)	563 (3.3)	26 (0.7)	565 (3.3)	15 (1.0)	545 (6.3)
Abu Dhabi, UAE	--	--	--	--	--	--	--	--

() 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.

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

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

Literacy and Numeracy Readiness for School

Early Preparation for School

Exhibits 5.16 and 5.17 provide further insight into the relative effects of formal preprimary education and informal literacy and numeracy activities in the home on later achievement in mathematics and science, respectively. The results suggest that preprimary education cannot completely replace parental involvement in preparing children for later success in school. At each level of preprimary attendance, from three years or more down through one year or less, the students whose parents “often” engaged them in early literacy and numeracy activities had higher average mathematics and higher average science achievement than those engaged only “sometimes” or “never.”

For both mathematics and science, average achievement was highest (520 and 513, respectively) among the 26 percent of students that had three years or more of preprimary education and whose parents “often” engaged them in literacy and numeracy activities before beginning primary school. It was lowest (469 and 455, respectively) among the 18 percent that had one year or less of preprimary education and parents reporting only “sometimes” or “never” engaging them in literacy and numeracy activities. See About the Scale in Exhibit 5.11 for information about the *Early Literacy and Numeracy Activities* scale.

Could Do Literacy and Numeracy Tasks When Beginning Primary School

To provide information about the extent to which students enter primary school equipped with some basic literacy and numeracy skills as a foundation for learning, the TIMSS Early Learning Survey (or “Home Questionnaire”) included a set of questions asking parents how well their child could do various literacy and numeracy activities when he or she first began primary school. Twelve items formed the *Literacy and Numeracy Tasks* scale in TIMSS 2019 (see About the Scale in Exhibit 5.18).

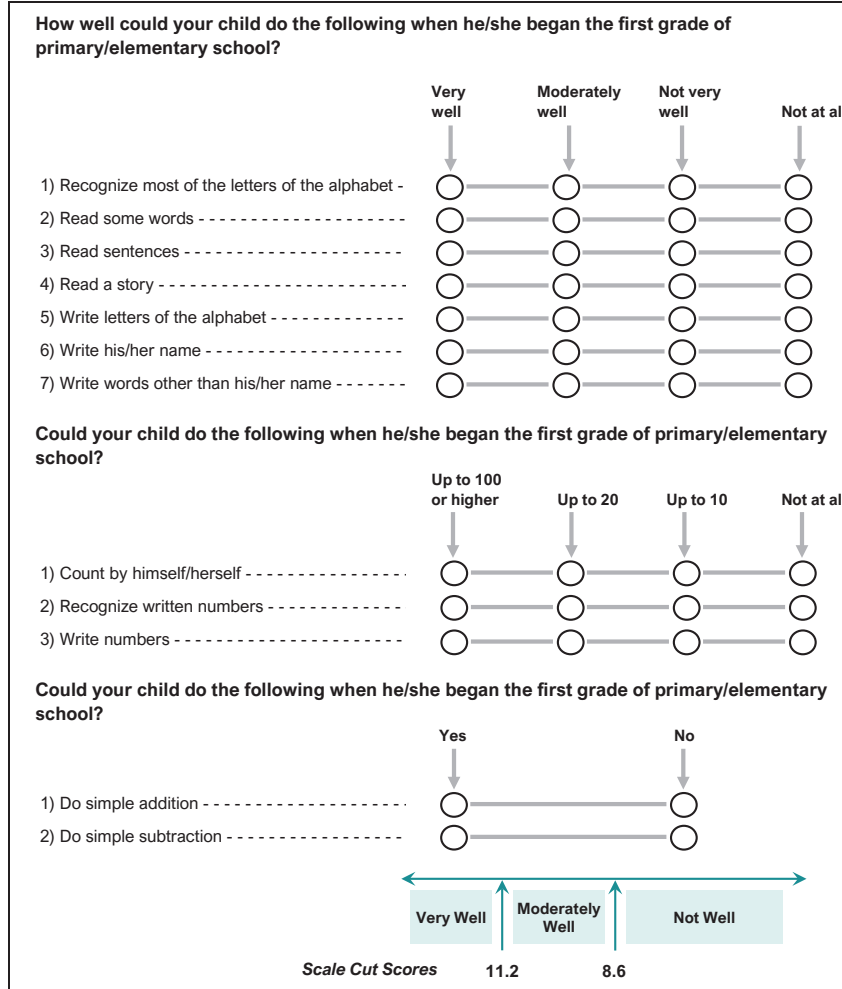
Parents’ reports indicate that early preparation appears to have an effect on mathematics and science achievement through the fourth grade. Exhibit 5.19 shows that, on average across countries, 25 percent of students entered school able to perform early literacy and numeracy tasks “very well” according to their parents, and more than half (51%) entered school able to perform the tasks “moderately well.” Parents’ assessments of their children’s early literacy and numeracy skills corresponded well with mathematics achievement at the fourth grade, with the children able to perform “very well” having higher achievement than those performing “moderately well” (532 vs. 498). The 24 percent of the students in the “not well” category had the lowest average achievement (468). Exhibit 5.20 provides a similar picture in relation to science achievement. Students in the “very well” category had the highest average science achievement (518) compared with students in the “moderately well” and “not well” categories (488 and 461, respectively).

Exhibit 5.18: Could Do Literacy and Numeracy Tasks When Beginning Primary School

Students' Results based on Parents' Reports

About the Scale

Students were scored according to their parents' reports regarding how well their children could do the twelve tasks on the *Early Literacy and Numeracy Tasks* scale when they began primary school. Cut scores divide the scale into three categories. Students who could do the tasks **Very Well** had a score at or above the cut score corresponding to their parents reporting the students could do all twelve tasks (five of the tasks at the highest level, five at the second highest level, and simple addition and simple subtraction), on average. Students who could do the tasks **Not Well** had a score at or below the cut score corresponding to their parents reporting the students could do the twelve tasks at a minimal level (five of the tasks at the second lowest level, five at the second highest level, and not simple addition or simple subtraction), on average. All other students could do the literacy and numeracy tasks **Moderately Well** when they began primary school.



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

Exhibit 5.19: Could Do Literacy and Numeracy Tasks When Beginning Primary School

Students' Results based on Parents' Reports

Country	Very Well		Moderately Well		Not Well		Average Scale Score	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
Ireland	55 (1.0)	572 (2.8)	39 (0.9)	529 (3.3)	5 (0.5)	497 (7.5)	11.7 (0.04)	
Korea, Rep. of	54 (1.0)	618 (2.5)	43 (0.9)	583 (2.8)	3 (0.3)	538 (9.2)	12.0 (0.04)	
Bahrain	51 (0.9)	493 (3.3)	42 (0.8)	471 (3.0)	8 (0.4)	459 (6.2)	11.3 (0.04)	
Singapore	50 (1.3)	655 (3.5)	44 (1.1)	605 (3.9)	6 (0.4)	545 (7.4)	11.4 (0.06)	
Albania	41 (1.4)	517 (3.6)	47 (1.2)	490 (3.9)	12 (1.2)	440 (8.9)	10.7 (0.07)	
Oman	40 (0.9)	465 (4.1)	48 (0.7)	418 (4.0)	12 (0.6)	380 (7.3)	10.8 (0.04)	
Spain	40 (1.2)	534 (2.6)	49 (1.1)	496 (2.9)	11 (0.5)	460 (4.3)	10.8 (0.04)	
Latvia	38 (1.0)	576 (2.5)	54 (1.0)	534 (2.8)	8 (0.6)	492 (6.5)	10.9 (0.03)	
Qatar	38 (1.1)	480 (3.8)	50 (1.0)	443 (4.3)	12 (0.7)	412 (6.2)	10.7 (0.05)	
Kosovo	36 (1.0)	462 (3.5)	53 (0.9)	442 (3.5)	11 (0.8)	410 (5.7)	10.6 (0.05)	
Hong Kong SAR	35 (1.1)	629 (3.6)	59 (1.0)	594 (3.2)	6 (0.6)	554 (8.0)	10.9 (0.05)	
Poland	35 (0.8)	551 (2.9)	51 (0.9)	511 (3.1)	15 (0.6)	486 (5.0)	10.5 (0.03)	
Croatia	34 (1.0)	538 (2.9)	53 (1.1)	500 (2.2)	13 (0.9)	478 (6.7)	10.6 (0.05)	
Japan	33 (0.8)	622 (2.5)	57 (0.7)	587 (1.9)	11 (0.5)	545 (4.9)	10.7 (0.04)	
Philippines	32 (1.5)	347 (6.7)	58 (1.2)	282 (6.3)	10 (0.8)	230 (8.1)	10.5 (0.06)	
Chinese Taipei	31 (0.8)	621 (2.7)	60 (0.8)	593 (2.3)	9 (0.5)	563 (4.7)	10.7 (0.03)	
Kazakhstan	31 (1.3)	530 (3.2)	57 (1.1)	506 (2.6)	12 (0.8)	496 (4.4)	10.5 (0.06)	
Canada	30 (0.8)	552 (2.9)	51 (0.8)	519 (2.4)	19 (0.8)	490 (3.0)	10.3 (0.04)	
Saudi Arabia	29 (0.9)	431 (3.9)	52 (0.9)	392 (4.5)	19 (1.0)	373 (6.9)	10.3 (0.05)	
Finland	29 (0.9)	579 (2.8)	47 (0.8)	531 (2.6)	24 (0.8)	493 (3.5)	10.2 (0.05)	
Sweden	29 (1.2)	561 (4.1)	52 (1.4)	523 (2.9)	19 (0.8)	487 (3.9)	10.3 (0.05)	
Azerbaijan	27 (0.9)	543 (3.2)	50 (0.9)	521 (2.8)	23 (1.1)	497 (3.9)	10.0 (0.06)	
Kuwait	27 (0.9)	429 (5.4)	55 (0.8)	385 (5.5)	18 (0.8)	330 (6.4)	10.2 (0.04)	
North Macedonia	25 (1.1)	501 (6.7)	53 (1.2)	474 (5.5)	22 (1.2)	441 (7.6)	10.1 (0.06)	
Lithuania	25 (1.1)	590 (3.5)	58 (1.1)	535 (2.8)	17 (0.8)	497 (5.6)	10.3 (0.04)	
South Africa (5)	24 (0.7)	413 (4.1)	60 (0.8)	368 (3.6)	15 (0.5)	340 (5.3)	10.2 (0.03)	
Russian Federation	24 (1.1)	599 (2.9)	53 (1.0)	565 (3.4)	23 (1.4)	540 (5.8)	10.0 (0.07)	
Cyprus	24 (0.7)	566 (3.9)	54 (0.8)	531 (2.9)	22 (0.7)	509 (3.7)	10.0 (0.04)	
Serbia	24 (0.9)	555 (4.0)	55 (1.1)	509 (2.9)	22 (1.0)	459 (5.9)	10.0 (0.04)	
Bosnia and Herzegovina	23 (0.7)	480 (3.1)	56 (0.8)	451 (2.6)	21 (0.8)	425 (3.7)	10.0 (0.04)	
Bulgaria	20 (0.9)	562 (3.6)	48 (1.5)	529 (3.5)	32 (2.0)	469 (9.1)	9.5 (0.10)	
Turkey (5)	19 (1.3)	556 (5.2)	35 (1.2)	543 (5.5)	46 (2.0)	494 (6.1)	9.0 (0.12)	
Morocco	19 (0.8)	443 (4.5)	45 (1.3)	385 (4.7)	36 (1.5)	352 (6.8)	9.2 (0.08)	
Chile	19 (0.7)	486 (3.2)	54 (1.0)	445 (3.5)	27 (1.0)	408 (3.2)	9.7 (0.04)	
Montenegro	18 (0.5)	489 (3.6)	55 (0.8)	456 (2.3)	27 (0.7)	427 (3.0)	9.7 (0.03)	
Armenia	18 (0.7)	514 (3.5)	48 (1.2)	498 (2.8)	34 (1.4)	491 (3.4)	9.5 (0.05)	
Iran, Islamic Rep. of	16 (1.0)	467 (5.8)	50 (1.2)	446 (4.4)	34 (1.2)	430 (5.7)	9.4 (0.06)	
Malta	16 (0.8)	554 (3.2)	55 (0.8)	518 (1.9)	29 (0.8)	490 (2.7)	9.6 (0.04)	
Pakistan	15 (2.6)	344 (15.9)	53 (4.0)	338 (15.1)	32 (3.4)	308 (13.6)	9.3 (0.16)	
France	14 (0.7)	526 (4.8)	59 (0.8)	491 (3.3)	26 (0.9)	459 (4.3)	9.6 (0.03)	
Georgia	13 (0.7)	506 (5.1)	52 (1.1)	483 (4.2)	35 (1.1)	474 (4.8)	9.3 (0.05)	
Czech Republic	13 (0.7)	581 (4.8)	51 (0.9)	541 (2.6)	36 (1.0)	527 (3.4)	9.3 (0.04)	
Portugal	12 (0.7)	553 (5.5)	55 (0.9)	534 (2.6)	33 (0.7)	508 (3.6)	9.3 (0.03)	
Italy	11 (0.6)	547 (4.8)	50 (0.9)	516 (2.9)	39 (1.1)	508 (2.7)	9.2 (0.04)	
Austria	10 (0.5)	556 (5.0)	49 (1.0)	544 (2.3)	41 (1.0)	534 (2.8)	9.2 (0.03)	
Norway (5)	10 (0.6)	602 (6.0)	46 (1.2)	561 (3.3)	44 (1.2)	532 (3.4)	9.0 (0.03)	
Hungary	7 (0.4)	569 (5.9)	31 (0.8)	536 (3.3)	62 (0.9)	515 (3.1)	8.4 (0.04)	
Germany	7 (0.6)	558 (6.4)	48 (1.2)	536 (3.0)	45 (1.3)	525 (3.1)	9.0 (0.04)	
Slovak Republic	7 (0.6)	552 (8.8)	43 (1.1)	518 (3.8)	50 (1.2)	499 (3.9)	8.7 (0.06)	
Belgium (Flemish)	7 (0.4)	553 (5.8)	44 (1.1)	536 (2.5)	49 (1.2)	529 (2.1)	8.8 (0.04)	
Denmark	6 (0.6)	587 (6.4)	55 (1.1)	547 (2.9)	39 (1.0)	520 (3.2)	9.1 (0.04)	
Australia	--	--	--	--	--	--	--	
England	--	--	--	--	--	--	--	
Netherlands	--	--	--	--	--	--	--	
Northern Ireland	--	--	--	--	--	--	--	
United States	--	--	--	--	--	--	--	
United Arab Emirates	x	52 (0.6)	514 (2.3)	40 (0.5)	490 (2.8)	7 (0.3)	467 (4.4)	11.4 (0.02)
New Zealand	x	11 (0.9)	560 (6.9)	51 (1.3)	514 (4.3)	38 (1.2)	494 (3.9)	9.2 (0.04)
International Average		25 (0.1)	532 (0.7)	51 (0.2)	498 (0.5)	24 (0.1)	468 (0.8)	
Benchmarking Participants								
Dubai, UAE	s	51 (1.4)	568 (2.9)	41 (1.1)	547 (2.6)	7 (0.7)	540 (5.9)	11.3 (0.04)
Madrid, Spain		44 (1.5)	540 (2.6)	47 (1.3)	510 (2.6)	9 (0.6)	482 (5.5)	11.0 (0.05)
Ontario, Canada	s	38 (1.3)	555 (4.3)	48 (1.1)	513 (4.6)	14 (1.1)	470 (6.1)	10.8 (0.06)
Moscow City, Russian Fed.		34 (0.9)	618 (2.3)	54 (0.9)	587 (2.5)	12 (0.7)	547 (4.2)	10.6 (0.04)
Quebec, Canada	r	17 (1.0)	565 (4.8)	55 (1.4)	541 (2.7)	28 (1.3)	516 (3.7)	9.7 (0.04)
Abu Dhabi, UAE	y	--	--	--	--	--	--	--

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.

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.

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

Exhibit 5.20: Could Do Literacy and Numeracy Tasks When Beginning Primary School

Students' Results based on Parents' Reports

Country	Very Well		Moderately Well		Not Well		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Ireland	55 (1.0)	550 (3.1)	39 (0.9)	510 (4.1)	5 (0.5)	486 (7.5)	11.7 (0.04)
Korea, Rep. of	54 (1.0)	603 (2.1)	43 (0.9)	572 (2.8)	3 (0.3)	546 (8.4)	12.0 (0.04)
Bahrain	51 (0.9)	516 (3.8)	42 (0.8)	480 (3.8)	8 (0.4)	447 (7.7)	11.3 (0.04)
Singapore	50 (1.3)	622 (3.0)	44 (1.1)	575 (3.6)	6 (0.4)	521 (7.0)	11.4 (0.06)
Albania	41 (1.4)	507 (4.1)	47 (1.2)	488 (3.9)	12 (1.2)	440 (9.2)	10.7 (0.07)
Oman	40 (0.9)	481 (4.5)	48 (0.7)	419 (4.2)	12 (0.6)	359 (6.6)	10.8 (0.04)
Spain	40 (1.2)	538 (2.5)	49 (1.1)	505 (2.2)	11 (0.5)	478 (3.8)	10.8 (0.04)
Latvia	38 (1.0)	566 (1.9)	54 (1.0)	533 (2.7)	8 (0.6)	497 (5.5)	10.9 (0.03)
Qatar	38 (1.1)	488 (4.1)	50 (1.0)	442 (4.8)	12 (0.7)	408 (6.6)	10.7 (0.05)
Kosovo	36 (1.0)	429 (4.5)	53 (0.9)	412 (4.1)	11 (0.8)	374 (6.3)	10.6 (0.05)
Hong Kong SAR	35 (1.1)	557 (4.0)	59 (1.0)	523 (3.2)	6 (0.6)	484 (7.8)	10.9 (0.05)
Poland	35 (0.8)	556 (2.7)	51 (0.9)	523 (2.9)	15 (0.6)	506 (5.0)	10.5 (0.03)
Croatia	34 (1.0)	543 (3.2)	53 (1.1)	519 (2.1)	13 (0.9)	497 (6.8)	10.6 (0.05)
Japan	33 (0.8)	585 (2.3)	57 (0.7)	557 (2.0)	11 (0.5)	521 (4.6)	10.7 (0.04)
Philippines	32 (1.5)	300 (8.2)	58 (1.2)	233 (7.3)	10 (0.8)	189 (9.2)	10.5 (0.06)
Chinese Taipei	31 (0.8)	580 (2.4)	60 (0.8)	550 (2.2)	9 (0.5)	532 (5.0)	10.7 (0.03)
Kazakhstan	31 (1.3)	515 (4.3)	57 (1.1)	486 (3.4)	12 (0.8)	483 (4.6)	10.5 (0.06)
Canada	30 (0.8)	556 (2.8)	51 (0.8)	529 (2.3)	19 (0.8)	507 (2.7)	10.3 (0.04)
Saudi Arabia	29 (0.9)	438 (4.7)	52 (0.9)	397 (5.2)	19 (1.0)	371 (6.8)	10.3 (0.05)
Finland	29 (0.9)	587 (2.6)	47 (0.8)	553 (2.9)	24 (0.8)	531 (3.5)	10.2 (0.05)
Sweden	29 (1.2)	566 (4.5)	52 (1.4)	539 (3.3)	19 (0.8)	516 (4.2)	10.3 (0.05)
Azerbaijan	27 (0.9)	453 (4.0)	50 (0.9)	434 (3.2)	23 (1.1)	410 (4.3)	10.0 (0.06)
Kuwait	27 (0.9)	443 (6.8)	55 (0.8)	397 (6.4)	18 (0.8)	342 (8.3)	10.2 (0.04)
North Macedonia	25 (1.1)	452 (7.8)	53 (1.2)	429 (6.7)	22 (1.2)	394 (8.0)	10.1 (0.06)
Lithuania	25 (1.1)	578 (3.1)	58 (1.1)	534 (2.9)	17 (0.8)	494 (5.0)	10.3 (0.04)
South Africa (5)	24 (0.7)	372 (5.5)	60 (0.8)	317 (5.0)	15 (0.5)	281 (6.8)	10.2 (0.03)
Russian Federation	24 (1.1)	595 (3.3)	53 (1.0)	566 (3.1)	23 (1.4)	542 (4.9)	10.0 (0.07)
Cyprus	24 (0.7)	542 (3.9)	54 (0.8)	510 (3.1)	22 (0.7)	492 (4.1)	10.0 (0.04)
Serbia	24 (0.9)	557 (4.1)	55 (1.1)	520 (3.1)	22 (1.0)	471 (6.9)	10.0 (0.04)
Bosnia and Herzegovina	23 (0.7)	482 (3.6)	56 (0.8)	458 (3.1)	21 (0.8)	435 (3.9)	10.0 (0.04)
Bulgaria	20 (0.9)	575 (4.0)	48 (1.5)	541 (4.9)	32 (2.0)	463 (9.4)	9.5 (0.10)
Turkey (5)	19 (1.3)	558 (4.8)	35 (1.2)	546 (5.0)	46 (2.0)	497 (6.0)	9.0 (0.12)
Morocco	19 (0.8)	443 (5.7)	45 (1.3)	375 (6.0)	36 (1.5)	338 (9.4)	9.2 (0.08)
Chile	19 (0.7)	509 (2.9)	54 (1.0)	473 (3.0)	27 (1.0)	438 (3.5)	9.7 (0.04)
Montenegro	18 (0.5)	485 (3.2)	55 (0.8)	459 (2.8)	27 (0.7)	429 (3.9)	9.7 (0.03)
Armenia	18 (0.7)	484 (3.9)	48 (1.2)	467 (3.6)	34 (1.4)	457 (4.2)	9.5 (0.05)
Iran, Islamic Rep. of	16 (1.0)	460 (6.0)	50 (1.2)	444 (4.4)	34 (1.2)	429 (6.3)	9.4 (0.06)
Malta	16 (0.8)	535 (3.5)	55 (0.8)	504 (2.1)	29 (0.8)	480 (3.9)	9.6 (0.04)
Pakistan	15 (2.6)	311 (20.2)	53 (4.0)	299 (16.0)	32 (3.4)	270 (14.5)	9.3 (0.16)
France	14 (0.7)	513 (4.7)	59 (0.8)	495 (3.1)	26 (0.9)	468 (4.5)	9.6 (0.03)
Georgia	13 (0.7)	484 (5.7)	52 (1.1)	454 (4.6)	35 (1.1)	446 (5.8)	9.3 (0.05)
Czech Republic	13 (0.7)	569 (4.2)	51 (0.9)	541 (2.8)	36 (1.0)	531 (3.3)	9.3 (0.04)
Portugal	12 (0.7)	529 (5.3)	55 (0.9)	508 (2.5)	33 (0.7)	493 (3.2)	9.3 (0.03)
Italy	11 (0.6)	539 (5.6)	50 (0.9)	508 (3.3)	39 (1.1)	508 (3.3)	9.2 (0.04)
Austria	10 (0.5)	526 (6.0)	49 (1.0)	526 (3.2)	41 (1.0)	523 (3.4)	9.2 (0.03)
Norway (5)	10 (0.6)	583 (6.6)	46 (1.2)	555 (3.2)	44 (1.2)	532 (3.9)	9.0 (0.03)
Hungary	7 (0.4)	562 (6.1)	31 (0.8)	538 (3.7)	62 (0.9)	524 (2.9)	8.4 (0.04)
Germany	7 (0.6)	538 (7.9)	48 (1.2)	533 (2.9)	45 (1.3)	528 (3.2)	9.0 (0.04)
Slovak Republic	7 (0.6)	554 (10.5)	43 (1.1)	529 (3.8)	50 (1.2)	511 (4.4)	8.7 (0.06)
Belgium (Flemish)	7 (0.4)	513 (5.7)	44 (1.1)	501 (2.6)	49 (1.2)	503 (2.4)	8.8 (0.04)
Denmark	6 (0.6)	570 (7.9)	55 (1.1)	538 (3.1)	39 (1.0)	522 (3.3)	9.1 (0.04)
Australia	--	--	--	--	--	--	--
England	--	--	--	--	--	--	--
Netherlands	--	--	--	--	--	--	--
Northern Ireland	--	--	--	--	--	--	--
United States	--	--	--	--	--	--	--
United Arab Emirates	52 (0.6)	513 (3.0)	40 (0.5)	485 (3.2)	7 (0.3)	458 (5.1)	11.4 (0.02)
New Zealand	11 (0.9)	553 (5.7)	51 (1.3)	527 (4.1)	38 (1.2)	515 (3.8)	9.2 (0.04)
International Average	25 (0.1)	518 (0.8)	51 (0.2)	488 (0.6)	24 (0.1)	461 (0.8)	
Benchmarking Participants							
Dubai, UAE	51 (1.4)	570 (2.9)	41 (1.1)	550 (2.8)	7 (0.7)	545 (6.6)	11.3 (0.04)
Madrid, Spain	44 (1.5)	542 (2.4)	47 (1.3)	516 (2.3)	9 (0.6)	490 (5.1)	11.0 (0.05)
Moscow, Canada	38 (1.3)	557 (4.1)	48 (1.1)	527 (2.2)	14 (1.1)	496 (5.6)	10.8 (0.06)
Moscow City, Russian Fed.	34 (0.9)	616 (2.5)	54 (0.9)	590 (2.6)	12 (0.7)	555 (4.5)	10.6 (0.04)
Quebec, Canada	17 (1.0)	548 (4.6)	55 (1.4)	528 (3.1)	28 (1.3)	514 (3.5)	9.7 (0.04)
Abu Dhabi, UAE	--	--	--	--	--	--	--

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.

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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.

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