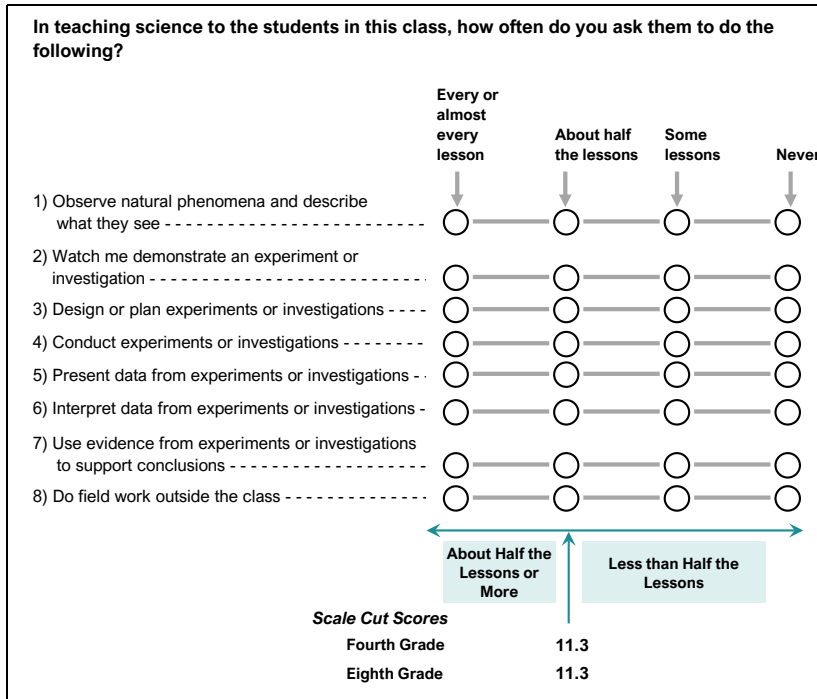


**Exhibit 13.11: Teachers' Emphasis on Science Investigation**

Students' Results Based on Teachers' Reports

**About the Scale**

Students were scored according to their teachers' reports regarding how often they asked students to do eight instructional activities on the *Emphasis on Science Investigation* scale. Cut scores divide the scale into two categories. Students with teachers reporting they emphasize science investigation in **About Half the Lessons or More** had a score at or above the cut score corresponding to their teachers reporting they do all eight activities in "about half the lessons," on average. All other students had teachers reporting they emphasize science investigation in **Less than Half the Lessons**.



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

## Exhibit 13.12: Teachers' Emphasis on Science Investigation

Students' Results Based on Teachers' Reports

Country	About Half the Lessons or More		Less than Half the Lessons		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Oman	82 (2.4)	431 (5.0)	18 (2.4)	457 (11.0)	12.5 (0.11)
Iran, Islamic Rep. of	78 (3.1)	444 (5.4)	22 (3.1)	428 (8.2)	12.5 (0.15)
Philippines	75 (3.8)	248 (8.8)	25 (3.8)	249 (12.4)	12.3 (0.20)
Cyprus	72 (3.9)	513 (3.8)	28 (3.9)	510 (4.2)	12.0 (0.12)
Turkey (5)	69 (3.6)	522 (6.1)	31 (3.6)	536 (5.2)	12.2 (0.22)
Pakistan r	66 (7.0)	303 (22.1)	34 (7.0)	278 (15.8)	12.0 (0.30)
Korea, Rep. of	66 (4.1)	590 (2.9)	34 (4.1)	583 (3.0)	11.6 (0.14)
Kuwait	61 (3.5)	392 (7.7)	39 (3.5)	394 (10.0)	11.6 (0.19)
United Arab Emirates r	58 (2.2)	486 (3.3)	42 (2.2)	458 (4.5)	11.5 (0.10)
Albania	57 (3.6)	493 (5.7)	43 (3.6)	485 (5.6)	11.5 (0.20)
Qatar	54 (2.9)	441 (7.1)	46 (2.9)	460 (4.8)	11.3 (0.13)
Japan	53 (4.4)	561 (2.0)	47 (4.4)	563 (3.0)	11.3 (0.14)
Bahrain	51 (4.0)	496 (6.6)	49 (4.0)	488 (6.3)	11.0 (0.13)
North Macedonia	48 (4.4)	429 (8.3)	52 (4.4)	424 (8.8)	11.3 (0.21)
Kosovo	46 (4.3)	419 (4.8)	54 (4.3)	408 (4.8)	11.2 (0.19)
Morocco	43 (4.1)	373 (8.4)	57 (4.1)	376 (8.2)	10.9 (0.17)
South Africa (5)	43 (4.2)	316 (8.8)	57 (4.2)	332 (7.2)	10.9 (0.22)
Kazakhstan	43 (3.8)	499 (6.7)	57 (3.8)	489 (4.3)	11.0 (0.20)
Saudi Arabia	43 (3.4)	416 (6.6)	57 (3.4)	391 (6.3)	10.9 (0.13)
Australia	35 (3.3)	531 (4.7)	65 (3.3)	535 (3.6)	10.0 (0.15)
Azerbaijan	33 (3.4)	423 (5.8)	67 (3.4)	429 (4.2)	10.3 (0.16)
Italy	32 (3.4)	511 (5.1)	68 (3.4)	509 (3.3)	10.0 (0.19)
Chile r	31 (4.1)	473 (5.9)	69 (4.1)	466 (3.9)	10.2 (0.18)
Serbia	30 (3.9)	522 (4.8)	70 (3.9)	515 (4.4)	10.0 (0.20)
Singapore	30 (2.7)	602 (5.5)	70 (2.7)	591 (4.3)	10.4 (0.08)
Portugal	29 (3.1)	501 (4.3)	71 (3.1)	505 (2.8)	9.9 (0.16)
Croatia	28 (3.5)	524 (4.6)	72 (3.5)	523 (2.4)	9.8 (0.20)
Chinese Taipei	27 (3.2)	559 (3.0)	73 (3.2)	558 (2.1)	10.2 (0.14)
Montenegro	26 (2.2)	448 (4.8)	74 (2.2)	455 (2.8)	9.6 (0.11)
Slovak Republic	25 (3.0)	532 (6.2)	75 (3.0)	518 (4.0)	9.8 (0.17)
United States	24 (2.3)	545 (5.4)	76 (2.3)	537 (3.2)	9.7 (0.13)
Malta	24 (0.3)	498 (2.2)	76 (0.3)	495 (1.5)	9.6 (0.02)
Bosnia and Herzegovina	20 (2.3)	454 (6.8)	80 (2.3)	460 (3.0)	9.4 (0.14)
Ireland	19 (2.9)	524 (6.9)	81 (2.9)	529 (3.1)	9.4 (0.15)
Spain	19 (3.3)	504 (6.3)	81 (3.3)	512 (2.8)	9.2 (0.16)
Bulgaria	19 (3.1)	540 (11.8)	81 (3.1)	517 (5.3)	9.4 (0.15)
France	18 (2.6)	491 (6.0)	82 (2.6)	488 (3.5)	9.3 (0.15)
Canada r	17 (1.7)	519 (3.9)	83 (1.7)	526 (2.2)	9.6 (0.09)
Georgia	16 (2.6)	450 (13.0)	84 (2.6)	456 (3.9)	9.5 (0.16)
Russian Federation	15 (2.6)	563 (6.9)	85 (2.6)	568 (3.2)	8.8 (0.16)
New Zealand	15 (2.1)	500 (7.0)	85 (2.1)	503 (2.9)	9.1 (0.13)
Armenia	15 (2.9)	470 (8.0)	85 (2.9)	467 (3.9)	9.2 (0.15)
Northern Ireland	14 (3.3)	528 (6.2)	86 (3.3)	517 (2.6)	8.5 (0.18)
Latvia	13 (2.7)	542 (5.3)	87 (2.7)	542 (2.7)	9.4 (0.16)
Lithuania	12 (2.5)	534 (10.0)	88 (2.5)	537 (2.7)	8.8 (0.14)
Denmark r	8 (2.5)	517 (9.2)	92 (2.5)	522 (2.8)	8.6 (0.16)
Hong Kong SAR	8 (2.8)	543 (20.8)	92 (2.8)	531 (3.6)	8.7 (0.22)
Sweden	7 (2.4)	533 (12.3)	93 (2.4)	540 (3.3)	8.4 (0.18)
Germany	7 (1.9)	509 (13.1)	93 (1.9)	519 (2.3)	8.5 (0.14)
Hungary	6 (1.6)	525 (8.9)	94 (1.6)	529 (2.9)	8.4 (0.13)
Poland	6 (1.8)	527 (8.4)	94 (1.8)	532 (2.7)	8.5 (0.14)
Finland	6 (1.4)	559 (7.7)	94 (1.4)	555 (2.6)	8.2 (0.10)
Netherlands r	6 (2.7)	528 (13.2)	94 (2.7)	517 (3.2)	7.8 (0.16)
Austria	5 (1.3)	519 (10.3)	95 (1.3)	522 (2.6)	8.2 (0.12)
Czech Republic	4 (1.1)	544 (11.1)	96 (1.1)	533 (2.6)	8.3 (0.12)
Belgium (Flemish)	3 (1.2)	509 (10.2)	97 (1.2)	502 (2.1)	7.6 (0.13)
Norway (5) s	2 (1.0)	~ ~	98 (1.0)	540 (2.8)	7.7 (0.14)
England x	12 (4.0)	538 (9.9)	88 (4.0)	538 (5.2)	9.8 (0.19)
<b>International Average</b>	<b>31 (0.4)</b>	<b>491 (1.1)</b>	<b>69 (0.4)</b>	<b>490 (0.7)</b>	
<b>Benchmarking Participants</b>					
Dubai, UAE r	67 (2.2)	554 (2.5)	33 (2.2)	541 (4.8)	12.2 (0.12)
Abu Dhabi, UAE r	46 (3.0)	430 (7.3)	54 (3.0)	405 (6.0)	11.0 (0.15)
Ontario, Canada r	16 (3.1)	519 (8.4)	84 (3.1)	528 (3.9)	9.6 (0.14)
Madrid, Spain	16 (3.5)	530 (7.6)	84 (3.5)	521 (1.9)	9.2 (0.16)
Quebec, Canada r	15 (3.0)	523 (4.9)	85 (3.0)	522 (2.7)	9.3 (0.17)
Moscow City, Russian Fed.	10 (3.1)	599 (8.3)	90 (3.1)	594 (2.3)	8.6 (0.17)

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 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.

### Exhibit 13.13: Teachers' Emphasis on Science Investigation

Students' Results Based on Teachers' Reports

Country	About Half the Lessons or More		Less than Half the Lessons		Average Scale Score
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	
Oman	75 (2.8)	458 (3.7)	25 (2.8)	456 (7.5)	12.1 (0.11)
Iran, Islamic Rep. of	61 (3.4)	452 (5.3)	39 (3.4)	445 (6.2)	11.6 (0.14)
Kuwait	55 (4.8)	435 (6.2)	45 (4.8)	455 (9.6)	11.5 (0.17)
Morocco	49 (2.8)	395 (3.3)	51 (2.8)	393 (3.7)	11.0 (0.10)
Turkey	48 (4.2)	521 (7.6)	52 (4.2)	510 (4.2)	11.1 (0.22)
United Arab Emirates	r 48 (1.7)	489 (4.4)	52 (1.7)	461 (4.5)	10.9 (0.07)
Bahrain	46 (2.3)	481 (3.6)	54 (2.3)	490 (3.1)	10.9 (0.13)
Qatar	45 (4.6)	472 (8.0)	55 (4.6)	473 (6.0)	10.8 (0.14)
Saudi Arabia	44 (3.9)	438 (4.3)	56 (3.9)	426 (4.1)	10.9 (0.17)
Egypt	43 (4.2)	401 (8.5)	57 (4.2)	382 (6.2)	10.9 (0.19)
Jordan	43 (4.0)	455 (7.3)	57 (4.0)	449 (5.5)	10.9 (0.15)
Malaysia	41 (3.6)	472 (7.7)	59 (3.6)	451 (5.4)	10.7 (0.15)
Lebanon	37 (2.7)	377 (6.6)	63 (2.7)	377 (6.7)	10.6 (0.11)
Kazakhstan	36 (2.0)	481 (4.4)	64 (2.0)	476 (3.6)	10.3 (0.12)
Chile	27 (3.6)	456 (6.5)	73 (3.6)	465 (3.3)	9.9 (0.15)
France	r 25 (3.1)	494 (5.2)	75 (3.1)	486 (2.9)	10.1 (0.12)
South Africa (9)	25 (2.4)	360 (6.8)	75 (2.4)	374 (4.0)	9.6 (0.13)
United States	r 25 (2.2)	531 (7.5)	75 (2.2)	525 (5.4)	9.8 (0.11)
Cyprus	s 24 (2.2)	481 (6.2)	76 (2.2)	488 (2.9)	9.8 (0.10)
Korea, Rep. of	23 (3.6)	563 (4.1)	77 (3.6)	560 (2.3)	9.8 (0.16)
Finland	23 (1.5)	549 (4.1)	77 (1.5)	541 (3.2)	9.4 (0.06)
Japan	21 (3.4)	574 (6.3)	79 (3.4)	568 (2.4)	10.1 (0.12)
Romania	20 (2.1)	473 (7.5)	80 (2.1)	471 (4.3)	9.6 (0.10)
Israel	20 (3.1)	506 (11.2)	80 (3.1)	515 (4.8)	9.4 (0.15)
Hong Kong SAR	18 (3.5)	526 (16.0)	82 (3.5)	499 (6.2)	9.3 (0.16)
Georgia	16 (1.5)	441 (6.5)	84 (1.5)	448 (3.8)	9.3 (0.08)
Ireland	14 (1.9)	520 (7.9)	86 (1.9)	529 (2.7)	9.8 (0.10)
Russian Federation	14 (1.2)	550 (6.6)	86 (1.2)	542 (4.2)	9.0 (0.09)
Australia	r 14 (2.3)	542 (10.8)	86 (2.3)	532 (3.8)	9.5 (0.09)
England	s 13 (3.9)	505 (18.9)	87 (3.9)	525 (7.6)	9.6 (0.16)
Italy	11 (2.0)	494 (7.9)	89 (2.0)	502 (2.6)	9.0 (0.12)
New Zealand	10 (2.2)	513 (15.2)	90 (2.2)	500 (3.9)	9.2 (0.12)
Hungary	8 (1.3)	544 (6.3)	92 (1.3)	527 (2.8)	8.7 (0.08)
Portugal	8 (1.2)	514 (6.2)	92 (1.2)	520 (2.9)	8.8 (0.10)
Chinese Taipei	8 (2.0)	587 (8.8)	92 (2.0)	573 (2.0)	8.6 (0.13)
Lithuania	7 (1.0)	529 (5.5)	93 (1.0)	533 (2.9)	8.3 (0.08)
Sweden	6 (1.3)	530 (13.9)	94 (1.3)	521 (3.3)	8.2 (0.14)
Singapore	3 (1.0)	597 (27.0)	97 (1.0)	607 (4.1)	8.5 (0.08)
Norway (9)	s 1 (0.7)	- -	99 (0.7)	498 (3.6)	7.8 (0.12)
<b>International Average</b>	<b>27 (0.5)</b>	<b>492 (1.5)</b>	<b>73 (0.5)</b>	<b>490 (0.7)</b>	
<b>Benchmarking Participants</b>					
Dubai, UAE	r 53 (3.3)	553 (5.6)	47 (3.3)	549 (5.0)	11.3 (0.10)
Abu Dhabi, UAE	r 42 (2.3)	448 (9.4)	58 (2.3)	395 (7.2)	10.6 (0.11)
Gauteng, RSA (9)	31 (3.5)	412 (7.8)	69 (3.5)	427 (5.3)	10.0 (0.20)
Western Cape, RSA (9)	21 (3.4)	418 (11.2)	79 (3.4)	446 (6.6)	9.2 (0.18)
Moscow City, Russian Fed.	12 (1.3)	571 (4.9)	88 (1.3)	566 (3.0)	8.8 (0.08)
Ontario, Canada	s 11 (3.3)	522 (11.6)	89 (3.3)	521 (4.9)	8.7 (0.21)
Quebec, Canada	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. A tilde (~) indicates insufficient data to report achievement.

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

A "y" indicates data are available for less than 40% of the students.