

Exhibit 9.5: Teachers Emphasize Science Investigation

Reported by Teachers

Students were scored according to their teachers' responses to how often they used each of eight instructional activities on the *Emphasize Science Investigation* scale. Students with teachers who emphasized science investigation in **About Half the Lessons or More** had a score on the scale of at least 11.3, which corresponds to their teachers using all eight activities in "about half the lessons," on average. All other students had teachers who emphasized science investigation in **Less than Half the Lessons**.

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	74 (2.9)	433 (4.3)	26 (2.9)	426 (6.5)	12.1 (0.10)
Cyprus	74 (4.0)	481 (3.0)	26 (4.0)	482 (6.4)	11.9 (0.13)
Iran, Islamic Rep. of	72 (3.5)	421 (5.3)	28 (3.5)	420 (10.0)	12.1 (0.13)
Korea, Rep. of	60 (4.0)	590 (2.6)	40 (4.0)	589 (3.0)	11.4 (0.14)
United Arab Emirates	57 (2.4)	465 (4.0)	43 (2.4)	444 (5.9)	11.3 (0.08)
Japan	50 (4.2)	571 (2.5)	50 (4.2)	568 (2.3)	11.3 (0.12)
Kuwait	49 (4.3)	332 (6.4)	51 (4.3)	345 (10.7)	11.2 (0.15)
Qatar	49 (3.4)	422 (5.8)	51 (3.4)	448 (6.9)	11.1 (0.15)
Saudi Arabia	46 (4.0)	399 (6.4)	54 (4.0)	382 (8.0)	11.1 (0.12)
Morocco	45 (3.6)	361 (8.2)	55 (3.6)	344 (6.7)	11.1 (0.12)
Turkey	44 (4.0)	494 (4.2)	56 (4.0)	475 (5.7)	11.0 (0.17)
Bahrain	41 (1.7)	470 (3.5)	59 (1.7)	452 (3.3)	10.7 (0.04)
Indonesia	40 (3.4)	404 (7.8)	60 (3.4)	392 (6.4)	10.6 (0.15)
Kazakhstan	39 (3.8)	557 (7.8)	61 (3.8)	545 (5.7)	10.9 (0.17)
Singapore	34 (2.4)	596 (6.1)	66 (2.4)	588 (4.5)	10.7 (0.07)
Chinese Taipei	31 (3.6)	558 (3.8)	69 (3.6)	554 (2.3)	10.6 (0.11)
Slovak Republic	28 (2.7)	532 (4.9)	72 (2.7)	515 (3.3)	10.2 (0.12)
Italy	28 (3.4)	515 (5.3)	72 (3.4)	518 (3.1)	10.0 (0.15)
Croatia	27 (3.0)	534 (3.2)	73 (3.0)	533 (2.5)	10.1 (0.15)
England	26 (3.6)	540 (5.9)	74 (3.6)	537 (3.4)	10.1 (0.14)
United States	24 (2.3)	546 (6.4)	76 (2.3)	545 (2.3)	9.9 (0.11)
Serbia	23 (3.5)	522 (6.2)	77 (3.5)	525 (4.2)	9.8 (0.15)
Australia	22 (2.8)	529 (4.5)	78 (2.8)	526 (3.0)	9.9 (0.12)
Chile	22 (3.6)	470 (8.1)	78 (3.6)	481 (3.7)	9.9 (0.17)
Georgia	20 (3.3)	460 (12.5)	80 (3.3)	449 (3.7)	9.8 (0.15)
Ireland	20 (3.0)	540 (5.6)	80 (3.0)	526 (2.5)	10.0 (0.12)
Poland	19 (3.3)	542 (5.4)	81 (3.3)	549 (2.4)	9.6 (0.16)
Portugal	18 (2.8)	508 (4.4)	82 (2.8)	508 (2.3)	9.2 (0.13)
Canada	17 (2.4)	519 (5.4)	83 (2.4)	525 (2.9)	9.7 (0.09)
Russian Federation	16 (2.9)	572 (6.5)	84 (2.9)	567 (3.7)	9.2 (0.13)
New Zealand	14 (2.1)	505 (8.2)	86 (2.1)	506 (2.9)	9.5 (0.08)
Spain	13 (2.1)	526 (4.5)	87 (2.1)	517 (2.9)	9.1 (0.11)
Bulgaria	12 (2.3)	522 (11.1)	88 (2.3)	537 (6.1)	9.3 (0.13)
Slovenia	12 (2.3)	541 (8.1)	88 (2.3)	544 (2.5)	9.4 (0.12)
France	11 (2.2)	499 (6.9)	89 (2.2)	487 (2.9)	9.7 (0.11)
Lithuania	11 (2.3)	522 (9.6)	89 (2.3)	529 (2.7)	8.8 (0.13)
Denmark	10 (2.1)	513 (8.0)	90 (2.1)	529 (2.6)	9.2 (0.10)
Hong Kong SAR	10 (2.1)	570 (6.9)	90 (2.1)	554 (3.4)	9.0 (0.15)
Sweden	9 (2.6)	544 (9.4)	91 (2.6)	540 (3.9)	9.1 (0.14)
Czech Republic	8 (2.0)	540 (6.4)	92 (2.0)	534 (2.4)	9.0 (0.12)
Germany	6 (1.9)	548 (8.8)	94 (1.9)	527 (2.6)	8.9 (0.14)
Hungary	6 (1.5)	540 (16.8)	94 (1.5)	542 (3.1)	9.1 (0.08)
Finland	4 (1.4)	559 (8.6)	96 (1.4)	553 (2.4)	8.7 (0.09)
Belgium (Flemish)	4 (1.5)	486 (15.4)	96 (1.5)	513 (2.4)	8.3 (0.10)
Norway (5)	r 4 (1.5)	537 (7.7)	96 (1.5)	539 (2.7)	8.4 (0.12)
Netherlands	r 3 (0.7)	540 (11.6)	97 (0.7)	517 (2.9)	8.3 (0.11)
Northern Ireland	r 3 (0.7)	504 (12.0)	97 (0.7)	521 (2.2)	8.5 (0.13)
International Avg.	27 (0.4)	508 (1.1)	73 (0.4)	505 (0.7)	

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

This TIMSS 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 "x" indicates data are available for less than 50% of students.

Exhibit 9.5: Teachers Emphasize Science Investigation (Continued)

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	
Benchmarking Participants					
Dubai, UAE	61 (1.6)	527 (3.2)	39 (1.6)	523 (4.1)	11.5 (0.11)
Abu Dhabi, UAE	45 (5.1)	427 (10.8)	55 (5.1)	411 (11.7)	10.9 (0.18)
Florida, US	r 22 (4.6)	553 (11.1)	78 (4.6)	551 (6.0)	9.7 (0.23)
Quebec, Canada	21 (4.4)	528 (6.9)	79 (4.4)	522 (4.7)	9.9 (0.16)
Ontario, Canada	12 (2.6)	522 (8.0)	88 (2.6)	532 (2.9)	9.5 (0.13)
Norway (4)	r 1 (0.9)	~ ~	99 (0.9)	493 (2.5)	8.1 (0.10)
Buenos Aires, Argentina	x x	x x	x x	x x	x x

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