

### Exhibit 5.7: Instruction Affected by Science Resource Shortages – Principals' Reports

Reported by Principals

Students were scored according to their principals' responses concerning thirteen school and classroom resources on the *Science Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 11.2, which corresponds to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 7.4, which corresponds to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was **Affected** by resource shortages.

Country	Not Affected		Affected		Affected A Lot		Average Scale Score	Difference in Average Scale Score from 2011	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement			
Singapore	74 (0.0)	599 (4.0)	18 (0.0)	585 (8.6)	8 (0.0)	601 (11.3)	12.2 (0.00)	0.5 (0.00)	▲
Malta	66 (0.1)	486 (1.8)	34 (0.1)	469 (2.6)	0 (0.0)	~ ~	11.6 (0.00)	◇ ◇	
Korea, Rep. of	61 (3.9)	555 (2.7)	37 (3.8)	558 (3.5)	3 (1.3)	537 (5.8)	11.8 (0.17)	0.2 (0.23)	
Australia	53 (3.6)	524 (3.1)	46 (3.5)	501 (4.8)	1 (0.8)	~ ~	11.5 (0.12)	0.2 (0.19)	
Slovenia	50 (4.7)	551 (3.3)	50 (4.7)	552 (3.9)	0 (0.0)	~ ~	11.5 (0.12)	-0.3 (0.17)	
England	48 (4.3)	552 (6.0)	52 (4.3)	536 (6.6)	0 (0.0)	~ ~	11.4 (0.15)	0.1 (0.22)	r
Japan	47 (3.5)	574 (2.8)	53 (3.6)	568 (2.4)	1 (0.6)	~ ~	10.9 (0.11)	0.3 (0.17)	
Canada	47 (3.4)	533 (3.1)	53 (3.3)	522 (3.0)	0 (0.3)	~ ~	11.3 (0.14)	◇ ◇	
Hong Kong SAR	45 (4.8)	546 (6.6)	52 (4.8)	544 (5.6)	3 (1.6)	529 (7.2)	11.0 (0.18)	0.2 (0.26)	
Qatar	45 (0.4)	478 (2.9)	34 (0.4)	433 (4.2)	20 (0.4)	448 (9.1)	10.5 (0.03)	1.3 (0.07)	▲
New Zealand	45 (5.2)	521 (5.7)	55 (5.2)	504 (4.1)	0 (0.0)	~ ~	11.1 (0.16)	-0.2 (0.23)	
Sweden	45 (4.2)	521 (5.1)	54 (4.1)	523 (4.8)	1 (0.9)	~ ~	11.0 (0.11)	0.0 (0.17)	r
Norway (9)	44 (4.1)	516 (5.3)	56 (4.1)	504 (3.0)	0 (0.0)	~ ~	11.2 (0.10)	◇ ◇	
United Arab Emirates	32 (2.3)	516 (4.6)	50 (2.4)	452 (4.6)	17 (1.8)	469 (7.4)	10.0 (0.13)	0.2 (0.16)	
United States	32 (3.4)	542 (5.7)	65 (3.4)	526 (3.6)	3 (0.9)	501 (12.3)	10.8 (0.13)	-0.1 (0.17)	
Kazakhstan	31 (3.9)	525 (9.0)	63 (4.0)	537 (6.5)	5 (1.8)	522 (23.6)	10.3 (0.20)	0.1 (0.27)	
Ireland	29 (3.5)	532 (7.2)	69 (3.8)	528 (3.4)	2 (1.5)	~ ~	10.7 (0.13)	◇ ◇	
Chile	28 (3.2)	483 (6.2)	68 (3.6)	443 (5.1)	4 (1.8)	442 (14.7)	10.2 (0.14)	0.6 (0.17)	▲
Chinese Taipei	28 (3.7)	583 (5.4)	72 (3.6)	564 (2.8)	1 (0.5)	~ ~	10.7 (0.12)	0.1 (0.20)	
Georgia	25 (3.3)	449 (6.6)	74 (3.3)	441 (3.9)	1 (0.8)	~ ~	10.6 (0.12)	0.5 (0.15)	▲
Russian Federation	20 (2.8)	552 (8.3)	78 (2.9)	542 (4.7)	1 (0.7)	~ ~	10.3 (0.10)	0.1 (0.17)	
Lithuania	17 (3.3)	517 (9.0)	80 (3.7)	519 (3.1)	2 (1.5)	~ ~	10.2 (0.14)	-0.1 (0.18)	
Israel	17 (2.7)	547 (9.2)	75 (2.9)	505 (4.5)	9 (1.8)	433 (15.6)	9.6 (0.11)	-0.5 (0.22)	
Bahrain	17 (0.2)	513 (5.7)	58 (0.3)	455 (2.8)	25 (0.2)	466 (4.8)	9.2 (0.01)	-0.2 (0.02)	▼
Kuwait	16 (3.3)	467 (26.6)	63 (3.0)	396 (5.1)	21 (3.3)	411 (12.4)	9.1 (0.21)	◇ ◇	
Oman	15 (2.2)	471 (6.8)	79 (2.5)	448 (3.1)	5 (1.4)	476 (10.5)	9.5 (0.10)	0.5 (0.14)	▲
Hungary	15 (3.2)	538 (13.9)	82 (3.4)	523 (3.6)	3 (1.6)	546 (13.0)	9.9 (0.11)	-0.6 (0.18)	▼
Lebanon	15 (2.7)	456 (12.8)	73 (3.0)	384 (6.7)	12 (2.5)	411 (15.1)	9.7 (0.15)	-0.1 (0.22)	
Saudi Arabia	12 (3.5)	407 (20.9)	73 (4.3)	387 (5.0)	15 (3.2)	431 (12.9)	9.1 (0.19)	-0.3 (0.23)	
Iran, Islamic Rep. of	10 (2.2)	507 (19.4)	78 (2.9)	451 (3.9)	13 (2.4)	450 (10.8)	9.1 (0.11)	0.3 (0.14)	
Italy	9 (2.4)	509 (10.8)	90 (2.6)	497 (2.7)	1 (0.8)	~ ~	9.8 (0.08)	-0.2 (0.11)	
South Africa (9)	7 (1.4)	461 (22.7)	83 (2.6)	354 (6.1)	10 (2.4)	316 (14.6)	9.3 (0.11)	-0.1 (0.15)	
Thailand	7 (2.1)	485 (15.4)	78 (2.9)	454 (4.6)	15 (2.8)	453 (12.3)	8.9 (0.13)	0.4 (0.17)	
Jordan	7 (1.5)	476 (12.8)	79 (3.1)	416 (3.7)	14 (2.9)	461 (11.6)	9.0 (0.13)	-0.1 (0.18)	
Malaysia	5 (2.2)	420 (11.7)	70 (4.1)	470 (4.6)	25 (3.8)	482 (10.8)	8.4 (0.15)	-1.0 (0.21)	▼
Morocco	3 (0.9)	426 (20.0)	95 (1.2)	391 (2.5)	2 (0.7)	~ ~	9.6 (0.05)	0.1 (0.08)	
Turkey	2 (1.0)	~ ~	79 (3.2)	493 (4.0)	19 (3.2)	490 (8.7)	8.4 (0.11)	0.1 (0.14)	
Egypt	1 (0.7)	~ ~	89 (2.3)	366 (4.8)	10 (2.2)	417 (13.5)	8.7 (0.08)	◇ ◇	
Botswana (9)	1 (0.0)	~ ~	89 (2.8)	390 (3.2)	10 (2.8)	402 (14.5)	8.6 (0.08)	-0.2 (0.12)	
International Avg.	27 (0.5)	509 (1.8)	65 (0.5)	480 (0.7)	7 (0.3)	465 (2.6)			

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

Significantly higher than 2011 ▲  
Significantly lower than 2011 ▼

This TIMSS 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 diamond (◇) indicates the country did not participate in the 2011 assessment.

A tilde (~) indicates insufficient data to report achievement.

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

**Exhibit 5.7: Instruction Affected by Science Resource Shortages – Principals' Reports (Continued)**

Country	Not Affected		Affected		Affected A Lot		Average Scale Score	Difference in Average Scale Score from 2011
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement		
<b>Benchmarking Participants</b>								
Quebec, Canada	80 (4.6)	537 (3.8)	20 (4.6)	531 (9.5)	0 (0.0)	~ ~	12.6 (0.19)	0.6 (0.23) ⬆
Dubai, UAE	57 (0.3)	548 (3.0)	29 (0.3)	491 (3.0)	14 (0.2)	511 (7.1)	11.3 (0.02)	0.9 (0.03) ⬆
Buenos Aires, Argentina	47 (4.7)	424 (6.1)	49 (4.6)	350 (8.1)	4 (2.6)	401 (9.0)	10.7 (0.20)	∅ ∅
Norway (8)	44 (4.0)	494 (3.9)	56 (4.0)	489 (3.1)	0 (0.0)	~ ~	11.2 (0.11)	0.1 (0.15)
Ontario, Canada	29 (4.6)	531 (5.7)	71 (4.5)	519 (3.1)	1 (0.6)	~ ~	10.7 (0.18)	0.0 (0.23)
Florida, US	27 (8.5)	518 (16.0)	73 (8.5)	511 (11.2)	0 (0.0)	~ ~	10.4 (0.30)	-0.9 (0.46)
Abu Dhabi, UAE	25 (4.1)	478 (12.5)	59 (4.4)	433 (9.5)	16 (3.4)	473 (11.3)	9.5 (0.24)	0.2 (0.30)

Significantly higher than 2011 ⬆  
Significantly lower than 2011 ⬇

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

