

Exhibit 14.1: Access to Computers for Mathematics Lessons

Students' Results based on Teachers' Reports

Country	Computers Available for Students to Use During Mathematics Lessons				Percent of Students by Computer Access*		
	Yes		No		Each Student has a Computer	The Class has Computers that Students can Share	The School has Computers that the Class can Sometimes Use
	Percent of Students	Average Achievement	Percent of Students	Average Achievement			
Malta	95 (0.2)	508 (1.4)	5 (0.2)	518 (5.0)	63 (0.4)	16 (0.3)	34 (0.4)
New Zealand	92 (1.8)	487 (2.9)	8 (1.8)	491 (12.6)	33 (3.3)	67 (3.3)	39 (3.2)
Denmark	r 87 (3.1)	523 (2.3)	13 (3.1)	533 (7.2)	r 63 (4.7)	r 8 (2.4)	r 34 (4.7)
Sweden	85 (2.4)	522 (2.8)	15 (2.4)	519 (10.8)	50 (4.3)	19 (3.1)	34 (4.1)
Hong Kong SAR	81 (4.6)	602 (3.9)	19 (4.6)	599 (12.2)	38 (4.3)	23 (3.8)	67 (4.8)
Norway (5)	r 76 (3.8)	546 (2.6)	24 (3.8)	539 (5.7)	r 39 (4.2)	r 29 (4.2)	r 50 (4.6)
United States	76 (2.5)	536 (2.9)	24 (2.5)	534 (5.8)	51 (3.0)	36 (2.1)	41 (2.1)
Australia	71 (3.5)	521 (3.9)	29 (3.5)	511 (7.0)	32 (3.2)	39 (3.8)	44 (4.0)
Netherlands	r 71 (5.1)	534 (2.8)	29 (5.1)	542 (4.5)	r 35 (4.7)	r 46 (5.9)	r 34 (4.8)
Georgia	70 (3.8)	481 (4.5)	30 (3.8)	483 (6.5)	s 75 (4.0)	s 38 (4.8)	s 90 (2.8)
Northern Ireland	69 (4.0)	564 (4.3)	31 (4.0)	568 (5.9)	3 (1.2)	48 (4.3)	58 (4.2)
Finland	65 (3.6)	531 (2.9)	35 (3.6)	535 (3.3)	15 (2.5)	17 (2.4)	57 (3.5)
Kazakhstan	61 (3.5)	511 (3.1)	39 (3.5)	514 (4.9)	10 (2.2)	17 (2.9)	52 (3.6)
Japan	59 (3.9)	591 (2.4)	41 (3.9)	595 (2.8)	5 (1.6)	19 (2.7)	57 (3.9)
Belgium (Flemish)	52 (3.9)	531 (2.8)	48 (3.9)	536 (2.7)	3 (1.2)	34 (4.0)	43 (3.7)
Canada	51 (2.9)	506 (3.0)	49 (2.9)	520 (4.2)	13 (2.1)	32 (2.7)	r 43 (2.8)
Lithuania	51 (3.8)	541 (4.5)	49 (3.8)	541 (3.9)	8 (2.0)	16 (3.1)	48 (3.9)
Germany	48 (3.7)	519 (3.9)	52 (3.7)	523 (3.4)	0 (0.3)	32 (3.6)	37 (3.4)
North Macedonia	47 (4.5)	472 (7.7)	53 (4.5)	471 (7.3)	14 (2.9)	26 (4.3)	29 (4.5)
Singapore	46 (2.6)	626 (5.4)	54 (2.6)	625 (4.7)	18 (1.9)	18 (2.0)	44 (2.5)
United Arab Emirates	r 45 (1.8)	512 (2.5)	55 (1.8)	457 (3.0)	r 23 (1.6)	r 25 (1.8)	r 39 (1.8)
Austria	44 (3.3)	549 (3.1)	56 (3.3)	532 (2.8)	1 (0.4)	39 (3.2)	21 (2.7)
Ireland	43 (4.0)	548 (4.7)	57 (4.0)	548 (2.8)	5 (2.0)	19 (2.9)	36 (4.1)
Russian Federation	42 (3.5)	568 (4.5)	58 (3.5)	566 (4.1)	7 (1.7)	28 (3.3)	41 (3.5)
Qatar	37 (3.5)	449 (7.5)	63 (3.5)	450 (5.0)	18 (2.8)	11 (2.3)	33 (3.3)
Chile	34 (3.9)	441 (5.4)	66 (3.9)	442 (4.0)	16 (3.2)	16 (2.9)	33 (3.8)
Korea, Rep. of	34 (3.8)	595 (5.2)	66 (3.8)	602 (2.7)	6 (2.1)	6 (2.1)	32 (3.8)
Latvia	34 (3.1)	539 (5.0)	66 (3.1)	550 (3.0)	6 (2.0)	10 (2.5)	32 (3.3)
Spain	33 (2.6)	503 (3.7)	67 (2.6)	501 (3.4)	7 (1.4)	11 (2.1)	31 (2.6)
Bahrain	32 (2.9)	489 (4.1)	68 (2.9)	475 (3.1)	6 (1.6)	9 (1.8)	28 (2.8)
Saudi Arabia	31 (3.3)	411 (6.4)	69 (3.3)	393 (4.8)	4 (1.3)	9 (2.0)	26 (3.2)
Hungary	31 (3.6)	522 (5.3)	69 (3.6)	525 (4.1)	2 (1.0)	7 (1.8)	29 (3.5)
Cyprus	30 (2.5)	538 (4.1)	70 (2.5)	532 (3.3)	0 (0.2)	14 (2.2)	26 (2.8)
Poland	29 (3.4)	514 (4.6)	71 (3.4)	522 (3.0)	6 (1.8)	4 (1.4)	27 (3.2)
Czech Republic	29 (3.4)	540 (5.6)	71 (3.4)	530 (3.0)	7 (1.9)	12 (2.2)	28 (3.4)
Iran, Islamic Rep. of	25 (2.8)	463 (9.7)	75 (2.8)	436 (4.5)	2 (1.0)	3 (1.4)	18 (2.6)
Kuwait	24 (3.3)	391 (11.5)	76 (3.3)	381 (5.4)	6 (2.0)	5 (1.8)	19 (3.1)
Chinese Taipei	23 (3.4)	600 (3.9)	77 (3.4)	599 (2.1)	3 (1.4)	14 (2.6)	16 (2.7)
Italy	23 (3.3)	515 (4.8)	77 (3.3)	515 (2.7)	2 (1.0)	14 (2.5)	20 (3.1)
Philippines	23 (3.3)	315 (13.2)	77 (3.3)	290 (6.9)	0 (0.2)	12 (2.3)	22 (3.2)
France	21 (3.4)	471 (6.0)	79 (3.4)	489 (3.2)	1 (0.7)	10 (2.2)	16 (3.2)
Bulgaria	19 (3.1)	516 (7.9)	81 (3.1)	515 (5.3)	2 (0.9)	8 (2.4)	18 (3.2)
Azerbaijan	18 (2.9)	508 (6.5)	82 (2.9)	517 (3.0)	4 (1.4)	6 (1.7)	15 (2.6)
Oman	17 (2.3)	437 (6.8)	83 (2.3)	429 (4.5)	3 (1.0)	4 (1.3)	14 (2.5)
Turkey (5)	16 (3.1)	533 (10.2)	84 (3.1)	521 (5.1)	2 (1.3)	8 (2.3)	13 (2.8)
Armenia	14 (2.9)	505 (6.5)	86 (2.9)	497 (2.8)	3 (1.3)	3 (1.2)	13 (2.8)
Slovak Republic	14 (2.1)	523 (8.9)	86 (2.1)	508 (3.6)	3 (1.0)	5 (1.0)	11 (2.0)
Serbia	13 (2.6)	512 (8.9)	87 (2.6)	507 (3.4)	0 (0.3)	9 (2.2)	10 (2.5)
Bosnia and Herzegovina	13 (2.2)	477 (6.3)	87 (2.2)	448 (2.5)	4 (1.3)	7 (1.8)	10 (2.3)
Portugal	13 (2.0)	524 (6.1)	87 (2.0)	526 (2.9)	2 (0.9)	7 (1.4)	12 (2.0)
Montenegro	11 (1.1)	455 (5.7)	89 (1.1)	453 (2.2)	1 (0.0)	6 (0.7)	10 (1.1)
Albania	9 (2.7)	530 (17.2)	91 (2.7)	491 (3.5)	2 (1.2)	8 (2.6)	8 (2.6)
South Africa (5)	8 (1.6)	430 (15.2)	92 (1.6)	368 (3.8)	1 (0.5)	2 (0.7)	6 (1.5)
Kosovo	6 (2.0)	451 (7.9)	94 (2.0)	443 (3.3)	s 0 (0.0)	s 7 (3.1)	s 9 (3.2)
Croatia	6 (2.0)	503 (11.4)	94 (2.0)	509 (2.3)	1 (0.8)	4 (1.7)	6 (2.0)
Pakistan	6 (1.4)	303 (54.2)	94 (1.4)	329 (12.8)	2 (1.5)	3 (0.6)	4 (1.0)
Morocco	5 (1.9)	430 (28.6)	95 (1.9)	379 (4.8)	0 (0.3)	2 (1.2)	4 (1.6)
England	x 32 (4.4)	566 (5.6)	68 (4.4)	554 (6.5)	x 7 (2.3)	x 20 (4.4)	x 24 (4.9)
International Average	39 (0.4)	506 (1.4)	61 (0.4)	500 (0.7)	13 (0.3)	17 (0.4)	29 (0.4)
Benchmarking Participants							
Dubai, UAE	r 78 (1.3)	555 (2.4)	22 (1.3)	514 (5.1)	r 50 (2.3)	r 40 (1.8)	r 65 (1.8)
Ontario, Canada	r 59 (5.5)	509 (4.9)	41 (5.5)	518 (10.5)	r 13 (4.1)	r 42 (5.5)	r 49 (5.3)
Moscow City, Russian Fed.	53 (4.5)	600 (2.9)	47 (4.5)	585 (3.1)	10 (2.4)	27 (3.6)	49 (4.6)
Madrid, Spain	39 (4.5)	516 (4.4)	61 (4.5)	519 (2.5)	10 (2.8)	9 (2.8)	33 (4.6)
Abu Dhabi, UAE	r 33 (2.4)	476 (5.4)	67 (2.4)	426 (3.9)	r 15 (1.5)	r 18 (2.5)	r 28 (2.4)
Quebec, Canada	32 (4.1)	528 (3.7)	68 (4.1)	535 (2.8)	8 (2.1)	17 (3.7)	28 (4.2)

* Teachers could indicate the class having more than one type of computer access.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

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 14.2: Access to Computers for Science Lessons

Students' Results based on Teachers' Reports

Country	Computers Available for Students to Use During Science Lessons				Percent of Students by Computer Access*						
	Yes		No		Each Student has a Computer	The Class has Computers that Students can Share	The School has Computers that the Class can Sometimes Use				
	Percent of Students	Average Achievement	Percent of Students	Average Achievement							
Denmark	r	93 (2.4)	522 (2.8)	7 (2.4)	519 (5.8)	r	63 (4.4)	r	8 (2.4)	r	48 (4.6)
New Zealand		91 (1.5)	503 (2.5)	9 (1.5)	500 (8.3)		30 (3.3)		69 (3.0)		41 (2.8)
Belgium (Flemish)		90 (2.2)	502 (2.3)	10 (2.2)	500 (6.3)		8 (1.7)		58 (4.0)		76 (3.0)
Sweden		89 (2.2)	540 (3.4)	11 (2.2)	534 (11.9)	r	54 (4.5)	r	26 (3.6)		35 (4.5)
Malta		87 (0.3)	497 (1.3)	13 (0.3)	491 (3.4)		62 (0.4)		19 (0.3)		32 (0.4)
Finland		83 (2.5)	554 (2.8)	17 (2.5)	557 (4.8)		18 (2.7)		25 (2.7)		76 (2.8)
Georgia		82 (3.3)	450 (4.6)	18 (3.3)	471 (8.6)	r	76 (3.6)	r	34 (4.2)	r	90 (2.6)
Northern Ireland		80 (3.5)	518 (2.8)	20 (3.5)	518 (5.9)		7 (2.1)		60 (4.4)		71 (4.2)
United States		79 (2.6)	541 (3.1)	21 (2.6)	534 (6.3)		53 (3.0)		38 (2.5)		42 (2.5)
Australia		78 (2.8)	535 (3.1)	22 (2.8)	529 (6.5)		33 (3.4)		41 (3.7)		49 (4.3)
Norway (5)	s	75 (4.2)	537 (3.3)	25 (4.2)	547 (5.1)	s	43 (5.0)	s	31 (4.9)	s	42 (5.0)
Netherlands	r	72 (4.8)	519 (4.0)	28 (4.8)	515 (4.4)	r	34 (5.3)	r	49 (5.7)	r	40 (5.6)
North Macedonia		71 (4.2)	422 (7.3)	29 (4.2)	436 (11.5)		19 (3.4)		43 (4.5)		44 (4.4)
Japan		70 (3.7)	560 (2.2)	30 (3.7)	565 (2.9)		10 (2.1)		24 (3.7)		66 (4.1)
Hong Kong SAR		70 (4.4)	533 (4.5)	30 (4.4)	532 (8.4)		45 (5.0)		28 (4.4)		59 (4.6)
Canada	r	64 (3.0)	524 (2.3)	36 (3.0)	525 (4.1)	r	16 (2.0)	r	40 (3.1)	r	52 (3.1)
Kazakhstan		63 (4.1)	488 (4.6)	37 (4.1)	499 (6.2)		16 (2.8)		24 (3.5)		52 (4.4)
Singapore		60 (2.6)	594 (4.4)	40 (2.6)	595 (4.6)		25 (2.4)		29 (2.2)		57 (2.8)
Germany		59 (3.8)	519 (3.1)	41 (3.8)	518 (4.5)		2 (1.1)		39 (3.8)		50 (3.9)
Lithuania		51 (3.6)	537 (4.2)	49 (3.6)	537 (4.0)		8 (2.0)		19 (2.9)		46 (3.8)
Chinese Taipei		50 (3.9)	557 (2.4)	50 (3.9)	559 (2.6)		6 (1.7)		26 (3.4)		39 (3.8)
Qatar		50 (4.3)	447 (5.6)	50 (4.3)	453 (7.0)		19 (3.4)		23 (3.2)		46 (4.0)
Korea, Rep. of		49 (3.8)	587 (3.6)	51 (3.8)	588 (2.3)		15 (2.6)		12 (2.8)		45 (4.0)
United Arab Emirates	r	48 (1.9)	507 (3.1)	52 (1.9)	445 (3.8)	r	25 (1.8)	r	30 (1.4)	r	42 (1.7)
Russian Federation		47 (3.7)	569 (3.9)	53 (3.7)	566 (4.0)		7 (1.6)		30 (3.7)		44 (3.9)
Spain		47 (2.9)	513 (3.0)	53 (2.9)	509 (3.3)		8 (1.7)		16 (2.2)		43 (2.9)
Latvia		45 (3.1)	535 (4.4)	55 (3.1)	547 (2.6)		5 (1.8)		17 (3.1)		42 (3.1)
Ireland		45 (3.8)	526 (5.6)	55 (3.8)	530 (3.5)		7 (2.2)		20 (3.2)		36 (3.8)
Austria		45 (3.2)	525 (3.5)	55 (3.2)	520 (3.6)		1 (0.7)		41 (3.0)		26 (3.3)
Kuwait		42 (4.0)	398 (10.6)	58 (4.0)	389 (8.3)		8 (2.1)		13 (2.7)		36 (3.6)
Cyprus		40 (4.7)	515 (5.0)	60 (4.7)	511 (3.8)		0 (0.5)		18 (3.7)		36 (4.8)
Chile	r	40 (3.6)	468 (4.6)	60 (3.6)	468 (4.2)	r	19 (3.2)	r	25 (4.0)	r	40 (3.6)
Bahrain		40 (2.9)	511 (4.8)	60 (2.9)	480 (4.7)		7 (1.5)		10 (2.0)		36 (2.7)
Saudi Arabia		37 (3.3)	413 (6.5)	63 (3.3)	394 (5.9)		3 (0.7)		16 (2.9)		31 (3.3)
Hungary		34 (3.3)	522 (4.8)	66 (3.3)	533 (3.7)		5 (1.5)		9 (2.1)		32 (3.2)
Italy		32 (3.4)	507 (4.6)	68 (3.4)	511 (3.6)		2 (0.9)		18 (2.8)		27 (3.2)
Slovak Republic		30 (3.3)	526 (7.1)	70 (3.3)	518 (4.1)		8 (1.8)		10 (1.8)		25 (3.1)
Iran, Islamic Rep. of		29 (3.2)	461 (8.1)	71 (3.2)	432 (5.1)		1 (0.7)		7 (2.0)		23 (3.2)
Philippines		29 (3.4)	255 (13.5)	71 (3.4)	245 (9.4)	x	3 (2.3)	x	32 (5.0)	x	55 (5.9)
Czech Republic		29 (3.0)	537 (4.7)	71 (3.0)	532 (3.0)		6 (1.8)		13 (2.1)		26 (2.8)
Oman		28 (3.2)	445 (9.3)	72 (3.2)	431 (4.8)		4 (1.2)		10 (2.0)		23 (2.9)
Armenia		25 (3.4)	476 (6.9)	75 (3.4)	464 (3.9)		9 (2.3)		6 (2.1)		23 (3.2)
France		23 (3.7)	482 (4.9)	77 (3.7)	490 (3.5)		0 (0.4)		12 (2.4)		19 (3.5)
Bulgaria		23 (3.3)	515 (12.2)	77 (3.3)	523 (6.2)		0 (0.3)		9 (2.5)		22 (3.3)
Poland		20 (2.9)	522 (5.7)	80 (2.9)	534 (2.8)		2 (1.2)		5 (1.8)		18 (2.7)
Turkey (5)		20 (3.2)	539 (6.0)	80 (3.2)	523 (5.4)		2 (0.9)		15 (2.9)		16 (3.0)
Serbia		19 (3.1)	520 (7.6)	81 (3.1)	516 (4.0)		0 (0.0)		13 (2.7)		16 (3.3)
Bosnia and Herzegovina		18 (2.4)	472 (6.0)	82 (2.4)	456 (3.0)		5 (1.4)		10 (2.1)		16 (2.6)
Portugal		18 (2.3)	507 (4.5)	82 (2.3)	503 (2.8)		3 (1.1)		10 (2.0)		18 (2.2)
Montenegro		18 (1.4)	442 (6.3)	82 (1.4)	456 (2.6)		1 (0.0)		10 (1.2)		15 (1.1)
Azerbaijan		17 (2.2)	433 (6.3)	83 (2.2)	425 (3.9)		5 (1.7)		9 (1.6)		13 (1.9)
Kosovo		12 (3.1)	416 (7.1)	88 (3.1)	413 (4.1)	s	0 (0.0)	s	10 (3.6)	s	17 (5.3)
Croatia		11 (2.4)	518 (8.6)	89 (2.4)	524 (2.2)		3 (1.2)		6 (2.5)		11 (2.3)
Albania		11 (2.6)	523 (12.2)	89 (2.6)	485 (3.9)		2 (1.2)		8 (2.3)		9 (2.5)
Morocco		11 (2.3)	412 (21.0)	89 (2.3)	370 (6.6)		0 (0.4)		4 (1.5)		8 (2.1)
Pakistan	r	8 (2.4)	297 (27.3)	92 (2.4)	292 (17.0)	r	0 (0.2)	r	4 (1.5)	r	4 (1.7)
South Africa (5)		7 (1.6)	422 (18.5)	93 (1.6)	319 (5.0)		1 (0.6)		2 (0.7)		6 (1.5)
England	x	36 (4.9)	550 (7.0)	64 (4.9)	533 (5.9)	x	4 (2.0)	x	24 (5.1)	x	27 (5.2)
International Average		45 (0.4)	496 (1.0)	55 (0.4)	490 (0.8)		14 (0.3)		22 (0.4)		36 (0.5)
Benchmarking Participants											
Dubai, UAE	r	80 (0.9)	554 (3.0)	20 (0.9)	531 (5.5)	r	47 (2.0)	r	50 (2.8)	r	69 (1.7)
Ontario, Canada	r	75 (5.9)	525 (3.7)	25 (5.9)	533 (11.9)	r	15 (4.3)	r	52 (6.0)	r	61 (6.2)
Moscow City, Russian Fed.		60 (4.3)	600 (2.7)	40 (4.3)	587 (3.4)		12 (2.6)		31 (3.6)		58 (4.5)
Madrid, Spain		53 (4.4)	524 (2.4)	47 (4.4)	521 (3.5)		16 (3.1)		13 (3.2)		49 (4.2)
Abu Dhabi, UAE	r	40 (2.3)	449 (6.0)	60 (2.3)	395 (5.9)	r	16 (1.9)	r	21 (2.3)	r	34 (2.6)
Quebec, Canada		38 (4.4)	522 (4.1)	62 (4.4)	523 (2.6)		10 (2.1)		20 (3.9)		32 (4.4)

* Teachers could indicate the class having more than one type of computer access.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

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 14.3: Access to Computers for Mathematics Lessons

Students' Results based on Teachers' Reports

Country	Computers Available for Students to Use During Mathematics Lessons				Percent of Students by Computer Access*			
	Yes		No		Each Student has a Computer	The Class has Computers that Students can Share	The School has Computers that the Class can Sometimes Use	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement				
Sweden		89 (2.6)	502 (2.7)	11 (2.6)	515 (8.2)	80 (3.1)	2 (1.1)	15 (3.0)
Norway (9)	s	82 (3.5)	506 (3.3)	18 (3.5)	501 (5.1)	s 73 (3.9)	s 13 (3.6)	s 20 (3.6)
New Zealand		81 (3.5)	488 (3.8)	19 (3.5)	460 (12.3)	61 (4.3)	24 (3.2)	55 (4.2)
Australia		76 (2.9)	529 (4.9)	24 (2.9)	488 (8.2)	62 (2.9)	10 (2.1)	40 (3.3)
United States		72 (2.8)	510 (4.7)	28 (2.8)	533 (9.2)	58 (3.0)	27 (2.2)	35 (2.4)
United Arab Emirates	r	56 (1.7)	480 (3.1)	44 (1.7)	468 (4.3)	r 32 (1.4)	r 24 (1.4)	r 43 (1.8)
Finland		55 (3.1)	508 (3.5)	45 (3.1)	510 (2.9)	24 (3.0)	13 (1.8)	47 (3.2)
Japan		54 (3.8)	595 (4.9)	46 (3.8)	594 (2.9)	8 (2.0)	19 (3.0)	52 (4.0)
Kazakhstan		46 (3.7)	484 (5.4)	54 (3.7)	490 (5.3)	15 (2.9)	30 (3.5)	36 (3.8)
Jordan		44 (3.6)	429 (6.5)	56 (3.6)	414 (6.1)	9 (2.7)	10 (1.8)	43 (3.7)
Chile		43 (4.1)	440 (5.0)	57 (4.1)	441 (4.9)	23 (3.6)	19 (3.2)	41 (4.1)
Hungary		42 (3.6)	514 (6.6)	58 (3.6)	515 (5.6)	6 (1.6)	7 (1.6)	39 (3.7)
Georgia		41 (4.0)	467 (7.2)	59 (4.0)	459 (5.5)	x 25 (6.4)	y - -	x 84 (5.1)
Lithuania		41 (3.9)	514 (4.9)	59 (3.9)	526 (4.3)	10 (2.0)	12 (2.4)	40 (3.9)
Egypt		39 (4.3)	424 (8.7)	61 (4.3)	407 (6.7)	2 (1.1)	11 (2.8)	38 (4.3)
Qatar		38 (3.3)	440 (8.8)	62 (3.3)	446 (4.6)	17 (2.3)	8 (2.3)	33 (3.3)
Hong Kong SAR		37 (4.0)	584 (7.9)	63 (4.0)	572 (6.5)	22 (3.4)	7 (2.1)	29 (4.0)
Singapore		35 (2.7)	615 (8.1)	65 (2.7)	616 (5.0)	19 (1.7)	11 (1.5)	30 (2.7)
Chinese Taipei		35 (3.4)	608 (5.4)	65 (3.4)	615 (3.2)	2 (1.0)	26 (3.1)	26 (3.1)
Romania		33 (3.7)	488 (8.9)	67 (3.7)	476 (5.4)	r 8 (2.1)	r 7 (2.2)	r 31 (3.8)
Bahrain		33 (2.7)	481 (3.8)	67 (2.7)	481 (2.5)	5 (0.7)	8 (1.6)	32 (2.8)
Israel		33 (3.2)	516 (10.7)	67 (3.2)	521 (6.0)	9 (2.2)	7 (1.3)	30 (3.0)
Russian Federation		31 (3.5)	558 (7.0)	69 (3.5)	537 (6.1)	7 (1.9)	16 (3.1)	30 (3.4)
Ireland		31 (3.2)	521 (5.5)	69 (3.2)	526 (3.1)	14 (2.3)	3 (1.2)	22 (2.6)
Korea, Rep. of		29 (3.5)	607 (4.6)	71 (3.5)	607 (3.6)	3 (1.1)	14 (2.6)	22 (3.2)
Saudi Arabia		29 (3.5)	401 (4.8)	71 (3.5)	389 (3.0)	5 (1.6)	14 (3.1)	23 (3.0)
Kuwait		28 (3.5)	426 (10.0)	72 (3.5)	392 (4.8)	6 (1.2)	5 (1.8)	25 (3.8)
Iran, Islamic Rep. of		25 (3.2)	465 (8.9)	75 (3.2)	440 (4.0)	0 (0.1)	3 (1.2)	22 (3.3)
England	s	24 (4.8)	521 (15.8)	76 (4.8)	522 (9.9)	s 13 (3.9)	s 4 (2.1)	s 17 (4.3)
Italy		23 (3.4)	484 (5.3)	77 (3.4)	502 (3.2)	r 6 (1.8)	r 15 (2.8)	r 24 (3.6)
France	r	19 (3.6)	483 (5.7)	81 (3.6)	482 (3.1)	r 6 (2.0)	r 5 (2.1)	r 16 (3.5)
Lebanon		16 (3.4)	447 (10.4)	84 (3.4)	426 (3.4)	2 (1.0)	6 (2.1)	14 (3.3)
Turkey		15 (2.8)	512 (12.1)	85 (2.8)	493 (4.9)	1 (0.9)	9 (2.3)	12 (2.5)
Oman		13 (2.6)	434 (10.1)	87 (2.6)	407 (3.2)	2 (0.7)	4 (1.3)	12 (2.5)
Malaysia		13 (2.1)	477 (9.8)	87 (2.1)	458 (3.7)	4 (1.3)	5 (1.5)	12 (2.2)
South Africa (9)		9 (1.3)	417 (11.5)	91 (1.3)	388 (2.8)	2 (0.4)	1 (0.4)	4 (0.7)
Portugal		9 (2.5)	503 (14.0)	91 (2.5)	500 (3.3)	3 (1.5)	1 (1.0)	8 (2.4)
Cyprus	s	9 (1.9)	517 (8.6)	91 (1.9)	504 (2.5)	s 0 (0.0)	s 2 (0.6)	s 6 (1.4)
Morocco		5 (1.6)	416 (15.5)	95 (1.6)	386 (2.4)	0 (0.0)	1 (0.7)	4 (1.3)
International Average		37 (0.5)	495 (1.3)	63 (0.5)	487 (0.9)	17 (0.4)	11 (0.4)	28 (0.5)
Benchmarking Participants								
Dubai, UAE		74 (2.3)	548 (3.2)	26 (2.3)	507 (6.8)	36 (2.8)	35 (2.2)	62 (3.1)
Ontario, Canada		70 (4.5)	539 (5.7)	30 (4.5)	516 (5.0)	r 21 (4.6)	r 50 (5.3)	r 57 (5.3)
Abu Dhabi, UAE	r	59 (1.8)	421 (5.0)	41 (1.8)	454 (4.6)	r 48 (1.9)	r 21 (2.5)	r 38 (2.5)
Moscow City, Russian Fed.		37 (4.1)	587 (7.0)	63 (4.1)	568 (4.8)	7 (2.2)	11 (2.5)	35 (4.0)
Quebec, Canada		29 (4.3)	557 (7.2)	71 (4.3)	537 (4.7)	14 (2.6)	6 (2.5)	17 (3.7)
Western Cape, RSA (9)		23 (3.6)	462 (14.2)	77 (3.6)	434 (5.7)	5 (1.6)	2 (1.0)	16 (3.8)
Gauteng, RSA (9)		15 (3.2)	434 (14.8)	85 (3.2)	418 (4.0)	5 (1.5)	1 (0.5)	7 (2.2)

* Teachers could indicate the class having more than one type of computer access.

() 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.

Exhibit 14.4: Access to Computers for Science Lessons

Students' Results based on Teachers' Reports

Country	Computers Available for Students to Use During Science Lessons				Percent of Students by Computer Access*		
	Yes		No		Each Student has a Computer	The Class has Computers that Students can Share	The School has Computers that the Class can Sometimes Use
	Percent of Students	Average Achievement	Percent of Students	Average Achievement			
Sweden	96 (1.7)	521 (3.1)	4 (1.7)	528 (31.8)	87 (2.8)	4 (1.2)	19 (3.0)
New Zealand	90 (2.6)	506 (4.2)	10 (2.6)	464 (22.8)	55 (4.1)	24 (3.5)	67 (4.1)
Australia	r 87 (1.6)	537 (3.8)	13 (1.6)	505 (10.6)	r 67 (2.8)	r 18 (2.4)	r 51 (2.7)
Norway (9)	s 85 (3.3)	497 (3.9)	15 (3.3)	500 (7.9)	s 77 (3.8)	s 16 (3.6)	s 21 (3.9)
United States	r 82 (2.3)	530 (4.2)	18 (2.3)	511 (14.3)	r 58 (2.9)	r 35 (3.1)	r 50 (2.9)
Finland	78 (1.9)	542 (3.3)	22 (1.9)	545 (4.9)	27 (3.0)	18 (1.8)	70 (2.3)
Japan	67 (3.8)	568 (2.8)	33 (3.8)	572 (3.9)	17 (3.2)	29 (3.5)	62 (4.0)
Chile	65 (3.9)	468 (4.2)	35 (3.9)	454 (5.7)	40 (4.0)	39 (3.8)	63 (3.8)
Kazakhstan	64 (2.9)	477 (4.2)	36 (2.9)	480 (5.7)	19 (2.2)	37 (2.8)	56 (3.0)
United Arab Emirates	r 59 (1.4)	483 (2.8)	41 (1.4)	462 (4.2)	r 39 (1.3)	r 27 (1.6)	r 47 (1.6)
Egypt	58 (3.7)	399 (7.8)	42 (3.7)	379 (8.0)	3 (1.4)	14 (2.9)	56 (3.6)
Hong Kong SAR	57 (4.0)	512 (7.5)	43 (4.0)	494 (8.9)	30 (3.8)	20 (3.6)	45 (4.3)
Singapore	56 (2.2)	605 (6.0)	44 (2.2)	611 (5.8)	29 (1.9)	21 (2.1)	53 (2.4)
Israel	56 (4.3)	510 (5.8)	44 (4.3)	519 (6.4)	10 (2.5)	22 (3.1)	53 (4.1)
Iran, Islamic Rep. of	54 (3.8)	465 (5.4)	46 (3.8)	431 (5.8)	2 (1.2)	6 (1.9)	49 (3.8)
Jordan	54 (3.6)	468 (5.1)	46 (3.6)	434 (7.8)	13 (2.6)	11 (2.1)	50 (3.8)
Chinese Taipei	54 (3.6)	572 (2.6)	46 (3.6)	576 (3.7)	5 (1.4)	37 (3.5)	40 (3.6)
Lithuania	53 (2.3)	529 (3.6)	47 (2.3)	538 (2.9)	16 (1.7)	20 (1.7)	48 (2.1)
Qatar	50 (4.5)	477 (5.7)	50 (4.5)	472 (7.5)	24 (2.7)	19 (2.7)	46 (4.1)
Georgia	49 (2.4)	445 (4.4)	51 (2.4)	449 (4.2)	x 26 (3.5)	x 27 (3.4)	s 87 (2.2)
Korea, Rep. of	49 (4.2)	560 (3.3)	51 (4.2)	561 (2.6)	7 (1.9)	27 (3.1)	39 (4.1)
Kuwait	48 (4.6)	457 (7.4)	52 (4.6)	432 (6.9)	8 (2.3)	10 (2.6)	42 (4.8)
Hungary	46 (2.6)	529 (3.5)	54 (2.6)	528 (3.7)	3 (0.7)	10 (1.4)	43 (2.7)
Russian Federation	46 (2.5)	548 (4.2)	54 (2.5)	539 (5.8)	8 (1.5)	28 (2.2)	44 (2.5)
Ireland	45 (3.7)	527 (3.9)	55 (3.7)	528 (4.3)	17 (2.7)	10 (2.0)	33 (3.2)
Bahrain	44 (2.8)	483 (3.8)	56 (2.8)	488 (3.5)	6 (1.1)	11 (2.5)	39 (2.7)
Romania	40 (2.9)	481 (5.7)	60 (2.9)	464 (4.9)	r 12 (2.0)	r 12 (2.2)	r 41 (3.3)
Italy	36 (3.8)	493 (4.7)	64 (3.8)	506 (3.3)	6 (1.8)	25 (3.6)	32 (3.7)
France	r 35 (3.5)	487 (4.4)	65 (3.5)	489 (3.9)	r 4 (1.5)	r 19 (2.6)	r 31 (3.2)
England	s 32 (4.8)	524 (14.2)	68 (4.8)	522 (8.2)	s 14 (3.6)	s 7 (2.9)	s 29 (5.1)
Saudi Arabia	30 (3.8)	441 (6.9)	70 (3.8)	428 (3.4)	5 (1.6)	11 (2.3)	26 (3.3)
Malaysia	20 (3.3)	452 (10.9)	80 (3.3)	462 (4.5)	4 (1.3)	7 (1.7)	17 (3.0)
Lebanon	19 (2.6)	409 (11.4)	81 (2.6)	370 (5.2)	1 (0.7)	6 (1.9)	14 (2.3)
Oman	18 (2.4)	475 (8.2)	82 (2.4)	453 (3.2)	3 (1.0)	8 (1.6)	16 (2.3)
Turkey	18 (3.2)	536 (11.2)	82 (3.2)	511 (4.8)	3 (1.5)	10 (2.5)	14 (2.9)
Portugal	17 (3.1)	536 (5.4)	83 (3.1)	516 (3.0)	3 (1.2)	8 (1.9)	17 (3.0)
Morocco	15 (1.9)	411 (7.3)	85 (1.9)	391 (3.2)	0 (0.0)	5 (1.1)	12 (1.7)
South Africa (9)	10 (1.8)	404 (16.9)	90 (1.8)	366 (3.2)	3 (0.9)	2 (0.8)	6 (1.4)
Cyprus	s 7 (1.0)	494 (6.7)	93 (1.0)	486 (2.5)	s 1 (0.0)	s 3 (0.6)	s 4 (0.8)
International Average	48 (0.5)	496 (1.1)	52 (0.5)	486 (1.4)	19 (0.4)	17 (0.4)	39 (0.5)
Benchmarking Participants							
Ontario, Canada	s 88 (3.4)	522 (5.0)	12 (3.4)	516 (9.4)	s 29 (4.9)	s 66 (5.6)	s 72 (5.4)
Dubai, UAE	r 81 (1.4)	565 (2.6)	19 (1.4)	494 (8.1)	r 52 (1.7)	r 38 (1.9)	r 65 (2.6)
Abu Dhabi, UAE	r 62 (2.5)	397 (6.2)	38 (2.5)	451 (7.8)	r 50 (1.6)	r 22 (2.5)	r 44 (2.7)
Moscow City, Russian Fed.	40 (2.6)	571 (3.7)	60 (2.6)	563 (3.2)	9 (1.6)	17 (1.9)	37 (2.5)
Western Cape, RSA (9)	21 (3.5)	472 (17.8)	79 (3.5)	432 (6.6)	8 (2.1)	5 (1.9)	17 (3.2)
Gauteng, RSA (9)	8 (1.9)	517 (18.8)	92 (1.9)	415 (4.6)	5 (1.9)	0 (0.0)	3 (0.5)
Quebec, Canada	y - -	- -	- -	- -	y - -	y - -	y - -

* Teachers could indicate the class having more than one type of computer access.

() 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>



TIMSS & PIRLS
International Study Center
Lynch School of Education
BOSTON COLLEGE