

Exhibit 8.3: Teachers Majored in Education and Mathematics

Reported by Teachers

Country	Major in Primary Education and Major (or Specialization) in Mathematics		Major in Primary Education but No Major (or Specialization) in Mathematics		Major in Mathematics but No Major in Primary Education		All Other Majors		No Formal Education Beyond Upper-Secondary*	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Australia	13 (2.6)	536 (7.1)	80 (3.2)	514 (3.8)	1 (0.6)	~ ~	6 (1.5)	531 (8.7)	0 (0.0)	~ ~
Bahrain	30 (1.7)	451 (3.0)	4 (1.4)	516 (24.2)	59 (2.8)	449 (1.9)	7 (3.3)	439 (22.3)	0 (0.3)	~ ~
Belgium (Flemish)	--	--	--	--	--	--	--	--	--	--
Bulgaria	r 27 (3.9)	540 (11.4)	70 (4.0)	516 (5.6)	1 (0.3)	~ ~	2 (1.2)	~ ~	0 (0.0)	~ ~
Canada	6 (1.0)	495 (11.1)	79 (2.1)	513 (2.6)	3 (0.9)	518 (10.7)	12 (1.6)	501 (5.0)	0 (0.0)	~ ~
Chile	r 46 (5.2)	463 (4.8)	51 (5.3)	466 (5.1)	2 (1.4)	~ ~	1 (0.6)	~ ~	1 (0.0)	~ ~
Chinese Taipei	37 (3.8)	599 (2.8)	44 (3.6)	594 (3.0)	3 (1.4)	602 (14.6)	15 (2.7)	599 (5.0)	0 (0.0)	~ ~
Croatia	--	--	--	--	--	--	--	--	--	--
Cyprus	22 (3.0)	527 (5.3)	75 (3.0)	521 (2.8)	1 (0.7)	~ ~	2 (0.9)	~ ~	0 (0.0)	~ ~
Czech Republic	6 (1.4)	526 (8.3)	75 (2.7)	529 (2.8)	3 (1.4)	521 (13.7)	13 (2.0)	531 (5.3)	4 (1.2)	507 (12.6)
Denmark	r 38 (3.6)	534 (4.0)	12 (2.8)	527 (10.3)	30 (3.7)	536 (5.7)	13 (2.6)	548 (10.2)	7 (2.1)	551 (10.8)
England	12 (2.6)	548 (11.9)	57 (4.3)	543 (4.7)	4 (1.7)	582 (23.5)	27 (3.8)	552 (8.7)	0 (0.0)	~ ~
Finland	10 (2.1)	538 (6.6)	82 (2.8)	536 (2.0)	0 (0.4)	~ ~	7 (1.7)	521 (9.3)	1 (0.6)	~ ~
France	s 10 (2.4)	484 (7.1)	28 (4.0)	492 (6.6)	20 (3.6)	485 (8.8)	38 (4.4)	481 (5.4)	4 (1.5)	489 (6.3)
Georgia	64 (4.2)	464 (5.5)	11 (3.0)	475 (7.3)	18 (3.5)	465 (9.8)	8 (2.2)	457 (12.5)	0 (0.0)	~ ~
Germany	62 (3.4)	523 (2.6)	30 (3.0)	526 (3.8)	4 (1.2)	511 (12.5)	4 (1.4)	494 (10.7)	0 (0.0)	~ ~
Hong Kong SAR	64 (4.3)	611 (3.3)	23 (3.8)	620 (8.0)	10 (2.9)	621 (14.4)	3 (1.4)	597 (14.4)	0 (0.0)	~ ~
Hungary	r 5 (2.2)	563 (12.5)	94 (2.3)	528 (3.7)	1 (0.6)	~ ~	0 (0.0)	~ ~	0 (0.0)	~ ~
Indonesia	24 (3.0)	389 (9.3)	42 (3.5)	402 (6.0)	9 (2.3)	413 (15.0)	17 (2.5)	405 (9.3)	8 (2.1)	373 (11.3)
Iran, Islamic Rep. of	15 (2.7)	432 (13.2)	43 (3.5)	434 (7.1)	6 (1.5)	447 (28.7)	27 (3.0)	436 (6.0)	9 (2.3)	413 (19.3)
Ireland	12 (2.6)	547 (4.8)	78 (3.6)	545 (2.7)	3 (2.0)	556 (5.9)	6 (2.1)	560 (5.2)	1 (0.6)	~ ~
Italy	r 2 (0.7)	~ ~	6 (2.0)	511 (9.5)	3 (1.4)	490 (23.8)	16 (3.2)	507 (7.6)	73 (3.7)	505 (3.1)
Japan	17 (2.8)	590 (3.1)	73 (3.1)	595 (2.5)	2 (1.2)	~ ~	7 (2.0)	594 (7.3)	0 (0.0)	~ ~
Jordan	10 (2.3)	378 (13.1)	1 (0.7)	~ ~	77 (3.7)	390 (4.2)	6 (2.3)	398 (10.0)	5 (1.9)	333 (16.8)
Kazakhstan	54 (4.0)	548 (5.5)	33 (3.6)	552 (10.9)	3 (1.4)	541 (41.4)	2 (0.9)	~ ~	8 (2.6)	531 (10.1)
Korea, Rep. of	12 (2.7)	609 (6.7)	86 (2.9)	608 (2.3)	0 (0.0)	~ ~	2 (1.1)	~ ~	0 (0.0)	~ ~
Kuwait	41 (4.3)	348 (7.3)	2 (0.8)	~ ~	48 (4.6)	350 (7.9)	7 (2.0)	374 (21.1)	3 (1.1)	346 (27.6)
Lithuania	18 (2.8)	526 (5.9)	79 (2.9)	539 (3.0)	1 (0.6)	~ ~	2 (0.7)	~ ~	0 (0.0)	~ ~
Morocco	r 3 (1.2)	383 (16.1)	5 (1.4)	365 (21.0)	9 (2.0)	416 (14.4)	21 (3.4)	374 (10.1)	63 (3.8)	372 (4.8)
Netherlands	x x	x x	x x	x x	x x	x x	x x	x x	x x	x x
New Zealand	19 (2.1)	499 (6.8)	75 (2.5)	490 (3.0)	0 (0.3)	~ ~	6 (1.3)	503 (12.6)	0 (0.0)	~ ~
Northern Ireland	r 17 (4.0)	581 (11.2)	65 (4.7)	572 (4.2)	1 (1.0)	~ ~	16 (3.7)	567 (5.6)	2 (0.9)	~ ~
Norway (5)	47 (4.3)	552 (3.7)	44 (4.2)	548 (3.6)	4 (1.8)	553 (9.6)	5 (1.5)	552 (7.2)	0 (0.0)	~ ~
Oman	64 (3.0)	432 (3.3)	10 (1.8)	414 (8.7)	23 (2.4)	413 (5.9)	2 (1.0)	~ ~	1 (0.9)	~ ~
Poland	7 (1.8)	544 (8.0)	0 (0.0)	~ ~	93 (1.8)	534 (2.4)	0 (0.0)	~ ~	0 (0.0)	~ ~
Portugal	29 (2.9)	534 (5.4)	70 (2.9)	544 (2.8)	0 (0.0)	~ ~	1 (0.7)	~ ~	0 (0.0)	~ ~
Qatar	28 (2.7)	433 (6.1)	11 (2.4)	508 (14.0)	45 (2.8)	421 (5.2)	13 (2.2)	440 (10.0)	2 (1.3)	~ ~
Russian Federation	44 (4.6)	565 (4.8)	53 (5.0)	564 (5.7)	1 (0.7)	~ ~	2 (0.9)	~ ~	0 (0.0)	~ ~
Saudi Arabia	34 (3.7)	380 (7.0)	4 (1.7)	373 (39.4)	45 (3.9)	384 (6.7)	5 (1.6)	411 (16.1)	12 (2.6)	373 (12.4)
Serbia	25 (3.8)	532 (5.5)	70 (3.6)	513 (4.8)	1 (0.9)	~ ~	2 (1.3)	~ ~	1 (0.6)	~ ~
Singapore	59 (2.9)	621 (5.2)	14 (1.9)	629 (7.7)	14 (1.8)	611 (10.6)	11 (1.7)	598 (10.5)	1 (0.7)	~ ~
Slovak Republic	23 (2.9)	502 (4.8)	70 (3.0)	499 (3.4)	3 (1.0)	453 (32.2)	4 (1.3)	481 (22.6)	0 (0.0)	~ ~
Slovenia	5 (1.2)	520 (4.9)	94 (1.3)	521 (2.0)	0 (0.0)	~ ~	0 (0.3)	~ ~	0 (0.0)	~ ~
South Africa (5)	47 (3.8)	382 (7.5)	30 (3.3)	370 (10.1)	11 (2.3)	374 (10.3)	9 (2.1)	376 (17.1)	4 (1.1)	343 (20.3)
Spain	22 (2.5)	508 (4.5)	62 (3.5)	504 (3.4)	4 (1.6)	499 (16.5)	10 (2.3)	505 (7.6)	1 (0.9)	~ ~
Sweden	70 (4.1)	521 (3.6)	12 (2.8)	516 (9.0)	12 (3.2)	523 (8.1)	2 (0.9)	~ ~	4 (1.7)	506 (12.7)
Turkey	r 17 (2.1)	495 (8.2)	68 (3.4)	484 (4.2)	2 (1.0)	~ ~	13 (2.8)	482 (10.1)	0 (0.0)	~ ~
United Arab Emirates	25 (1.8)	448 (7.1)	16 (1.5)	449 (9.2)	50 (2.1)	453 (3.8)	8 (1.2)	483 (9.7)	0 (0.3)	~ ~
United States	13 (1.6)	537 (6.6)	73 (2.3)	540 (2.8)	2 (0.7)	~ ~	12 (1.5)	541 (9.5)	0 (0.0)	~ ~
International Avg.	27 (0.4)	505 (1.1)	46 (0.5)	512 (1.5)	14 (0.3)	487 (2.9)	8 (0.3)	495 (2.0)	5 (0.2)	434 (4.0)

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

* Countries have been increasing their certification requirements and providing professional development to teachers certified under earlier guidelines.
 () 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 less than 50% of students.

Exhibit 8.3: Teachers Majored in Education and Mathematics (Continued)

Country	Major in Primary Education and Major (or Specialization) in Mathematics		Major in Primary Education but No Major (or Specialization) in Mathematics		Major in Mathematics but No Major in Primary Education		All Other Majors		No Formal Education Beyond Upper-Secondary*	
	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement	Percent of Students	Average Achievement
Benchmarking Participants										
Buenos Aires, Argentina	x x	x x	x x	x x	x x	x x	x x	x x	x x	x x
Ontario, Canada	r 5 (1.5)	510 (9.0)	76 (3.0)	516 (2.8)	1 (0.5)	~ ~	18 (2.7)	506 (6.2)	0 (0.0)	~ ~
Quebec, Canada	6 (2.1)	519 (8.9)	86 (3.9)	537 (4.4)	5 (2.9)	531 (15.8)	3 (1.5)	530 (8.8)	0 (0.0)	~ ~
Norway (4)	44 (4.4)	497 (3.6)	42 (4.5)	497 (3.0)	2 (1.2)	~ ~	11 (2.6)	487 (11.4)	1 (0.8)	~ ~
Abu Dhabi, UAE	r 29 (4.0)	407 (15.4)	29 (3.9)	391 (12.8)	33 (4.7)	449 (8.9)	9 (2.5)	472 (22.5)	1 (0.6)	~ ~
Dubai, UAE	30 (2.7)	511 (4.0)	17 (1.3)	556 (4.3)	42 (3.0)	487 (3.7)	11 (2.0)	531 (10.0)	0 (0.0)	~ ~
Florida, US	r 11 (3.5)	566 (12.9)	68 (3.8)	549 (5.6)	4 (2.5)	536 (25.1)	16 (3.6)	535 (18.6)	0 (0.0)	~ ~

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