

Exhibit 8.4: Teachers Majored in Education and Mathematics

Reported by Teachers

Country	Major in Mathematics and Mathematics Education		Major in Mathematics but No Major in Mathematics Education		Major in Mathematics Education but No Major in Mathematics		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	46 (3.3)	513 (4.7)	18 (2.7)	507 (10.3)	14 (2.7)	498 (9.8)	22 (2.7)	503 (6.0)	0 (0.0)	~ ~
Bahrain	33 (4.2)	460 (4.1)	48 (4.5)	452 (3.3)	16 (2.2)	440 (5.6)	3 (0.6)	469 (15.9)	1 (0.9)	~ ~
Botswana (9)	22 (4.0)	395 (6.4)	46 (5.2)	392 (4.4)	14 (3.2)	383 (6.3)	16 (3.6)	398 (6.8)	2 (1.3)	~ ~
Canada	19 (2.2)	545 (6.0)	8 (1.6)	537 (5.6)	15 (2.3)	546 (4.8)	59 (2.5)	521 (2.9)	0 (0.0)	~ ~
Chile	44 (4.7)	444 (6.2)	34 (4.2)	425 (7.1)	5 (2.0)	440 (15.8)	14 (3.4)	399 (8.9)	2 (1.7)	~ ~
Chinese Taipei	31 (3.1)	610 (5.8)	50 (3.8)	600 (4.6)	4 (1.5)	599 (16.9)	15 (2.3)	577 (4.8)	0 (0.0)	~ ~
Egypt	46 (4.4)	392 (6.1)	25 (3.5)	397 (8.5)	22 (3.2)	395 (9.3)	5 (1.5)	362 (16.7)	2 (0.9)	~ ~
England	44 (4.1)	520 (8.1)	37 (4.3)	526 (8.5)	4 (1.5)	475 (26.2)	15 (3.0)	504 (12.6)	1 (0.5)	~ ~
Georgia	46 (4.1)	453 (6.0)	45 (3.8)	458 (4.5)	4 (1.7)	439 (13.4)	3 (1.3)	435 (26.2)	2 (1.2)	~ ~
Hong Kong SAR	42 (4.1)	574 (8.2)	25 (3.5)	610 (8.2)	9 (2.3)	597 (16.3)	23 (3.9)	610 (8.2)	1 (0.8)	~ ~
Hungary	12 (2.4)	500 (14.4)	8 (2.3)	519 (18.2)	76 (3.3)	518 (4.3)	4 (1.3)	472 (17.2)	0 (0.0)	~ ~
Iran, Islamic Rep. of	21 (2.1)	440 (10.0)	46 (3.6)	441 (7.0)	22 (2.9)	445 (9.2)	9 (2.2)	407 (13.3)	2 (1.1)	~ ~
Ireland	33 (3.0)	519 (5.1)	36 (2.6)	532 (5.6)	8 (1.6)	534 (5.7)	22 (2.5)	510 (8.3)	1 (0.5)	~ ~
Israel	62 (2.6)	519 (5.9)	25 (2.2)	498 (6.7)	7 (1.7)	511 (14.2)	5 (1.0)	474 (18.2)	0 (0.2)	~ ~
Italy	25 (3.6)	494 (6.3)	20 (3.0)	495 (7.1)	9 (2.3)	491 (9.6)	46 (4.0)	492 (4.5)	0 (0.0)	~ ~
Japan	41 (3.5)	582 (3.9)	40 (3.2)	593 (3.5)	6 (1.8)	562 (10.9)	13 (2.0)	592 (6.9)	0 (0.0)	~ ~
Jordan	12 (2.5)	385 (9.2)	75 (3.3)	384 (3.9)	6 (1.7)	389 (14.0)	4 (1.3)	402 (16.2)	3 (1.2)	406 (11.1)
Kazakhstan	37 (3.8)	540 (8.4)	58 (3.8)	524 (7.9)	1 (0.8)	~ ~	1 (1.0)	~ ~	2 (1.2)	~ ~
Korea, Rep. of	18 (3.1)	610 (6.2)	30 (3.4)	606 (5.7)	49 (4.1)	603 (3.7)	3 (1.2)	618 (9.4)	0 (0.0)	~ ~
Kuwait	38 (4.5)	407 (9.0)	38 (3.9)	387 (5.4)	16 (2.9)	377 (12.1)	7 (2.2)	411 (37.2)	1 (0.9)	~ ~
Lebanon	20 (3.5)	426 (9.6)	46 (4.1)	451 (5.7)	3 (1.5)	470 (23.0)	11 (2.8)	442 (9.8)	20 (3.6)	431 (8.5)
Lithuania	55 (5.1)	512 (4.9)	36 (4.7)	508 (5.5)	8 (2.5)	508 (13.0)	1 (0.9)	~ ~	0 (0.2)	~ ~
Malaysia	31 (3.3)	466 (8.6)	27 (3.3)	478 (10.0)	18 (2.6)	477 (9.8)	24 (3.3)	449 (9.1)	0 (0.0)	~ ~
Malta	66 (0.1)	494 (1.2)	21 (0.1)	492 (2.2)	8 (0.1)	489 (4.2)	4 (0.0)	506 (7.7)	1 (0.0)	~ ~
Morocco	10 (2.1)	393 (8.0)	43 (3.3)	381 (3.9)	1 (0.5)	~ ~	9 (1.7)	375 (7.2)	37 (2.9)	388 (3.0)
New Zealand	29 (2.9)	496 (8.0)	30 (3.1)	503 (8.9)	7 (1.6)	502 (13.5)	34 (3.7)	481 (6.1)	0 (0.0)	~ ~
Norway (9)	15 (2.5)	512 (5.3)	54 (4.0)	515 (2.9)	2 (1.2)	~ ~	29 (3.5)	512 (3.5)	0 (0.0)	~ ~
Oman	40 (3.4)	398 (5.6)	42 (2.9)	406 (3.7)	17 (2.6)	409 (6.2)	0 (0.1)	~ ~	0 (0.3)	~ ~
Qatar	35 (2.9)	434 (6.1)	50 (3.3)	434 (5.0)	7 (1.7)	452 (16.7)	7 (1.4)	446 (15.8)	1 (0.3)	~ ~
Russian Federation	58 (4.0)	544 (4.5)	41 (3.9)	530 (6.8)	0 (0.0)	~ ~	1 (0.6)	~ ~	0 (0.0)	~ ~
Saudi Arabia	37 (4.3)	366 (7.7)	42 (4.4)	367 (6.8)	16 (2.9)	366 (7.4)	1 (1.0)	~ ~	3 (1.5)	360 (9.6)
Singapore	53 (2.6)	625 (5.2)	31 (2.4)	614 (7.0)	6 (1.1)	645 (11.1)	10 (1.5)	595 (11.4)	0 (0.0)	~ ~
Slovenia	39 (3.2)	511 (2.9)	40 (3.3)	518 (3.2)	20 (2.7)	527 (5.7)	1 (0.5)	~ ~	0 (0.0)	~ ~
South Africa (9)	24 (2.6)	379 (6.5)	48 (3.4)	363 (7.8)	13 (2.3)	396 (17.1)	11 (2.3)	369 (12.6)	2 (0.9)	~ ~
Sweden	50 (4.3)	506 (4.1)	17 (3.3)	495 (8.5)	21 (3.7)	497 (4.9)	11 (2.9)	489 (8.8)	1 (0.8)	~ ~
Thailand	34 (4.0)	419 (7.6)	47 (4.3)	437 (7.7)	3 (1.4)	440 (18.3)	16 (3.0)	439 (9.8)	0 (0.0)	~ ~
Turkey	53 (4.0)	460 (6.8)	18 (2.7)	470 (12.1)	27 (3.3)	444 (8.0)	3 (1.3)	463 (20.1)	0 (0.0)	~ ~
United Arab Emirates	36 (2.0)	478 (4.2)	49 (2.1)	457 (3.6)	10 (1.2)	445 (13.0)	5 (1.1)	493 (20.1)	0 (0.3)	~ ~
United States	35 (2.9)	521 (4.9)	12 (1.6)	512 (8.5)	22 (2.4)	513 (8.2)	31 (2.8)	522 (5.9)	0 (0.0)	~ ~
International Avg.	36 (0.6)	483 (1.1)	36 (0.5)	482 (1.2)	13 (0.4)	481 (2.1)	13 (0.4)	477 (2.4)	2 (0.2)	396 (4.3)

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

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	6 (2.0)	524 (11.8)	3 (1.3)	524 (10.9)	7 (2.0)	538 (10.1)	84 (2.9)	524 (3.3)	0 (0.0)	~ ~	
Quebec, Canada	43 (5.4)	557 (6.0)	16 (3.9)	543 (8.1)	25 (5.6)	561 (6.2)	15 (3.3)	522 (8.6)	0 (0.0)	~ ~	
Norway (8)	19 (3.5)	482 (5.5)	51 (4.1)	489 (3.0)	3 (1.3)	498 (13.3)	27 (3.2)	487 (3.4)	0 (0.0)	~ ~	
Abu Dhabi, UAE	26 (4.0)	449 (10.7)	51 (4.4)	435 (7.1)	17 (3.2)	438 (19.2)	5 (2.0)	483 (36.3)	0 (0.4)	~ ~	
Dubai, UAE	46 (2.9)	516 (3.9)	45 (2.9)	510 (4.6)	5 (1.2)	490 (19.5)	4 (1.0)	555 (21.7)	1 (0.8)	~ ~	
Florida, US	r	26 (5.3)	498 (19.3)	24 (6.5)	506 (15.2)	14 (4.4)	532 (17.0)	35 (6.7)	489 (13.8)	0 (0.0)	~ ~

* 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 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.