

Exhibit 3.4: Achievement in Science Cognitive Domains

Country	Overall Science Average Scale Score	Knowing (75 items)		Applying (88 items)		Reasoning (52 items)		
		Average Scale Score	Difference from Overall Science Score	Average Scale Score	Difference from Overall Science Score	Average Scale Score	Difference from Overall Science Score	
² Singapore	597 (3.2)	594 (3.4)	-3 (1.0) ▼	600 (3.4)	3 (0.9) ▲	595 (3.2)	-2 (0.7) ▼	
Japan	571 (1.8)	567 (2.2)	-3 (1.2) ▼	575 (1.9)	4 (0.8) ▲	570 (2.1)	-1 (1.1) ▼	
Chinese Taipei	569 (2.1)	589 (2.3)	20 (1.3) ▲	565 (2.0)	-4 (1.0) ▼	560 (2.0)	-9 (1.3) ▼	
Korea, Rep. of	556 (2.2)	555 (2.9)	0 (2.0)	552 (2.2)	-3 (1.3) ▼	560 (2.8)	5 (1.7) ▼	
Slovenia	551 (2.4)	558 (2.6)	7 (1.7) ▲	547 (2.3)	-4 (1.2) ▼	550 (2.3)	-1 (1.3) ▼	
Hong Kong SAR	546 (3.9)	547 (3.7)	2 (1.0)	541 (4.3)	-5 (1.5) ▼	550 (4.4)	4 (1.4) ▲	
Russian Federation	544 (4.2)	558 (5.2)	14 (2.2) ▲	538 (4.6)	-6 (1.8) ▼	538 (3.9)	-7 (1.7) ▼	
England	537 (3.8)	523 (4.1)	-14 (1.2) ▼	538 (3.9)	2 (1.4)	545 (4.0)	8 (1.4) ▲	
Kazakhstan	533 (4.4)	529 (5.8)	-4 (2.6)	535 (4.5)	3 (0.9) ▲	528 (4.7)	-5 (2.1) ▼	
Ireland	530 (2.8)	523 (3.2)	-7 (1.6) ▼	533 (3.0)	3 (1.8)	532 (3.0)	2 (2.2)	
† United States	530 (2.8)	532 (3.4)	2 (1.2)	531 (2.8)	1 (1.2)	526 (2.8)	-4 (0.9) ▼	
Hungary	527 (3.4)	525 (3.5)	-2 (1.1) ▼	528 (3.4)	1 (1.6)	524 (3.8)	-3 (2.2)	
¹ † Canada	526 (2.2)	518 (2.3)	-8 (1.6)	526 (2.1)	-1 (0.9)	533 (2.2)	7 (0.8) ▲	
Sweden	522 (3.4)	519 (3.2)	-3 (1.2) ▼	518 (3.5)	-4 (1.9) ▼	526 (4.0)	4 (2.2)	
² Lithuania	519 (2.8)	513 (3.1)	-6 (2.1) ▼	517 (3.4)	-3 (2.2)	525 (3.2)	6 (1.9) ▲	
† New Zealand	513 (3.1)	503 (3.2)	-10 (0.9) ▼	513 (3.5)	1 (1.2)	520 (3.3)	7 (1.7) ▲	
Australia	512 (2.7)	510 (2.7)	-2 (1.1)	512 (2.9)	0 (0.8)	513 (2.8)	1 (1.0)	
Norway (9)	509 (2.8)	500 (3.1)	-8 (1.5) ▼	507 (2.9)	-2 (1.7)	518 (3.0)	9 (1.3) ▲	
³ Israel	507 (3.9)	503 (4.3)	-4 (1.3) ▼	504 (3.8)	-3 (1.1) ▼	511 (4.4)	4 (1.6) ▲	
² Italy	499 (2.4)	505 (2.6)	6 (1.4) ▲	496 (2.4)	-3 (1.5)	493 (2.8)	-6 (1.4) ▼	
Turkey	493 (4.0)	489 (4.5)	-4 (1.1) ▼	492 (3.9)	-1 (1.5)	495 (4.2)	2 (1.4)	
Malta	481 (1.6)	468 (2.1)	-14 (1.3) ▼	489 (1.8)	8 (1.5) ▲	479 (1.7)	-3 (1.1) ▼	
United Arab Emirates	477 (2.3)	478 (2.5)	1 (1.3)	478 (2.4)	1 (0.8)	473 (2.4)	-4 (0.9) ▼	
Malaysia	471 (4.1)	466 (5.1)	-5 (2.1) ▼	476 (4.2)	5 (0.8) ▲	467 (3.9)	-4 (0.9) ▼	
Bahrain	466 (2.2)	462 (2.5)	-4 (1.7) ▼	464 (2.4)	-2 (1.0)	466 (2.8)	1 (1.8)	
Armenia	460 (3.3)	468 (4.1)	8 (2.0) ▲	457 (3.4)	-3 (1.5) ▼	449 (4.0)	-11 (2.1) ▼	
Qatar	457 (3.0)	448 (3.6)	-9 (2.3) ▼	460 (3.6)	3 (1.7)	454 (3.2)	-2 (1.7)	
Iran, Islamic Rep. of	456 (4.0)	455 (4.8)	-1 (1.7)	457 (4.0)	1 (0.9)	454 (4.0)	-3 (1.1) ▼	
Thailand	456 (4.2)	469 (4.3)	14 (1.4) ▲	450 (4.7)	-6 (1.3) ▼	447 (4.0)	-9 (1.1) ▼	
Oman	455 (2.7)	455 (2.9)	0 (1.1)	454 (2.9)	-1 (1.3)	454 (2.4)	0 (1.3)	
Chile	454 (3.1)	466 (3.2)	12 (1.6) ▲	446 (3.0)	-8 (1.3) ▼	448 (3.6)	-5 (1.2) ▼	
¹ ² Georgia	443 (3.1)	452 (3.3)	9 (2.7) ▲	442 (3.1)	-1 (2.3)	432 (3.5)	-11 (1.8) ▼	
Jordan	426 (3.4)	430 (3.3)	4 (1.7) ▲	425 (3.3)	-1 (1.3)	419 (3.6)	-7 (1.7) ▼	
Kuwait	411 (5.2)	415 (5.2)	4 (1.9) ▲	406 (5.2)	-5 (1.5) ▼	400 (5.8)	-11 (1.6) ▼	
Lebanon	398 (5.3)	403 (5.9)	5 (2.9)	398 (5.3)	0 (2.8)	381 (6.3)	-17 (2.5) ▼	
Saudi Arabia	396 (4.5)	395 (5.0)	-2 (3.1)	383 (4.9)	-14 (2.2) ▼	405 (4.7)	8 (1.9) ▲	
Morocco	393 (2.5)	395 (2.3)	2 (0.9)	391 (2.8)	-2 (0.8) ▼	385 (2.6)	-9 (1.2) ▼	
Botswana (9)	392 (2.7)	371 (3.6)	-21 (1.8) ▼	398 (3.8)	7 (2.2) ▲	390 (2.6)	-2 (2.0)	
Egypt	371 (4.3)	372 (5.2)	1 (2.1)	371 (4.4)	0 (1.4)	359 (4.8)	-12 (2.3) ▼	
South Africa (9)	358 (5.6)	337 (6.7)	-20 (2.0) ▼	368 (5.9)	10 (1.5) ▲	350 (5.6)	-7 (1.5) ▼	
Benchmarking Participants								
‡ Quebec, Canada	530 (4.4)	527 (5.1)	-3 (2.6)	524 (4.6)	-5 (1.1) ▼	535 (4.5)	6 (1.4) ▲	
Dubai, UAE	525 (2.0)	527 (2.5)	3 (1.9)	525 (2.2)	0 (1.3)	521 (2.0)	-4 (1.1) ▼	
Ontario, Canada	524 (2.5)	514 (2.6)	-10 (1.9) ▼	525 (2.4)	1 (1.3)	532 (2.6)	8 (1.5) ▲	
¹ Florida, US	508 (6.0)	511 (6.9)	2 (2.6)	508 (5.8)	-1 (1.6)	506 (6.4)	-3 (2.6)	
Norway (8)	489 (2.4)	477 (3.2)	-12 (1.9) ▼	488 (2.6)	-1 (1.6)	498 (2.4)	9 (0.9) ▲	
Abu Dhabi, UAE	454 (5.6)	453 (6.1)	-2 (2.1)	457 (5.9)	3 (1.1) ▲	454 (5.7)	-1 (1.7)	
† Buenos Aires, Argentina	386 (4.2)	397 (4.8)	11 (2.5) ▲	379 (4.5)	-7 (2.1) ▼	373 (4.8)	-13 (2.7) ▼	

▲ Subscale score significantly higher than overall science score
▼ Subscale score significantly lower than overall science score

Numbers of items are based on the TIMSS 2015 eighth grade science assessment items included in scaling.
See Appendix C.2 for target population coverage notes 1, 2, and 3. See Appendix C.8 for sampling guidelines and sampling participation notes †, ‡, and †.
() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

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