

Exhibit 2.2.14: Relative Achievement in Science Cognitive Domains

Country	Overall Science Average Scale Score	Knowing (68 Items)		Applying (91 Items)		Reasoning (53 Items)	
		Average Scale Score	Difference from Overall Score	Average Scale Score	Difference from Overall Score	Average Scale Score	Difference from Overall Score
<sup>3</sup> Singapore	606 (5.7)	610 (5.7)	4 (1.6) ▲	605 (5.8)	-2 (1.0)	608 (5.7)	1 (1.4)
Chinese Taipei	572 (2.4)	592 (2.8)	21 (1.6) ▲	574 (2.5)	2 (0.8)	556 (2.4)	-16 (1.3) ▼
<sup>†</sup> Japan	557 (3.1)	558 (3.5)	1 (2.6)	559 (3.5)	2 (2.1)	555 (3.2)	-2 (2.3)
Korea, Rep. of	545 (2.2)	535 (2.9)	-10 (1.8) ▼	547 (2.2)	2 (1.1)	554 (2.3)	9 (1.4) ▲
<sup>2</sup> England	531 (4.3)	532 (4.6)	1 (2.4)	528 (4.2)	-3 (1.1) ▼	536 (4.8)	5 (1.7) ▲
Finland	531 (3.2)	529 (2.9)	-1 (1.1)	531 (3.0)	0 (2.1)	533 (3.2)	2 (1.4)
<sup>3†</sup> Türkiye	530 (3.6)	503 (4.1)	-26 (2.5) ▼	537 (3.7)	7 (1.3) ▲	543 (3.9)	14 (2.3) ▲
<sup>†</sup> Hong Kong SAR	528 (4.7)	528 (4.7)	0 (1.1)	527 (5.0)	-1 (1.5)	528 (5.0)	1 (1.3)
<sup>2</sup> Czech Republic	527 (2.0)	530 (2.1)	3 (1.0) ▲	529 (2.4)	2 (1.4)	519 (2.4)	-8 (1.1) ▼
Ireland	525 (3.5)	519 (3.8)	-6 (1.0) ▼	524 (3.8)	-1 (1.4)	531 (3.4)	6 (1.4) ▲
Hungary	522 (3.3)	531 (3.5)	9 (1.3) ▲	522 (3.3)	0 (1.4)	512 (3.2)	-9 (1.0) ▼
<sup>2</sup> Sweden	521 (2.9)	514 (3.1)	-7 (1.2) ▼	521 (3.2)	-1 (1.6)	528 (3.1)	7 (1.2) ▲
Australia	520 (3.2)	513 (3.1)	-7 (1.4) ▼	520 (3.2)	0 (1.0)	526 (3.4)	6 (1.2) ▲
<sup>2</sup> Lithuania	519 (3.0)	515 (2.9)	-4 (1.8)	520 (3.1)	1 (1.7)	521 (3.2)	2 (1.8)
<sup>≡</sup> United States	513 (3.9)	503 (4.0)	-11 (1.5) ▼	514 (3.9)	0 (1.2)	521 (4.1)	8 (1.0) ▲
<sup>2</sup> Austria	512 (2.4)	511 (2.7)	-1 (1.4)	512 (2.4)	0 (0.9)	512 (2.6)	0 (1.4)
Portugal	506 (2.4)	510 (3.0)	5 (1.6) ▲	505 (2.4)	-1 (1.0)	500 (3.3)	-5 (2.6)
Malta	501 (1.6)	496 (2.4)	-5 (1.7) ▼	501 (1.6)	0 (1.1)	505 (2.9)	4 (2.6)
Italy	501 (3.2)	510 (4.1)	10 (2.5) ▲	499 (3.8)	-1 (1.6)	490 (3.5)	-10 (1.2) ▼
<sup>2</sup> Norway (9)	488 (2.6)	485 (3.0)	-3 (1.8)	487 (2.7)	-2 (0.9)	493 (2.9)	5 (1.2) ▲
United Arab Emirates	486 (2.0)	492 (2.4)	6 (0.8) ▲	486 (2.0)	0 (0.8)	478 (2.0)	-8 (0.5) ▼
France	486 (3.2)	487 (3.6)	1 (2.7)	481 (3.2)	-5 (1.5) ▼	491 (3.4)	5 (1.9) ▲
Qatar	481 (4.3)	485 (4.2)	4 (1.3) ▲	481 (4.4)	0 (1.0)	472 (4.6)	-9 (1.9) ▼
<sup>3</sup> Israel	481 (3.6)	475 (3.9)	-5 (1.5) ▼	477 (3.6)	-3 (0.9) ▼	489 (4.5)	8 (2.5) ▲
<sup>≡</sup> Romania	466 (4.1)	479 (4.1)	13 (2.0) ▲	462 (4.4)	-4 (1.7)	454 (4.4)	-12 (1.2) ▼
Cyprus	464 (3.0)	472 (3.2)	8 (1.3) ▲	460 (3.0)	-5 (1.1) ▼	461 (3.2)	-3 (1.6)
Oman	456 (2.6)	460 (2.9)	5 (1.2) ▲	457 (2.3)	1 (1.0)	447 (2.4)	-9 (1.6) ▼
<sup>†</sup> Chile	455 (2.7)	461 (2.6)	6 (1.6) ▲	452 (2.7)	-4 (1.1) ▼	454 (2.8)	-1 (1.9)
Bahrain	452 (2.6)	452 (2.6)	0 (1.7)	455 (2.2)	3 (1.7)	441 (3.0)	-11 (1.7) ▼
<sup>1</sup> Georgia	448 (2.9)	461 (3.4)	13 (2.2) ▲	444 (2.6)	-4 (1.1) ▼	434 (2.5)	-14 (1.7) ▼
Kazakhstan	443 (3.0)	429 (3.6)	-14 (1.7) ▼	446 (2.9)	4 (1.0) ▲	446 (3.4)	4 (1.5) ▲
Malaysia	426 (3.7)	413 (4.0)	-14 (0.9) ▼	429 (3.6)	3 (0.7) ▲	433 (3.9)	7 (1.4) ▲
Brazil	420 (2.5)	424 (2.5)	4 (1.0) ▲	418 (2.5)	-2 (1.0)	416 (3.0)	-4 (1.5) ▼
Kuwait	420 (5.8)	430 (6.2)	10 (3.3) ▲	417 (6.0)	-3 (2.2)	406 (5.4)	-14 (1.9) ▼
<sup>2</sup> Saudi Arabia	419 (3.4)	422 (3.6)	3 (0.8) ▲	419 (3.4)	-1 (1.4)	411 (3.3)	-8 (1.0) ▼
Iran, Islamic Rep. of	419 (3.6)	416 (4.1)	-3 (2.0)	423 (3.4)	4 (1.5) ▲	409 (3.4)	-10 (1.2) ▼
Jordan	413 (3.6)	412 (3.4)	0 (1.3)	414 (3.3)	1 (1.4)	402 (3.7)	-10 (1.4) ▼
Azerbaijan	411 (3.0)	410 (3.6)	-1 (1.9)	415 (2.8)	4 (1.1) ▲	406 (3.9)	-6 (2.5)
Uzbekistan	396 (3.7)	396 (3.5)	0 (1.6)	397 (3.8)	2 (1.9)	387 (4.5)	-8 (1.6) ▼
Palestinian Nat'l Auth.	393 (2.9)	400 (3.0)	7 (1.4) ▲	393 (3.0)	0 (1.4)	376 (3.6)	-17 (1.9) ▼
<sup>ψ</sup> South Africa (9)	362 (4.0)	346 (4.1)	-16 (1.3) ▼	372 (3.8)	10 (1.2) ▲	363 (3.9)	0 (1.3)
<sup>ψ</sup> Morocco	327 (3.4)	325 (3.9)	-2 (1.3)	324 (3.1)	-3 (1.2) ▼	326 (4.0)	-1 (2.5)
<sup>≡</sup> New Zealand	502 (4.0)	491 (4.4)	-11 (1.6) ▼	501 (3.9)	-1 (1.4)	515 (4.3)	13 (1.7) ▲
<sup>✕</sup> Cote d'Ivoire	183 (8.2)	--	--	--	--	--	--
<b>Benchmarking Participants</b>							
Dubai, UAE	547 (3.2)	557 (3.5)	9 (1.4) ▲	546 (3.2)	-1 (0.8)	540 (3.4)	-7 (1.5) ▼
Sharjah, UAE	499 (4.9)	510 (5.6)	11 (1.3) ▲	498 (5.1)	0 (1.7)	485 (4.8)	-14 (2.0) ▼
Abu Dhabi, UAE	443 (3.8)	440 (4.2)	-4 (1.3) ▼	446 (3.7)	3 (0.9) ▲	441 (3.6)	-2 (1.0)

▲ ▼ Subscale score significantly different from overall score ( $p < 0.01$ )

Numbers of items are based on the TIMSS 2023 eighth-grade science items included in scaling.

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

See Appendix B.7 for population coverage notes 1, 2, and 3. See Appendix B.10 for sampling guidelines and sampling participation notes †, ‡, and ≡.

ψ Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%.

✕ Average achievement not reliably measured because the percentage of students with achievement too low for estimation exceeds 25%.

A dash (-) indicates comparable data not available because average achievement could not be accurately estimated.

New Zealand did not satisfy guidelines for minimum school participation rates. Achievement could not be reliably estimated for Cote d'Ivoire.