

Exhibit 5.7: Instruction Affected by Mathematics Resource Shortages – Principals' Reports

Reported by Principals

Students were scored according to their principals' responses concerning thirteen school and classroom resources on the *Mathematics Resource Shortages* scale. Students in schools where instruction was **Not Affected** by resource shortages had a score on the scale of at least 11.1, which corresponds to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score no higher than 7.5, which corresponds to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was **Affected** by resource shortages.

| Country | Not Affected | | Affected | | Affected A Lot | | Average Scale Score | Difference in Average Scale Score from 2011 |
|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---|
| | Percent of Students | Average Achievement | Percent of Students | Average Achievement | Percent of Students | Average Achievement | | |
| Singapore | 74 (0.0) | 623 (3.9) | 20 (0.0) | 613 (8.2) | 6 (0.0) | 622 (12.6) | 12.0 (0.00) | 0.2 (0.00) ▲ |
| Korea, Rep. of | 62 (3.8) | 605 (3.3) | 37 (3.9) | 607 (4.0) | 1 (0.7) | ~ ~ | 11.6 (0.15) | 0.1 (0.23) |
| Slovenia | 56 (4.6) | 517 (2.9) | 44 (4.6) | 516 (3.9) | 0 (0.0) | ~ ~ | 11.5 (0.12) | -0.4 (0.18) |
| Malta | 55 (0.2) | 501 (1.3) | 45 (0.2) | 482 (1.5) | 0 (0.0) | ~ ~ | 11.4 (0.00) | ◊ ◊ |
| Australia | 51 (3.5) | 520 (3.3) | 48 (3.4) | 493 (5.2) | 1 (0.7) | ~ ~ | 11.3 (0.11) | 0.1 (0.19) |
| England | r 48 (4.6) | 539 (6.2) | 52 (4.6) | 515 (6.9) | 0 (0.0) | ~ ~ | 11.3 (0.14) | r 0.0 (0.21) |
| Norway (9) | 47 (4.1) | 516 (3.8) | 53 (4.1) | 508 (2.5) | 0 (0.0) | ~ ~ | 11.1 (0.11) | ◊ ◊ |
| Japan | 46 (3.3) | 593 (4.2) | 53 (3.4) | 580 (3.1) | 1 (0.6) | ~ ~ | 10.9 (0.10) | 0.0 (0.17) |
| Hong Kong SAR | 46 (4.2) | 600 (7.3) | 51 (4.3) | 586 (6.8) | 3 (1.6) | 582 (14.1) | 10.9 (0.16) | 0.0 (0.25) |
| Qatar | 45 (0.4) | 455 (3.1) | 34 (0.4) | 421 (4.0) | 20 (0.4) | 424 (8.5) | 10.3 (0.03) | 1.2 (0.06) ▲ |
| Canada | 45 (3.4) | 538 (3.0) | 54 (3.4) | 519 (3.1) | 0 (0.3) | ~ ~ | 11.2 (0.11) | ◊ ◊ |
| Sweden | 41 (4.1) | 501 (4.3) | 58 (4.0) | 500 (4.0) | 1 (0.9) | ~ ~ | 10.9 (0.10) | r 0.0 (0.16) |
| New Zealand | 39 (5.0) | 500 (6.0) | 61 (5.0) | 486 (4.1) | 0 (0.0) | ~ ~ | 10.9 (0.15) | -0.4 (0.22) |
| United States | 37 (3.1) | 532 (5.9) | 61 (3.1) | 512 (3.7) | 3 (0.9) | 494 (9.0) | 10.8 (0.12) | -0.2 (0.16) |
| Kazakhstan | 32 (4.0) | 524 (9.7) | 63 (3.8) | 533 (6.8) | 5 (1.7) | 498 (28.3) | 10.2 (0.18) | 0.1 (0.27) |
| United Arab Emirates | 31 (2.2) | 508 (4.8) | 53 (2.3) | 441 (3.9) | 16 (1.7) | 456 (7.2) | 9.9 (0.12) | 0.2 (0.15) |
| Georgia | 29 (3.3) | 449 (5.9) | 70 (3.3) | 454 (4.5) | 1 (0.8) | ~ ~ | 10.5 (0.10) | 0.3 (0.15) |
| Chinese Taipei | 29 (3.5) | 613 (6.6) | 71 (3.5) | 594 (3.3) | 1 (0.5) | ~ ~ | 10.6 (0.11) | 0.1 (0.20) |
| Chile | 27 (3.5) | 453 (6.7) | 70 (3.8) | 419 (4.9) | 3 (1.6) | 413 (19.4) | 10.2 (0.13) | 0.4 (0.18) |
| Ireland | 27 (3.5) | 526 (7.3) | 71 (3.8) | 522 (3.3) | 2 (1.5) | ~ ~ | 10.4 (0.12) | ◊ ◊ |
| Lithuania | 23 (3.9) | 519 (8.0) | 74 (3.8) | 509 (3.0) | 2 (1.5) | ~ ~ | 10.2 (0.13) | 0.0 (0.17) |
| Russian Federation | 19 (2.8) | 550 (8.9) | 80 (2.9) | 536 (5.1) | 1 (0.5) | ~ ~ | 10.2 (0.09) | 0.0 (0.16) |
| Hungary | 17 (3.5) | 526 (13.9) | 80 (3.7) | 510 (4.0) | 2 (1.3) | ~ ~ | 9.8 (0.11) | -0.7 (0.18) ▼ |
| Kuwait | 16 (3.4) | 443 (22.9) | 63 (3.2) | 380 (4.4) | 21 (3.6) | 388 (9.4) | 9.1 (0.20) | ◊ ◊ |
| Israel | 16 (2.7) | 559 (8.9) | 76 (3.2) | 508 (4.8) | 8 (1.9) | 431 (18.4) | 9.6 (0.11) | -0.3 (0.21) |
| Bahrain | 16 (0.2) | 497 (3.8) | 63 (0.3) | 444 (1.8) | 21 (0.2) | 456 (3.3) | 9.2 (0.01) | -0.3 (0.01) ▼ |
| Oman | 15 (2.1) | 426 (7.3) | 77 (2.6) | 395 (2.8) | 8 (1.5) | 422 (10.2) | 9.4 (0.10) | 0.4 (0.13) ▲ |
| Lebanon | 14 (2.8) | 479 (9.2) | 78 (3.0) | 436 (4.4) | 8 (1.5) | 443 (9.3) | 9.6 (0.14) | -0.1 (0.22) |
| Saudi Arabia | 13 (3.6) | 365 (17.2) | 74 (4.2) | 363 (4.7) | 13 (2.9) | 396 (14.4) | 9.1 (0.17) | -0.2 (0.21) |
| Jordan | 7 (1.5) | 431 (10.9) | 80 (2.9) | 376 (3.4) | 13 (2.8) | 418 (10.9) | 9.0 (0.11) | -0.1 (0.16) |
| South Africa (9) | 6 (1.4) | 463 (19.1) | 87 (2.3) | 368 (4.8) | 7 (2.1) | 346 (8.7) | 9.3 (0.09) | 0.0 (0.13) |
| Italy | 6 (1.9) | 516 (11.2) | 93 (2.0) | 493 (2.8) | 1 (0.8) | ~ ~ | 9.7 (0.07) | -0.3 (0.10) ▼ |
| Iran, Islamic Rep. of | 6 (1.6) | 511 (25.7) | 82 (2.7) | 432 (4.3) | 12 (2.3) | 428 (11.9) | 9.1 (0.10) | 0.2 (0.13) |
| Malaysia | 6 (2.4) | 431 (9.2) | 70 (4.2) | 465 (4.6) | 24 (3.8) | 474 (8.5) | 8.4 (0.13) | -0.9 (0.20) ▼ |
| Thailand | 5 (1.7) | 461 (21.2) | 81 (2.8) | 430 (5.0) | 14 (2.7) | 429 (15.7) | 8.9 (0.12) | 0.4 (0.18) |
| Morocco | 3 (0.9) | 413 (16.6) | 95 (1.2) | 383 (2.3) | 1 (0.7) | ~ ~ | 9.6 (0.05) | 0.0 (0.08) |
| Turkey | 2 (1.0) | ~ ~ | 81 (3.0) | 457 (4.7) | 17 (3.1) | 453 (9.9) | 8.4 (0.11) | 0.0 (0.14) |
| Egypt | 1 (0.6) | ~ ~ | 91 (2.0) | 389 (4.4) | 8 (2.0) | 431 (14.5) | 8.8 (0.07) | ◊ ◊ |
| Botswana (9) | 1 (0.0) | ~ ~ | 92 (2.4) | 390 (2.4) | 7 (2.4) | 402 (14.8) | 8.7 (0.07) | -0.2 (0.10) |
| International Avg. | 27 (0.5) | 506 (1.8) | 66 (0.5) | 476 (0.7) | 6 (0.3) | 448 (2.9) | | |

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

This TIMSS questionnaire scale was established in 2011 based on the combined response distribution of all countries that participated in TIMSS 2011. To provide a point of reference for country comparisons, the scale centerpoint of 10 was located at the mean of the combined distribution. The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the distribution.

Significantly higher than 2011 ▲
Significantly lower than 2011 ▼

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

A diamond (◊) indicates the country did not participate in the 2011 assessment.

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.

Exhibit 5.7: Instruction Affected by Mathematics Resource Shortages – Principals' Reports (Continued)

| Country | Not Affected | | Affected | | Affected A Lot | | Average Scale Score | Difference in Average Scale Score from 2011 |
|----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---|
| | Percent of Students | Average Achievement | Percent of Students | Average Achievement | Percent of Students | Average Achievement | | |
| Benchmarking Participants | | | | | | | | |
| Quebec, Canada | 78 (4.8) | 550 (3.4) | 22 (4.8) | 544 (8.3) | 0 (0.0) | ~ ~ | 12.3 (0.17) | 0.4 (0.22) |
| Dubai, UAE | 56 (0.3) | 537 (3.1) | 30 (0.3) | 478 (2.8) | 13 (0.2) | 497 (7.9) | 11.1 (0.02) | 0.7 (0.03) ● |
| Norway (8) | 46 (4.0) | 490 (3.3) | 54 (4.0) | 487 (2.9) | 0 (0.0) | ~ ~ | 11.1 (0.12) | 0.0 (0.16) |
| Buenos Aires, Argentina | 45 (4.7) | 433 (5.7) | 50 (4.7) | 363 (8.4) | 5 (2.7) | 403 (14.9) | 10.7 (0.19) | ◇ ◇ |
| Florida, US | 31 (8.4) | 510 (13.5) | 69 (8.4) | 492 (12.0) | 0 (0.0) | ~ ~ | 10.4 (0.27) | s -1.0 (0.44) |
| Ontario, Canada | 27 (4.7) | 531 (5.8) | 72 (4.6) | 517 (3.5) | 1 (0.6) | ~ ~ | 10.6 (0.16) | -0.2 (0.22) |
| Abu Dhabi, UAE | 21 (3.8) | 476 (14.0) | 66 (4.3) | 423 (7.1) | 13 (2.9) | 457 (13.1) | 9.4 (0.22) | 0.2 (0.28) |

Significantly higher than 2011 ●
Significantly lower than 2011 ▼

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

