

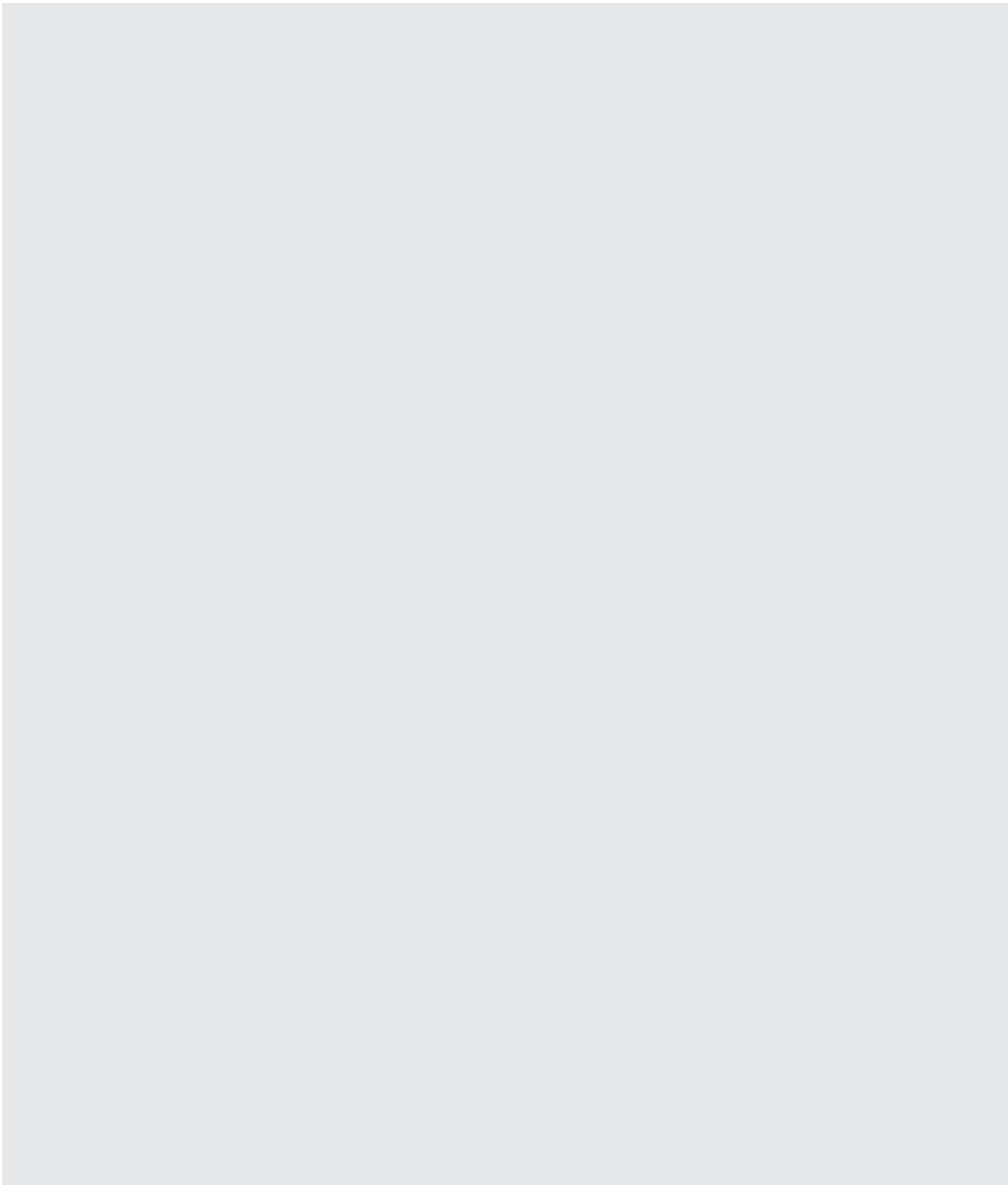
Achievement by Gender in the Mathematics Cognitive Domains at the Fourth and Eighth Grades

This chapter presents average achievement by gender for the three mathematics cognitive domains in achievement between boys and girls at the fourth or eighth grade. Within the cognitive domains, however, there were significant differences by gender, especially at the eighth grade.

At the eighth grade, girls had the advantage in more countries in the knowing domain of mathematics and, even more so in the rea-

soning domain. Internationally across the TIMSS 2003 participants, girls had significantly higher achievement, on average, than boys in both these domains. Boys had the advantage in more countries in the applying domain.

At the fourth grade, while performance was about the same internationally for boys and girls in the knowing domain, there was a significant difference, on average, favoring boys in the applying domain. Also, boys had significantly higher achievement in considerably more countries than did girls. In the reasoning domain, there was



Gender Differences in the Applying Cognitive Domain

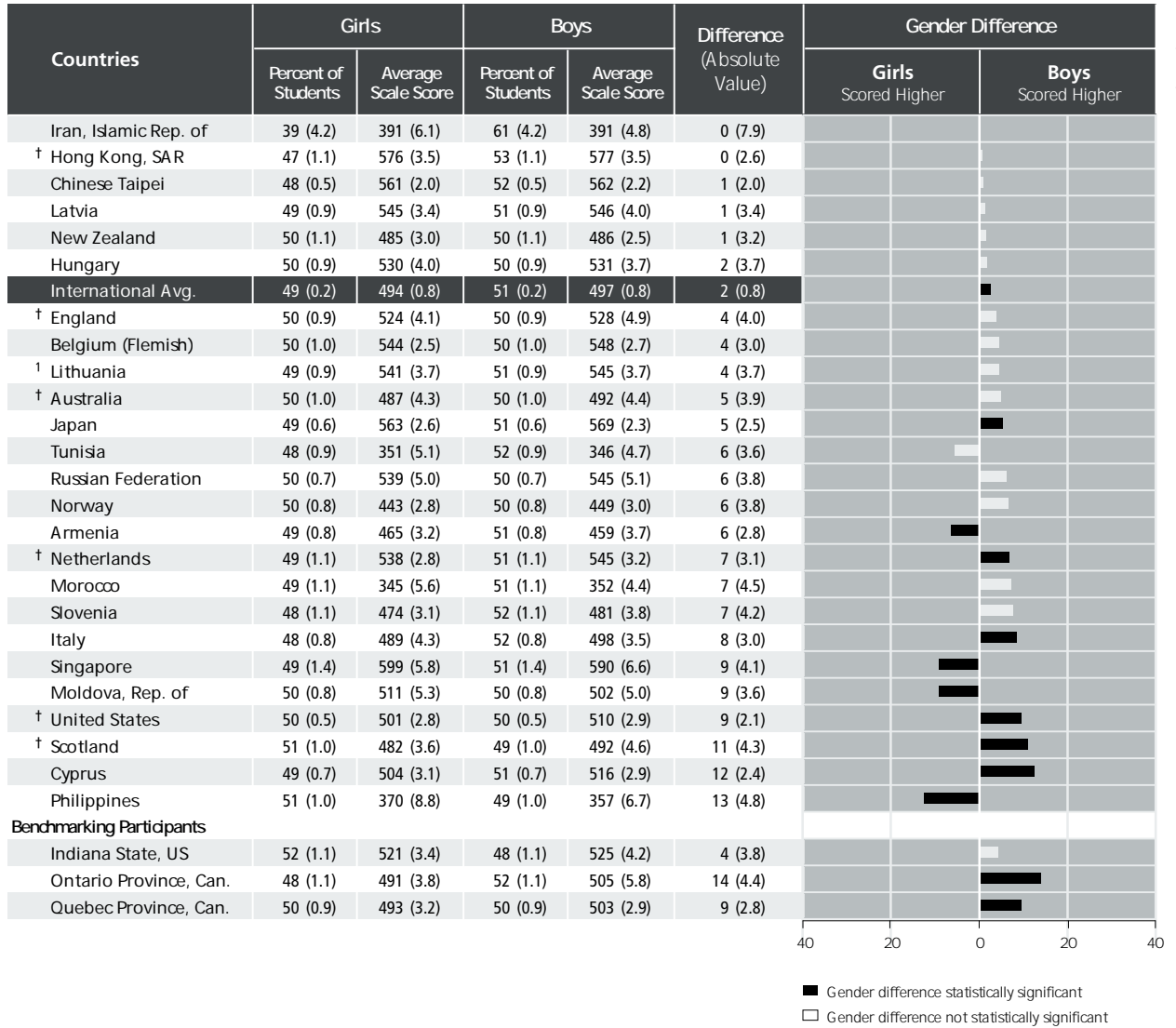
Exhibit 3.2 shows achievement differences between girls and boys for the applying domain for the eighth and fourth grades, (on the first and second pages, respectively). For the applying domain at the eighth grade, boys had significantly higher achievement in more countries than girls. Girls had significantly higher achievement than boys in seven countries, and boys had significantly higher achievement than girls in 13 countries and two benchmarking participants (the US state of Indiana and the Canadian province of Quebec).

Fourth grade had a corresponding pattern for the applying domain, with boys having significantly higher achievement in more countries than girls. Girls had higher achievement in the applying domain in four countries whereas boys had higher achievement in seven countries and the two Canadian provinces. Also, internationally, on average, there was a small but significant difference favoring boys.

| | | | | | | Girls Scored Higher | Boys Scored Higher |
|-----------------------------------|----------|-----------|----------|-----------|----------|------------------------|-----------------------|
| Norway | 50 (0.8) | 469 (2.8) | 50 (0.8) | 468 (3.4) | 0 (3.2) | | |
| Slovenia | 50 (0.9) | 491 (3.0) | 50 (0.9) | 491 (2.8) | 0 (3.6) | | |
| Russian Federation | 49 (1.2) | 503 (3.8) | 51 (1.2) | 503 (4.1) | 0 (2.6) | | |
| [†] Hong Kong, SAR | 50 (2.4) | 584 (3.7) | 50 (2.4) | 584 (4.5) | 1 (5.1) | | |
| Romania | 52 (0.9) | 475 (5.4) | 48 (0.9) | 474 (5.3) | 1 (3.9) | | |
| ¹ Indonesia | 50 (0.7) | 408 (5.0) | 50 (0.7) | 409 (5.3) | 1 (3.3) | | |
| New Zealand | 52 (1.7) | 496 (4.7) | 48 (1.7) | 497 (7.2) | 1 (5.9) | | |
| Bulgaria | 48 (1.3) | 471 (6.0) | 52 (1.3) | 472 (4.9) | 1 (5.5) | | |
| International Avg. | 50 (0.2) | 466 (0.6) | 50 (0.2) | 467 (0.6) | 1 (0.6) | | |
| Sweden | 51 (0.9) | 504 (3.2) | 49 (0.9) | 506 (2.8) | 1 (2.2) | | |
| Palestinian Nat'l Auth. | 55 (2.4) | 389 (4.1) | 45 (2.4) | 388 (4.6) | 1 (5.8) | | |
| Latvia | 49 (0.8) | 505 (3.5) | 51 (0.8) | 504 (4.1) | 2 (3.4) | | |
| ¹ Lithuania | 50 (0.9) | 499 (3.2) | 50 (0.9) | 497 (3.3) | 2 (2.9) | | |
| Botswana | 51 (0.7) | 370 (3.0) | 49 (0.7) | 368 (2.9) | 2 (2.4) | | |
| Japan | 49 (1.2) | 563 (4.4) | 51 (1.2) | 565 (3.6) | 2 (6.7) | | |
| [†] Scotland | 50 (1.3) | 506 (4.8) | 50 (1.3) | 504 (3.8) | 3 (3.8) | | |
| ¹ Serbia | 49 (0.8) | 468 (3.5) | 51 (0.8) | 466 (3.1) | 3 (2.9) | | |
| South Africa | 51 (0.9) | 267 (5.9) | 49 (0.9) | 271 (6.5) | 3 (6.1) | | |
| Estonia | 50 (1.0) | 531 (3.3) | 50 (1.0) | 526 (3.2) | 4 (2.9) | | |
| Chinese Taipei | 48 (1.0) | 584 (5.1) | 52 (1.0) | 580 (5.1) | 4 (4.2) | | |
| Egypt | 46 (2.7) | 401 (4.3) | 54 (2.7) | 406 (4.9) | 5 (6.3) | | |
| ² Macedonia, Rep. of | 49 (0.9) | 431 (4.2) | 51 (0.9) | 426 (4.3) | 6 (3.9) | | |
| Slovak Republic | 48 (1.3) | 499 (4.0) | 52 (1.3) | 505 (4.3) | 6 (3.6) | | |
| ^{••} Korea, Rep. of | 48 (2.8) | 581 (2.9) | 52 (2.8) | 587 (2.3) | 6 (2.9) | | |
| Malaysia | 50 (1.8) | 515 (5.1) | 50 (1.8) | 508 (4.8) | 7 (4.6) | | |
| Iran, Islamic Rep. of | 40 (4.1) | 420 (4.6) | 60 (4.1) | 413 (4.1) | 7 (7.2) | | |
| Italy | 50 (0.9) | 479 (3.0) | 50 (0.9) | 488 (4.0) | 8 (3.0) | | |
| Armenia | 53 (0.7) | 482 (3.5) | 47 (0.7) | 473 (3.5) | 8 (3.6) | | |
| [‡] United States | 52 (0.7) | 497 (3.5) | 48 (0.7) | 506 (3.5) | 9 (2.1) | | |
| Moldova, Rep. of | 51 (0.8) | 462 (4.0) | 49 (0.8) | 453 (4.5) | 9 (3.3) | | |
| Lebanon | 57 (1.8) | 422 (3.7) | 43 (1.8) | 432 (4.2) | 10 (4.0) | | |
| [†] Netherlands | 49 (1.2) | 538 (4.0) | 51 (1.2) | 548 (4.3) | 10 (3.8) | | |
| Philippines | 58 (0.9) | 383 (4.8) | 42 (0.9) | 373 (5.5) | 10 (3.5) | | |
| ² Israel | 52 (1.6) | 490 (3.7) | 48 (1.6) | 500 (4.6) | 10 (4.2) | | |
| Singapore | 49 (0.8) | 617 (3.6) | 51 (0.8) | 606 (4.1) | 11 (3.1) | | |
| Hungary | 50 (1.0) | 517 (3.8) | 50 (1.0) | 529 (4.0) | 11 (3.5) | | |
| Saudi Arabia | 43 (2.3) | 332 (6.1) | 57 (2.3) | 344 (4.5) | 12 (7.9) | | |
| Ghana | 45 (0.9) | 286 (4.9) | 55 (0.9) | 299 (4.8) | 13 (5.2) | | |
| Australia | 51 (2.2) | 501 (6.1) | 49 (2.2) | 516 (6.0) | 15 (7.5) | | |
| Belgium (Flemish) | 54 (2.1) | 529 (3.3) | 46 (2.1) | 544 (3.7) | 15 (4.6) | | |
| Cyprus | 49 (0.6) | 465 (1.9) | 51 (0.6) | 450 (2.5) | 16 (3.1) | | |
| ¹ [†] Morocco | 50 (1.8) | 377 (3.4) | 50 (1.8) | 393 (3.3) | 16 (3.4) | | |
| Chile | 48 (1.6) | 382 (3.6) | 52 (1.6) | 399 (4.2) | 18 (4.6) | | |
| Tunisia | 53 (0.7) | 407 (2.6) | 47 (0.7) | 433 (2.4) | 26 (2.1) | | |
| Jordan | 49 (1.7) | 436 (4.9) | 51 (1.7) | 409 (5.8) | 27 (6.9) | | |
| Bahrain | 50 (0.4) | 411 (2.3) | 50 (0.4) | 384 (2.3) | 27 (3.2) | | |
| [‡] England | 50 (2.4) | 503 (5.4) | 50 (2.4) | 504 (6.0) | 46 (1.0) | | |

SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

Exhibit 3.2 Average Mathematics Achievement by Gender for Applying Cognitive Domain



SOURCE: IEA's Trends in International Mathematics and Science Study (TIMSS) 2003

u ? WYgWf Vexdes_bWbSf[ubSf[a' dSfVea' kSfVidW/SUW/Wf eLZaa'eI VdWf UyWV/eWV /fi EFS' VSD/VdcbSbbVsd[bsdWfZVWz4VUSgVdWeg'feSdVd'g' VV fa fZW VSD/f i Za'W g_TVd ea_WfaIS'e_SkSbbVsd[La' eferWfz

@Sf[a' S'6VdW BabgSf[a' VaW'e' afUbHMS'aX: fWd Sf[a' S'6VdW BabgSf[a' /eWVj Z[f 5#fz

Gender Differences in the Reasoning Cognitive Domain

Exhibit 3.3 shows gender achievement differences in the reasoning domain at the eighth grade (first page) and fourth grade (second page). On average, across all countries, eighth-grade girls had significantly higher achievement than boys in the reasoning domain. In this domain, girls had significantly higher achievement than boys in 17 countries and the Basque Country, Spain whereas boys had higher achievement in only two countries (Morocco and Tunisia).

At the fourth grade this pattern was similar, but far less pronounced. There was essentially no difference in achievement internationally between fourth-grade boys and girls in the reasoning domain. However, girls had higher achievement than boys in three countries whereas boys did not outperform girls in any country or benchmarking entity.

