Chapter 6

Where girls still lag behind in education

Key findings

- By 2014, gender parity in access to primary, lower secondary and upper secondary had generally been achieved worldwide. However, global averages mask persistent disparities in regions and countries. Girls are, for example, still less likely than boys to be enrolled in primary school in sub-Saharan Africa – fewer than 95 girls for every 100 boys.
- In no country or economy that participates in the OECD PISA assessment do more girls than boys perform at the highest levels in mathematics.
- Despite the gains made by girls and young women in many areas of education, teenage girls across the OECD report lower levels of life satisfaction than teenage boys.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Though the gender gap has narrowed, gender-related education disparities are still there

Over the past century, countries around the world have made significant progress in narrowing, and even closing, long-standing gender gaps in educational attainment. Since the early 1900s, the number of years that working-age adults spend in education increased from an average of 6 to 12 years among men and from 5 to 13 years among women. Indeed, more young women than ever before are now participating in formal and higher education in the OECD and, over the past decade, gender gaps in educational attainment have reversed. In 2000, adult men had higher tertiary-level attainment rates than adult women, but by 2012 34% of women across OECD countries had attained a tertiary education, compared with 30% of men.

The increase in female participation in education was also dramatic in non-OECD countries. Among the over 100 non-OECD countries that are part of the Barro and Lee dataset (2013), the average number of years that working-age adults spend in education countries rose from around two to about eight among men and from one to eight years for women. By 2014, gender parity in access to primary, lower secondary and upper-secondary school had been achieved, on average, across the globe (UNESCO, 2016).

Despite such impressive gains, global averages mask persistent disparities in many regions and countries. In North Africa, for example, just 95 girls are enrolled in primary school for every 100 boys and, in sub-Saharan Africa, the ratio is 93/100. As for secondary schools, gender disparities are more widespread. In 2014, 54% of countries globally had not achieved gender parity in lower-secondary education, while in upper-secondary school the figure was 77% (UNESCO, 2016).

Discriminatory gender norms rob girls of educational opportunity

In low- and middle-income countries, policies to lower the direct cost of schooling for girls should be combined with policies to reduce the opportunity cost of their caring and housework responsibilities. They include childcare programmes for siblings and flexible school times in the harvesting season. Tackling discriminatory norms, attitudes and practices through the media, religious institutions and community leaders can also help to dismantle some of the barriers to girls' education (Box 6.1).

Incentives to delay marriage and reduce adolescent pregnancy – including cash-transfer programmes, and sexual and reproductive health education – are also an effective way of keeping adolescent girls at school. Although Mexico has effectively achieved gender parity in upper-secondary school completion rates with a gender gap of less than 1 percentage point, it has very school high drop-out rates – more than 40% of male and female 15-to-19 year-olds were not enrolled in education in 2013 – and the lowest upper-secondary graduation rate in the OECD. Of the 15-to-29 year-old female drop-outs, 8% listed pregnancy or having a child as the reason for leaving school early, and 11% cited getting married or entering a union. Accordingly, Mexico's Secretariat of Education (SEP) has made a serious financial commitment to keeping at-risk students – such as teenage mothers – in school by offering scholarships with a gender component. From 2013 to 2015, SEP offered over 700 000 scholarships aimed at keeping girls in school (OECD, 2017a).

Box 6.1. Obstacles to girls participating in education in developing countries

In 2014, only 39% of girls in sub-Saharan Africa completed lower secondary school, even though 76% of them were enrolled in primary school (World Bank, 2016). In addition to the direct costs of schooling, poverty (Filmer, 2000), opportunity costs (World Bank, 2001) and restricted access to quality education (Arceo-Gomez and Campos-Vasquez, 2014) prevent girls from going on to secondary education. There are a host of other factors, too. They include the lack of separate toilets for girls and boys (Birdthistle et al., 2011), a dearth of female teachers, long distances to school and violence against young women.

The shortage of female teachers in Yemen, for instance, may be why 28% of girls drop out of school before completing their secondary education (Ashuraey et al., 1995). In Afghanistan, for every mile the journey to school is reduced, girls' enrolment increases by 19 percentage points, compared to 13 among boys (Burde and Linden, 2012). Data from 40 low- and middle-income countries show that up to 10% of adolescent girls reported incidents of forced sexual intercourse or other sexual acts at school in the previous year (UNICEF, 2014). In South Africa, 8% of girls in secondary school reported that they had been sexually assaulted or raped at school in the previous year (Burton and Leoschut, 2013).

Discriminatory social practices and institutions, such as early marriage and gender roles that assign caring responsibilities to girls might also cut short their education in adolescence (Ferrant and Nowacka, 2015). Formal and informal laws, social norms and practices reinforce the social expectation that women and girls should handle household chores (Ferrant et al., 2014), so burdening them with more tasks that cut into the time they might otherwise spend in education. Girls who devote 28 hours or more per week to domestic and care work spend 25% less time at school than those for whom it takes up 10 hours per week (ILO, 2009). And since girls are twice as likely as boys to spend long hours doing housework, education gender gaps widen even further.

Similarly, girls' decisions to drop out of school often come just before or after early marriage or in the wake of pregnancy, which only adds to their caring responsibilities. In Bolivia, for example, 19% of 15-to-24 year-old females who had not completed secondary education cited marriage as the main reason and 14% pregnancy (Demographic and Health Surveys, Bolivia, 2008).

In Ethiopia, the Berhane Hewan Programme, launched in 2004, sought to delay the age at which girls marry and support those who had married as children through a combination of community awareness-raising and financial backing for remaining in school. The programme provided school supplies, put in place peer mentoring groups, and made asset transfers to families who did not marry their daughters. An evaluation showed positive results as girls in the project site were three times more likely to be in school and none married during the project's pilot phase (Erulkar and Muthengi, 2009). The project has been replicated by the Population Council and Partners for the period 2010-16 in Ethiopia, Burkina Faso and Tanzania (Population Council, 2014).

Another measure which shows promise in keeping girls in school is the ongoing 2015 Plan International initiative Adolescent Girls Initiative-Kenya (AGI-K) for girls who live in the slums of Nairobi. AGI-K combines conditional cash transfer schemes and a mentorship programme where girls learn about sexual and reproductive health. It covers 176 primary schools and has enrolled over 2 000 girls in its mentorship programme; it uses an automated tracking system to monitor school attendance and at-home visits in the event of long absences (Austrian et al, 2015).

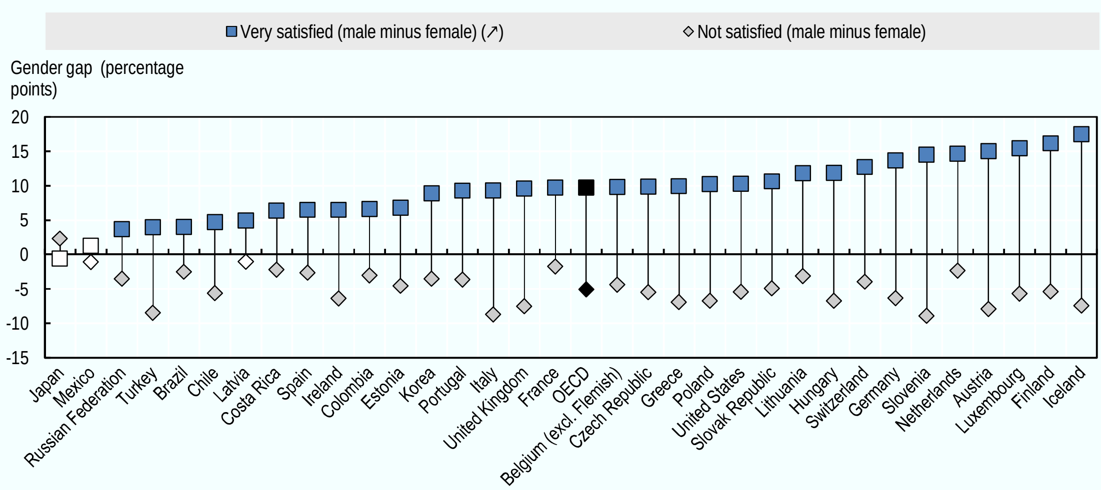
Box 6.2. Despite their educational gains, teenage girls are often less satisfied with life than boys

Although best known for its academic proficiency tests, the 2015 OECD PISA assessment also contained a study of student life satisfaction and well-being (OECD, 2017b). Students were asked about how motivated they felt to perform well in school, their relationships with peers and teachers, their home life and how they spend their time outside of school. The results, mostly based on self-reports, complemented the standard PISA proficiency data by providing insight into teenage students' hopes, aspirations and thoughts about their own lives.

One of the most striking findings to emerge from the study was that, despite gains made by girls and young women in many areas of education, teenage girls do not seem happier or more satisfied with life than teenage boys. In fact, across almost the whole OECD, girls report significantly lower life satisfaction than boys. On average, 15-year-old girls were around 10 percentage points less likely than their male peers to say they were "very satisfied" with their lives, and about 5 points more likely to report low levels of life satisfaction, too (Figure 6.1). The scale of the well-being gender gap varied from country to country, although differences were statistically insignificant only in Mexico and, in part, in Japan and Latvia.

Figure 6.1. Teenage girls report significant lower life satisfaction than teenage boys

Gender gap (male minus female) in the proportion of 15-year-old students reporting they are "very satisfied" and "not satisfied"
with their lives, 2015



Note: Shaded markers represent statistically significant gender differences and white markers non-statistically significant. Life satisfaction is based on students' self-reports. Students were asked to rate their life on a scale from 0 to 10, where 0 denotes the worst possible life and 10 the best possible. A rating of 9 or 10 is classified as "very satisfied", while a rating of between 0 and 4 is classified as "not satisfied".

Source: *OECD PISA 2015 Database*, http://www.oecd.org/pisa/data.

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The reasons behind teenage girls' lower life satisfaction are not fully understood and many determinants probably come into play. One interesting result, though, is that, among *adults*, gender seems to have little effect on self-reported well-being. Indeed, there seems to be something specific to adolescence that produces the gender gap in self-reported life satisfaction. One possibility is that the gap reflects girls' harsh self-criticism as they go through adolescence. The 2015 PISA assessment did not collect information on students' body image, but existing research suggests that exposure to mass media depictions of the "thin-ideal body type" (Grabe et al., 2008) and photo sharing in social media exert a significant negative impact on adolescent girls' self-perceptions and satisfaction.

Narrowing gaps in mathematics scores and numeracy

Figures from OECD PISA 2015 show that, although girls and women have made impressive headway in educational attainment around the world, gender gaps persist in mathematics and numeracy. Across the OECD in 2015, boys outperformed girls in mathematics by an average of eight points – equivalent to around one-fifth of a year of schooling. The gap was wider among high achievers, with the highest-scoring 10% of boys outperforming the top 10% of girls by 16 points. At the mean, the pro-boy advantage was statistically significant in 28 out of the 70 countries with available data, and was greatest in Austria, Brazil, Chile, Costa Rica, Germany, Ireland, Italy and Spain, where boys' average score exceeded girls' by more than 15 points. The gender gap among the highest-performing students (those in the 90th percentile of the performance distribution) is significant in most countries and economies and exceeds 15 points in 30. In no PISA-participating country or economy do more girls than boys perform at Level 5 or above in mathematics.

In the vast majority of countries, the mathematics gender gap failed to change significantly between 2012 and 2015, data from OECD PISA 2012 and 2015 show. Although it actually shrank by an average three points across OECD countries over the period, it was thanks mainly to the change in one country, Korea, where boys' mathematics scores dropped more steeply than girls'. As a result, while Korea had one of the widest pro-boy gender gaps in 2012, girls outperformed boys in 2015, although the difference was not statistically significant.

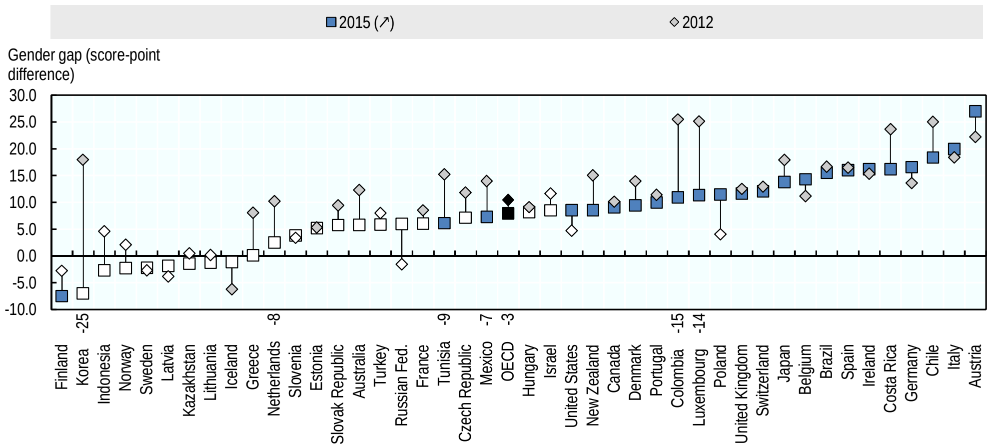
Tunisia also saw a significant deterioration in mathematics performance among both boys and girls between 2012 and 2015, although boys' scores fell more dramatically (Figure 6.2): the gender gap in favour of boys consequently narrowed by nine points. Colombia had the widest pro-boy mathematics gender gap of all PISA-participating countries/economies in 2012, but was able to close it significantly – even among the country's highest-achieving students. While boys' performance remained stable between 2012 and 2015, girls did 20 points better on average, with the highest-achieving improving by 28 points. In Luxembourg, Mexico and the Netherlands, the pro-male gender gap shrank because boys performed more weakly, while girls stayed steady.

Despite the prevalence of statistically significant gender differences, the actual size of the gender gap in mathematics proficiency at the age of 15 is often not all that large – in other words, 15-year-old boys frequently perform better at mathematics than 15-year-old girls, but not very much better. However, comparisons between the performance of 15-year-old students in OECD PISA in 2003 and the performance of roughly the same birth-cohort at around age 24 in the 2012 OECD Survey of Adult Skills (PIAAC) suggest that gender gaps in mathematics sometimes widen as teenagers move into adulthood (Figure 6.3). Among OECD countries with available data, the average standardised gender gap is 0.12 points at the age of 15, and 0.18 points at around age 24 – still only small. However, in Canada, Austria and Norway the standardised gender gap among those aged around 24 is greater than 0.3 points, and in Finland and the United States it is larger than 0.5 points (Figure 6.3). These are gaps that are considerably larger than those for the same birth-cohorts earlier at age 15.

The gender gap among the top mathematics performers remained stable between the ages of 15 and 23-25 – on average, the standardised gap between the highest-achieving 10th of males and females was 0.24 at 15 years old and 0.23 at 23-25. By contrast, the gap widened, but not by much, among the bottom performers (Borgonovi et al., 2017).

Figure 6.2. Gender differences in mathematics performance changed little between 2012 and 2015

Gender gap (male minus female difference in score points) in mean PISA scores in mathematics, 2012 and 2015



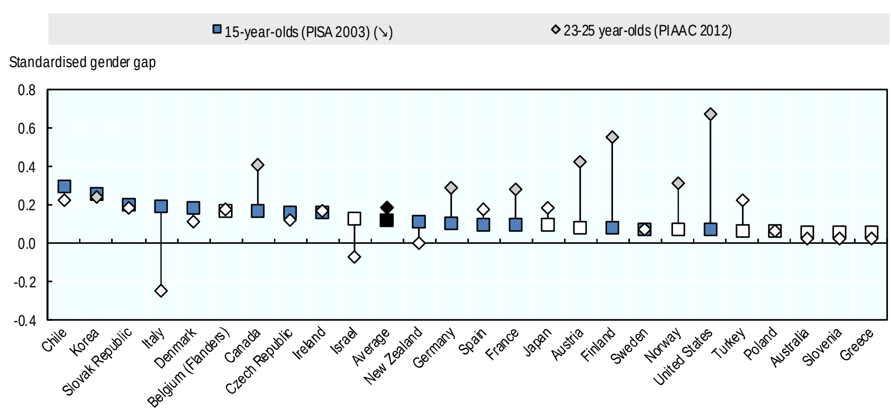
Note: Shaded markers represent statistically significant gender differences, and white markers non-statistically significant gender differences. Statistically significant changes between PISA 2012 and PISA 2015 are shown next to the country name.

Source: *OECD PISA 2015 Database*, http://www.oecd.org/pisa/data/.

StatLink http://dx.doi.org/10.1787/888933574285

Figure 6.3. Gender differences in mathematics performance sometimes grow as teenagers become young adults

Standardised gender gaps (male minus female) in numeracy proficiency among 15-year-olds (PISA 2003)[a] and 23-25 year-olds (PIAAC 2012)



Note: The standardised gender gap refers to the score-point difference between the male and female scores, divided by the pooled standard deviation. Shaded markers represent statistically significant gender differences at the 5% level, and white markers non-statistically significant gender differences at the 5% level. Data are based on two different samples of young men and young women drawn from roughly the same birth-cohort at different points in time – from 15-year-olds in 2003, and from 23-25 year-olds in 2012. This design is known as a "pseudo-cohort" analysis – the data show the evolution of the gender gap when following a "pseudo-cohort" over time, as opposed to following exactly the same individuals, as would be the case with full panel data. For more details, see Borgonovi et al. (2017).

a) For Chile, Greece, Israel, New Zealand, Slovenia and Turkey, data for 15-year-olds are based on PISA 2006 rather than PISA 2003, and data for 23-25 year-olds are based on PIAAC round 2 (2015) rather than PIAAC round 1 (2012).

Source: Borgonovi, F. et al. (2017), "Youth in Transition: How Do Some of the Cohorts Participating in PISA Fare in PIAAC?", *OECD Education Working Papers*, No. 154, OECD Publishing, Paris, http://dx.doi.org/10.1787/51479ec2-en.

StatLink http://dx.doi.org/10.1787/888933574304

What explains mathematics gender gaps? One reason might be that girls and young women are more likely than boys and young men to hold negative perceptions of their abilities in mathematics and to report stress and anxiety in problems and situations that involve mathematics (OECD, 2015a). In 2012, OECD PISA asked students to report on whether they felt confident doing a range of pure and applied mathematics tasks; in 2015, OECD PISA asked students to report their feelings of self-confidence with respect to science. In general, girls reported less self-confidence than boys in both subjects, although the confidence gender gap was much wider in mathematics than in science problems. Girls' faith in their science abilities also seems to vary with the type of task they are asked to perform. Chapter 7 in this report discusses evidence on women's under-representation in science, technology, engineering and mathematics (STEM) subjects and careers, and emphasises the importance of programmes aimed at challenging gender-stereotypical attitudes and expectations and at building girl's self-confidence in STEM fields.

Key policy messages

- In countries where girls' and young women's access to education is limited, it is important to reduce the direct cost of schooling, make educational and transport facilities safe, and reduce the opportunity cost of the caring and housework responsibilities that girls are assigned. Governments must also tackle discriminatory norms, attitudes and practices through, for example, gender-awareness training, media programmes, and the endorsement of girls' education by community leaders. Incentives to delay early marriage and curb teenage pregnancies are also critical to keeping adolescent girls in school.
- In most OECD countries, the challenge of gender equality in education has moved from attainment to opportunity – boys and girls must have the same opportunity to high-quality education in all subjects, including education, mathematics and science. Policy should also ensure that women have the same chances as men to develop the skills they have acquired in school, the workplace and everyday life.
- Educators should encourage boys and girls to work hard from their youngest years to realise their potential, learn from their mistakes and solve problems on their own – all of which will help build student's self-confidence.

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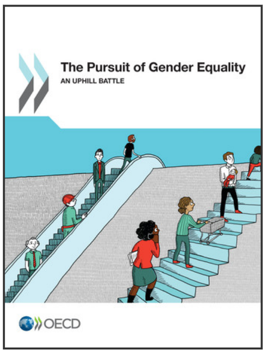

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