

**Do socio-economic disparities
in skills grow between the teenage
years and young adulthood?**



Adult Skills
in Focus #5



OECD

BETTER POLICIES FOR BETTER LIVES

- In most countries, there are large gaps in literacy proficiency between socio-economically advantaged and disadvantaged 15-year-olds, which tend to widen on average as individuals enter adulthood.
- These socio-economic disparities in literacy proficiency remain stable between the ages of 15 and 27 among high-achieving individuals but widen considerably among low-performers.
- The average literacy proficiency of both socio-economically advantaged and disadvantaged young adults increases between the ages of 16 and 27, but skills grow faster among socio-economically advantaged individuals.

The skills students have as 15-year-olds help to shape their future life outcomes

Since 2000, the OECD's Programme for International Student Assessment (PISA) has been a key source of information about how well education systems equip students with the knowledge and skills they need to fully participate in modern societies. PISA illustrates the cumulative effect that family, social and educational factors have on shaping performance in a low-stakes standardised test at the age of 15. Important though this information is, most students in OECD countries continue their educational careers for some years after the PISA test. Most 15-year-olds can expect to stay in education or training for at least another three or four years, with those who will go on to complete higher degrees looking at approximately another ten years of study.

In most countries, the age of 15 is an important point in students' education and training careers. At this age, young people (and their families) make important choices about transitions into different schools, further education or training, or are channelled through formal and informal mechanisms into different educational and training opportunities. Disparities in skills at this age can therefore have a significant impact on life outcomes. However, the tendency to devote more and more years to the development of skills through formal schooling, further education and training implies that the competencies measured at the age of 15 should not be seen as the final word on the effectiveness of education and training systems. Furthermore, educational experiences are only some of the factors

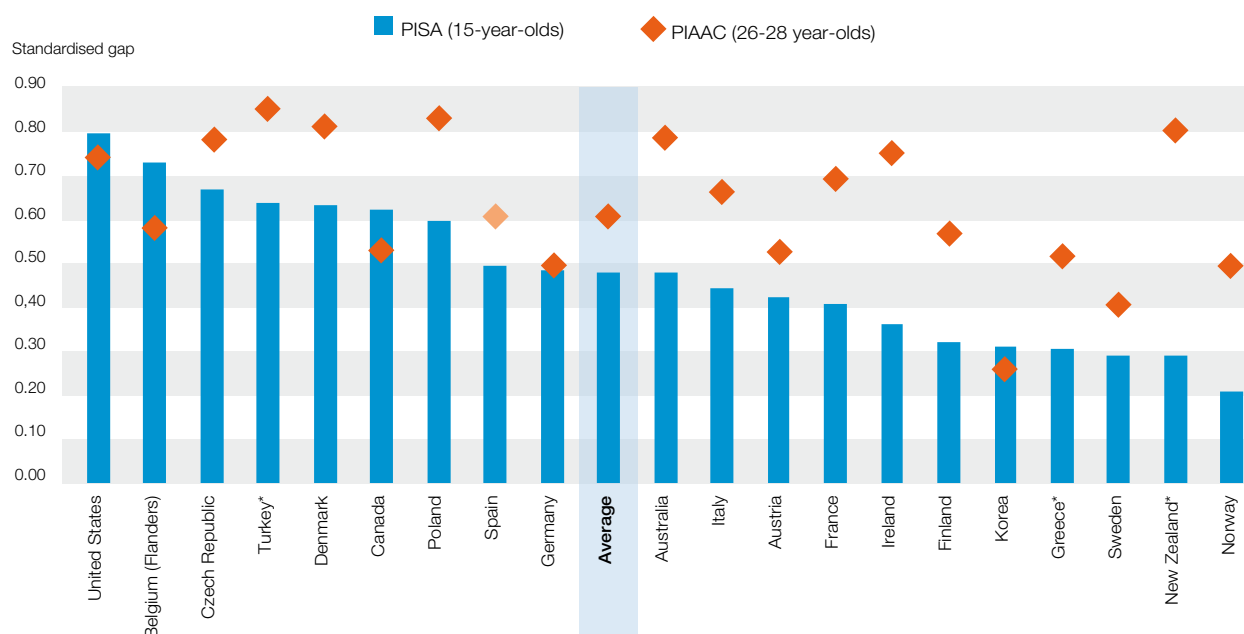
that can shape individuals' proficiency. The tasks individuals engage in at work, and the events they experience through life, have the potential to reshape their cognitive capacity.

PISA data reveal large disparities in achievement not only across countries, but also within countries across different subgroups of students. In particular, students from socio-economically disadvantaged households perform less well than other students in the three subjects PISA covers – reading, mathematics and science.

Currently, no comparable cross-national data are available from longitudinal studies following students who participated in PISA over time. However, in order to identify how socio-economic disparities in achievement evolve as students transition from the teenage years into adulthood it is possible to compare socio-economic disparities observed by the OECD Survey of Adult Skills (PIAAC) with disparities observed in PISA 12 years earlier. Several of the countries which participated in PIAAC in 2011/12 had also participated in PISA in 2000, while three countries which participated in PIAAC in 2014/15 had also participated in PISA in 2003. Although it is not possible to identify individuals taking the PIAAC test who had also sat the PISA test, assuming the target populations and samples were stable, it is possible to compare the performance of groups of individuals belonging to the same birth cohort taking the test in PISA at the age of 15 and PIAAC at the age of 27.



Figure 1 / **Disparities in literacy between individuals with and without tertiary educated parents at the age of 15 (PISA) and 26-28 (PIAAC)**



Note: The standardised gap refers to the difference in the mean scores of individuals with at least one parent educated at the tertiary level and individuals without tertiary-educated parents divided by the average standard deviation of countries participating in the study. Countries are ranked in descending order of the gap in PISA. Bars and diamonds highlighted in dark represent groups for which the gap is statistically significant at the 5% level. An * next to the country name denotes PIAAC round 2 countries for which PISA 2003 data were used to identify performance at age 15.

Source: OECD Survey of Adult Skills (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis; OECD PISA (2000, 2003), www.oecd.org/pisa/data/database-pisa2000.htm; www.oecd.org/pisa/data/database-pisa2003.htm.

Comparing PISA and PIAAC

To ensure comparability of the PISA and PIAAC samples, adults sampled in PIAAC who reported that they were born outside the country in which they were assessed and had arrived after the age of 10 are excluded. PISA and PIAAC had two indicators of socio-economic condition in common: parental education and the number of books the respondent reported having available in the home at the age of 15 (PISA) and the age of 16 (PIAAC). To compensate for small sample sizes by individual year of birth, PIAAC estimates are based on individuals between the age of 26 and 28. The PISA reading and mathematics assessments and the PIAAC literacy and numeracy assessments are not directly comparable, but the frameworks are very similar. Therefore, although it is not possible to examine growth in performance, it is possible to calculate measures of standardised gaps in performance comparing individuals with at least one tertiary-educated parent and those with neither parent having a tertiary degree (the standardised parental education gap), as well as between individuals with over 100 books in their home at the age of 15/16 and those with fewer than 100 books. A standardised gap smaller than 0.3 is considered to be small, a standardised gap between 0.3 and 0.5 is medium sized and a standardised gap greater than 0.5 is large.

Socio-economic disparities vary widely from country to country

How skills are distributed across the population has significant implications for economic and social outcomes. Therefore, assessing the extent to which parental educational attainment and the possession of cultural resources determine the acquisition of information-processing skills needed for further education, training, the labour market and everyday life is an important policy consideration.

The score gap in literacy proficiency associated with parental education is generally large at the age of 15 and it tends to widen as the cohort of students observed in PISA move into young adulthood. In the Czech Republic, Denmark and Poland, the standardised

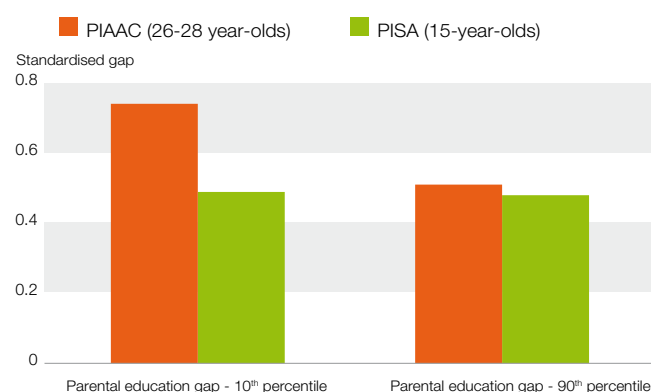
parental education gap is greater than 0.5 at the age of 15 and increases by age 27. By contrast, in Belgium (Flanders), Canada and the United States the gap is larger than 0.5 at age 15 but decreases by age 27. In New Zealand, Norway and Sweden the standardised parental education gap is small at age 15 (standardised gap around 0.3) but it increases by young adulthood and, in New Zealand, it becomes as large as 0.8. In Korea the gap is small at age 15 and remains small by age 27. The parental education gap at the age of 15 is medium-sized in Australia, Austria, Finland, France, Germany, Ireland, Italy and Spain. The gap remains stable in Germany, while it tends to grow in the other countries.

Skills gaps widen fastest among the lowest achievers

Among the highest-achieving individuals (those performing at the 90th percentile in literacy), the standardised gap between those with at least one tertiary-educated parent and those with no parent educated at the tertiary level remains relatively stable between the ages of 15 and 27. The gap in literacy was 0.46 at age 15 and 0.53 at age 27. On average, among individuals at the bottom of the performance distribution (10th percentile), the gap associated with parental educational attainment at the age of 15 is very similar, at 0.48. However, between the ages of 15 and 27, the gap for those at the bottom end of the performance distribution grows much more strongly, to 0.77.

Comparison between cohorts in PISA and PIAAC does not allow growth in achievement to be measured. However, analyses of age-proficiency profiles in literacy in PIAAC by parental educational attainment and the number of books in the family home provide some relevant evidence. An important caveat is that, in this case, comparisons are not looking at the same cohort over time, but different cohorts at a single point in time.

Figure 2 / Socio-economic disparities in literacy widen from age 15 to age 27 particularly among lowest achievers



Note: Standardised gap refers to the difference in the mean scores of individuals with at least a tertiary educated parent and individuals with no tertiary educated parent divided by the pooled standard deviation of the study. The table presents the average across the 20 countries with comparable data.

Source: OECD Survey of Adult Skills (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis; OECD PISA (2000, 2003), www.oecd.org/pisa/data/database-pisa2000.htm; www.oecd.org/pisa/data/database-pisa2003.htm.

Gaps in skills tend to widen after the moderating effect of schooling ends

Between the age of 16 and the age of 27, gaps in literacy proficiency between individuals with tertiary educated parents and individuals with no parent educated at the tertiary level, and between individuals with over 100 books at age 16 and those with less than 100 books at the same age, become larger. This “fanning out” effect

occurs because achievement growth between the teenage years and young adulthood is steeper among socio-economically advantaged individuals. Although both groups appear to increase in literacy skills, the growth is more pronounced among individuals with better-educated parents and with access to more

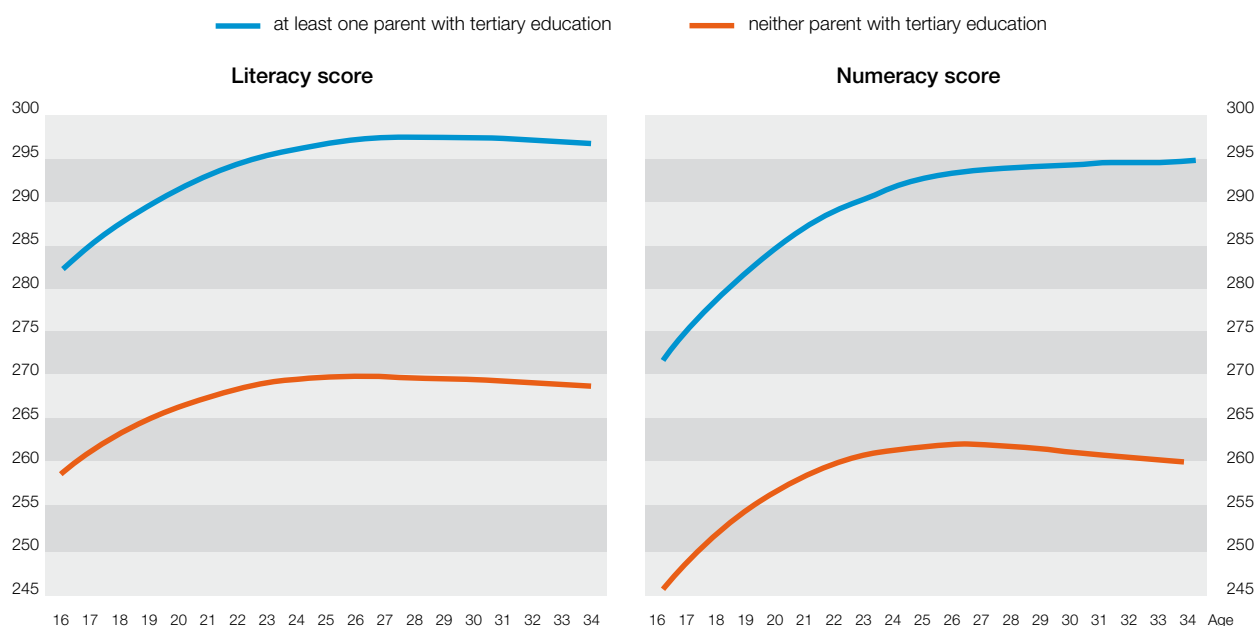


cultural resources when teenagers. Moreover, the growth in proficiency among individuals whose parents did not attain tertiary education and with fewer cultural resources appears to plateau at an earlier age than it does among individuals with at least one tertiary-educated parent and with abundant cultural resources.

In most countries, socio-economic disparities in literacy and numeracy at the age of 15 not only persist in young adulthood, but tend to widen. Further education and participation in the labour market are the crucial mechanisms associated with skill acquisition beyond compulsory schooling. Socio-economically disadvantaged youngsters are considerably less likely than their more advantaged counterparts to attend post-secondary education and training, and are more likely to drop out of education without a secondary level qualification. They are also more likely to be unemployed or out of the labour force and to work in jobs that require little advanced on-the-job training or use of higher-order thinking skills. Although it is not possible to establish causality, given the nature of the data examined, there appears to be an increasing divergence in the opportunities for skill development between socio-economically advantaged and disadvantaged youngsters following the completion of compulsory schooling and an overall increase in socio-economic gaps in proficiency in the large majority of countries.

Secondary schooling represents an equalising force in terms of skill development. In most countries, whatever their social background, students follow a broadly similar programme of study, at least until the completion of lower secondary education. Even if participation in a common educational experience does not eliminate socio-economic disparities in learning outcomes, it moderates the effects of differences in social background and the differences in access to resources as well as in the associated dispositions and attitudes to learning on performance. With the completion of compulsory schooling, the experience of young people from different backgrounds diverges both in terms of the types of education programmes they follow as well as the timing of entry into the labour market and their occupational destinations. Unsurprisingly, inequalities in proficiency in literacy and numeracy appear to widen after the end of compulsory schooling, in particular, among low-achieving individuals. Germany and Korea represent important outliers. In Germany, the gaps in literacy proficiency by socio-economic condition were the highest among students who sat the PISA test in 2000, but were in line with the OECD average when considering the same birth cohort at the age of 27. Korea also bucked the trend of increasing socio-economic gaps in skills after the end of compulsory schooling: gaps were already among the lowest at the age of 15 and had grown smaller by the age of 27.

Figure 3 / Disparities in age proficiency profiles in literacy and numeracy between age 16 and 34



Note: International country average.

Source: OECD Survey of Adult Skills (2012, 2015), www.oecd.org/skills/piaac/publicdataandanalysis.

The bottom line



The striking cross-national variation in socio-economic disparities in skills gaps among 15-year-olds, and the evolution of these gaps between the ages of 15 and 27, raises the question of what policies and institutional arrangements may explain such variability. Extensive policy analysis and research has been devoted to the features of education systems which are most strongly associated with such socio-economic gradients (or the lack of them) in literacy and numeracy. However, much less is known about which factors contribute to narrowing or widening socio-economic gaps after the end of compulsory schooling. Results on the widening gap at the bottom end of the performance distribution identify a target group for policy interventions – socio-economically disadvantaged students who are low-achievers at the age of 15. These results also help to formulate hypotheses as to why gaps widen in many countries after schools are no longer able to exert their equalising effect, since this is the group which is less likely to enjoy opportunities for further skill development through education and training.

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