PISA IN FOCUS 45

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Do countries with high mean performance in PISA maintain their lead as students age?

- Countries where 15-year-old students perform at high standards internationally tend to be the same countries where these young adults tend to perform well at the age of 26 to 28.
- School systems need to ensure that their students perform at a high level by the time they complete compulsory schooling and that these skills are maintained and further developed thereafter.

PISA provides a snapshot of the performance of 15-year-old students in reading, mathematics and science. The choice of focusing on 15-year-olds was determined by the fact that PISA wanted to compare how prepared students near the end of compulsory schooling are to make the transition from school to the labour market or further education and training. Yet PISA can only provide a snapshot, and countries may differ significantly with respect to what happens during the transition from compulsory schooling to adult life and how the skills acquired by students develop as they age and become young adults. Does the rate of learning gain that occurs after the age of 15 vary between countries? Are the students with high scores at the age of 15 still the high performers at later ages, at the age of 20 or 25? Do young people in countries with poor performance in PISA catch up with their peers in better-performing countries over time or are the gaps in performance observed at age 15 maintained or even widened?

Used in conjunction with the results from PISA, data from the Survey of Adult Skills (a product of the OECD Programme for the International Assessment of Adult Competencies, or PIAAC) can provide insights into whether countries with high mean performance in PISA maintain their lead later or whether countries' performance tend to converge once students leave compulsory education.

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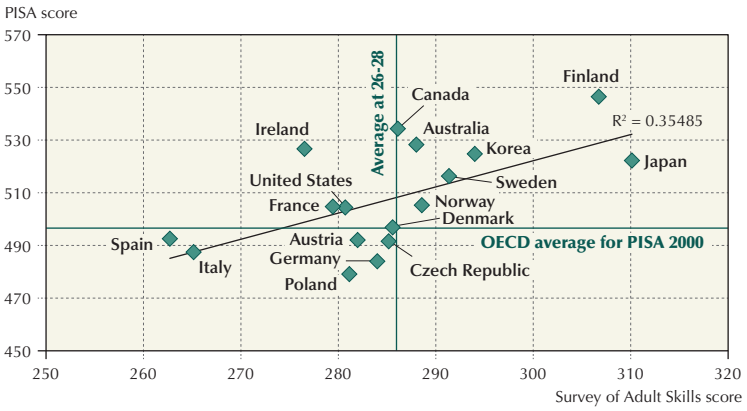
The Survey of Adult Skills (PIAAC) is a survey of adults aged 16 to 64 in over 20 countries and economies who were tested to capture their numeracy and literacy skills. Data were collected in 2011 and 2012. Because 16 countries participating in PIAAC had participated in the 2000 PISA study, it is possible to examine and compare results in reading and mathematics from the cohort whose members were 15 when they participated in PISA 2000 and the same cohort in the Survey of Adult Skills, composed of young adults aged 26 to 27 in 2011-12.

PISA performance can tell us a lot – but not everything – about skills proficiency among adults.

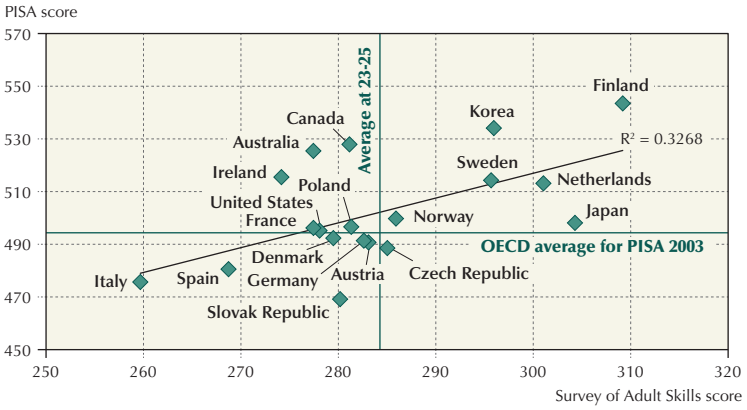
In general, there is a positive relationship between performance in PISA and the corresponding age group's performance in the Survey of Adult Skills. Countries that had high, middling or low mean scores in a given wave of PISA also tend to have high mean, middling or low mean scores for the corresponding age group in the adult survey. In 2000, 15-year-olds in Finland, Japan, Korea and Sweden performed above average; 12 years later, 26-28 year-olds in these countries also performed above average in the Survey of Adult Skills. Similarly, Austria, Germany, Italy, Poland and Spain performed below average in PISA 2000 and did again in the adult survey for the corresponding age group.

Country-level performance of 15-year-olds in reading and mathematics is associated with levels of literacy and numeracy of the same cohorts 12 years later, but the relationship is not deterministic. In Ireland, for example, 15-year-olds performed well above the average in reading in PISA 2000, but the same cohort scored below average in the Survey of Adult Skills in 2012. In Italy and Spain, 15-year-olds performed close to the average in reading in PISA 2000, but the same cohort scored well below average in literacy in the adult survey in 2012.

Mean reading score in PISA 2000 and literacy score in the Survey of Adult Skills 2012, 26-28 year-olds



Mean reading score in PISA 2003 and literacy score in the Survey of Adult Skills 2012, 23-25 year-olds



Notes: A three-year age band is used in the Survey of Adult Skills to increase size and reliability of estimates. The mix of countries contributing to the average in PISA and the Survey of Adult Skills differs, which may contribute to differences in countries' average scores relative to the overall averages in either study.

Source: Survey of Adult Skills (PIAAC) (2012) and OECD, PISA 2000-2009 Databases, Table A5.6 (L).

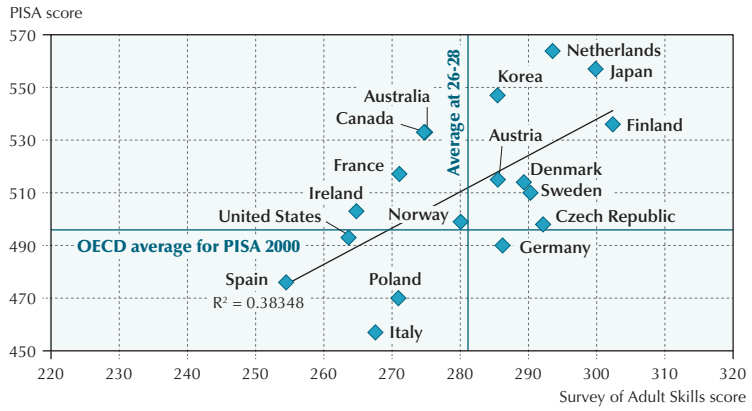
StatLink http://dx.doi.org/10.1787/888932898693

Once developed, skills must be used.

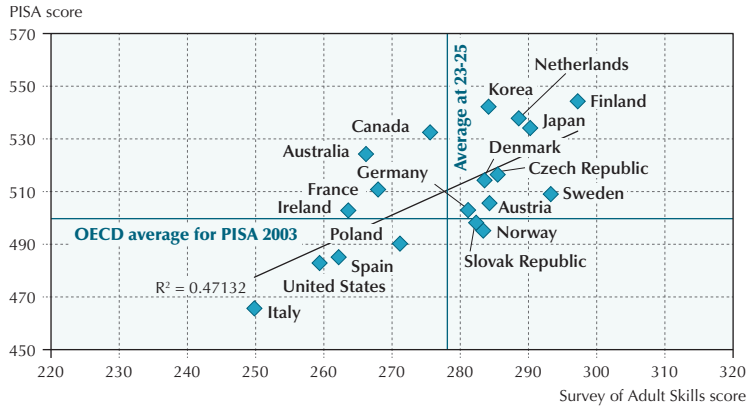
While there are a number of countries where the performance of 15-year-olds would predict better performance of the same cohort in the Survey of Adult Skills, no country has higher-than-expected performance in the adult survey, suggesting that it may be particularly hard for countries to catch up when young people leave school with a poor set of skills. Post-compulsory education and training systems do not compensate for the country-to-country differences in performance that are observed at the age of 15. This is perhaps not surprising. The teaching of literacy and numeracy is an explicit objective of most school systems. This is not true during the post-compulsory years, when a certain level of competence in these skills is taken as a given, and instruction focuses more on developing domain-specific skills and knowledge.

These results speak to the importance of providing students with the opportunity to reach high levels of performance at an early age and to maintain this performance as they age. It is a challenge of developing skills on the one hand, and using skills, on the other. Skills that are not used are lost; thus school systems that provide their students with a high level of skills must ensure these skills are used throughout post-compulsory education so that they are translated into better social and labour market outcomes as students leave the school system. In addition, adult training systems, employers and labour market policies must ensure that these skills are used regularly to avoid a loss of skills.

Mean mathematics score in PISA 2000 and numeracy score in the Survey of Adult Skills 2012, 26-28 year-olds



Mean mathematics score in PISA 2003 and numeracy score in the Survey of Adult Skills 2012, 23-25 year-olds



Notes: A three-year age band is used in the Survey of Adult Skills to increase size and reliability of estimates. The mix of countries contributing to the average in PISA and the Survey of Adult Skills differs, which may contribute to differences in countries' average scores relative to the overall averages in either study.

Source: Survey of Adult Skills (PIAAC) (2012) and OECD, PISA 2000-2009 Databases, Table A5.6 (N).

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The findings of this analysis should not be taken as implying that performance at the age of 15 represents destiny at the individual level. The results concern the mean performance of an age cohort. Within a given age group, the rate of leaning gain in literacy or numeracy from the age of 15 may differ considerably among the individual members of that group. In Canada and Denmark, the same students who sat the PISA test in 2000 were retested at later ages, and results suggest that there is a high degree of variability in achievement growth after the age of 15. In Canada, for example, students who had sat the PISA 2000 assessment were retested using the PISA instruments in 2009, when they were 24. Results indicated that over time, skills levels among individuals converge, but that students who showed an early performance disadvantage did not overcome it by the time they were 24.
In Denmark, students who had participated in PISA in 2000 also participated in the Survey of Adult Skills in 2011-12. Although many students maintained their relative ranking in the two assessments, around one quarter performed relatively better in the adult survey than in PISA, and another quarter performed relatively worse.

The bottom line: Countries where students near the end of compulsory schooling perform at high levels tend to maintain their lead after these students transition from school into young adulthood, but some countries are particularly successful in equipping individuals with core skills after they leave school. While governments should ensure that school systems are effective in developing skills in the area of reading and mathematics, there is considerable scope for post-secondary education and training systems, as well as workplaces, to intervene to improve the proficiency of young people who leave school with poor literacy and numeracy skills.

For more information

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See OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris;
OECD (2012), *Learning beyond Fifteen: Ten Years after PISA*, PISA, OECD Publishing, Paris;
The Ministry of Education (2014), *Summary of the Danish PISA-PIAAC survey*, Undervisnings Ministeriet, Copenhagen.

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