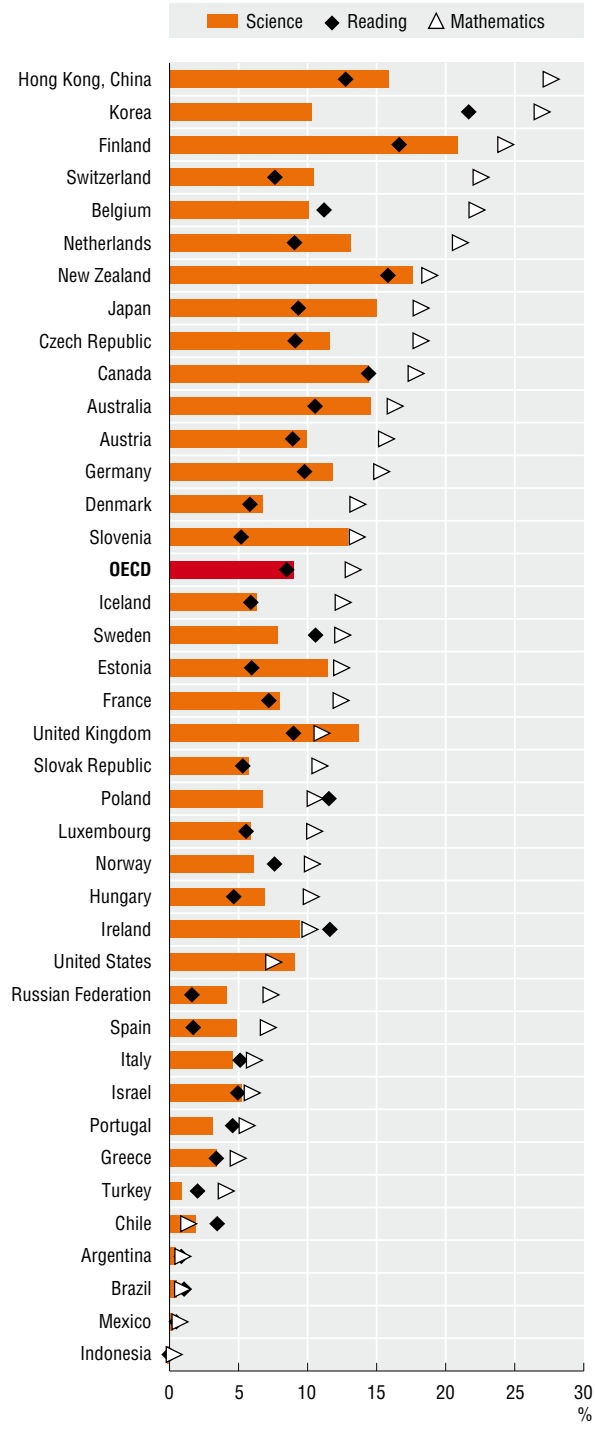
Education systems play a broad role in supporting innovation because knowledge-based societies rely on a highly qualified and flexible labour force in all sectors of the economy and society. Innovation requires the capacity to continually learn and upgrade skills.

Reading, mathematics and science proficiency at age 15, 2006

Percentage of top performers



Source: OECD, PISA 2006 Database.

StatLink http://dx.doi.org/10.1787/835310061550

DID YOU KNOW?

More than half of the 15-year-olds in the OECD countries have used a computer for more than five years, but 12% of students have never used a computer at school.

(OECD, PISA 2006.)

While basic competencies are generally considered important for absorbing new technologies, high-level competencies are critical for the creation of new knowledge and technologies. Emphasis is increasingly placed on capabilities for adapting and combining multidisciplinary knowledge and performing complex problem solving. The acquisition of such skills starts at a very early age.

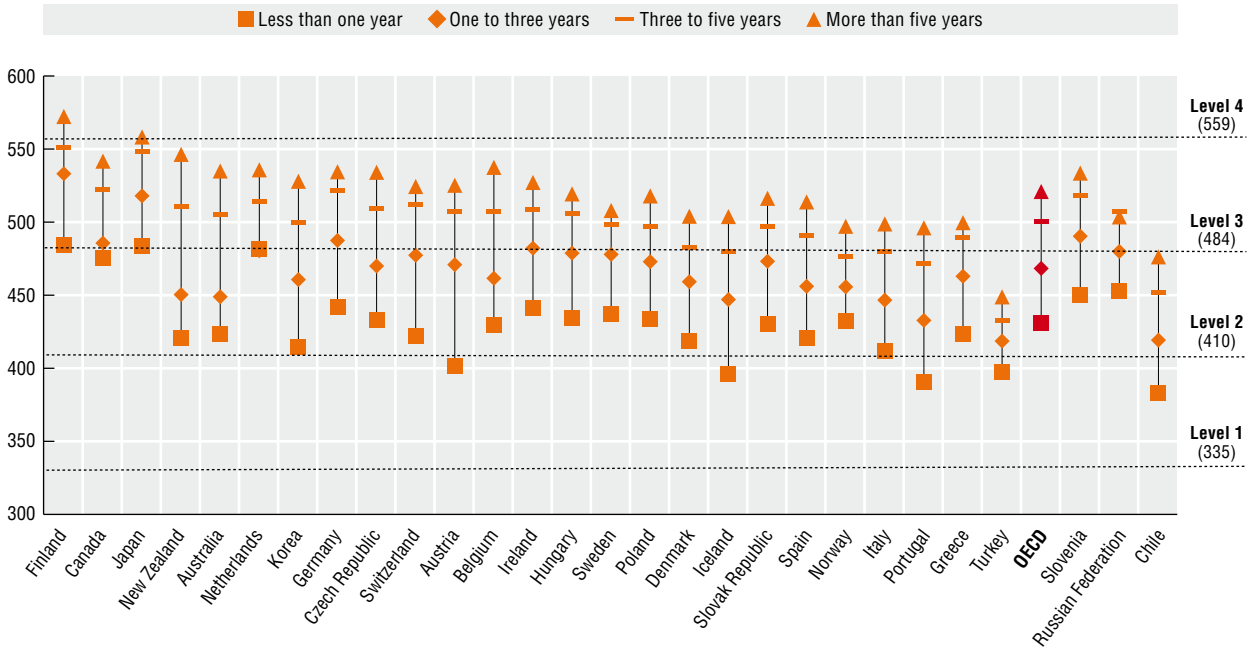
A focus on top-performing students allows for a better understanding of proficiency patterns among 15-year olds. Data from the OECD's Programme for International Student Assessment (PISA) show that in almost all OECD countries, the share of top performers was higher in mathematics than in science and reading. However, the variability in the proportion of top performers across countries suggests differences in countries' potential capacities to staff future knowledge-driven industries with home-grown talent.

Results from PISA 2006 also show an association between how long students have been using computers and their performance in science. On average, 15-year-olds with more than five years of experience with computers raise their average PISA score in science by 90 score points compared to those who have used computers for less than one year. This gap corresponds to more than one proficiency level in the PISA science test.

Definitions

Top performers in science are students proficient at Levels 5 and 6 in the PISA 2006 science assessment (*i.e.* they have obtained scores higher than 633.33 points). The other levels in science performance are: Level 4 (score of 558.7), Level 3 (score of 484.1), Level 2 (score of 409.5) and Level 1 (score of 334.9). *Top performers in reading* are students proficient at Level 5 in the PISA 2006 reading assessment (*i.e.* with scores higher than 625.61). *Top performers in mathematics* are students proficient at Levels 5 and 6 in the PISA 2006 mathematics assessment (*i.e.* with scores higher than 606.99).

Length of time students have been using a computer and mean PISA science score, 2006



How to read this figure

In Finland, 15-year-old students who had more than five years of experience with computers had an average score of 574 points. This is 88 points higher than those who have used a computer for less than a year.

Source: OECD (2010), *Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA 2006*, OECD, Paris.
See chapter notes.

StatLink http://dx.doi.org/10.1787/835310061550

Measurability

The achievement scores are based on assessments administered as part of the Programme for International Student Assessment (PISA) undertaken by the OECD. The most recent available PISA data were collected during the 2006 school year. Around 400 000 students were randomly selected and represented about 20 million 15-year-olds in the schools of the 57 participating countries, including all 30 OECD member countries and 27 partner countries and economies.

The target population is students aged from 15 years and 3 (completed) months to 16 years and 2 (completed) months at the beginning of the testing period and who were enrolled in an educational institution at the secondary level, irrespective of the grade level or type of institution, and irrespective of whether they participated in school full-time or part-time. Although the main focus of PISA 2006 was science, the survey also covered reading and mathematics. The PISA 2006 survey also, for the first time, sought information on students' attitudes to science by including questions on attitudes within the test itself, rather than only through a complementary questionnaire.

PISA 2006 also gave countries the option to administer a short questionnaire on students' familiarity with information and communication technology (ICT). This questionnaire made it possible to gain more detail on students' access to computers than the main questionnaire. The ICT questionnaire focused on how familiar students were with computers rather than on ICT in general. Students were asked how often they used computers, where and how they learned to use computers and the Internet, and how confident they were in performing certain computer tasks. As a result, a more nuanced picture of students' access to, and use of, ICT can be drawn for the 25 OECD countries and 14 partner countries and economies that completed the ICT questionnaire. To complement the information on ICT, an additional questionnaire was sent to school principals about the use of ICT in their schools and the extent to which a lack of ICT hinders instruction.