

# EDITORIAL

## Fifty years of change in education

Since its early days, the OECD has emphasised the role of education and human capital in driving economic and social development; and in the half century since its founding, the pool of human capital in its member countries has developed dramatically. Access to education has expanded to the extent that the majority of people in OECD countries is now enrolled in education beyond basic, compulsory schooling. At the same time, countries have transformed the ways they look at educational outcomes, moving beyond a simplistic “more is better” perspective that simply measures investment and participation in education to one that encompasses the quality of the competencies that students ultimately acquire. In an increasingly global economy, in which the benchmark for educational success is no longer improvement by national standards alone, but the best performing education systems internationally, the role of the OECD has become central, providing indicators of educational performance that not only evaluate but also help shape public policy.

### **Growth in educational attainment from the 1950s to the 2000s**

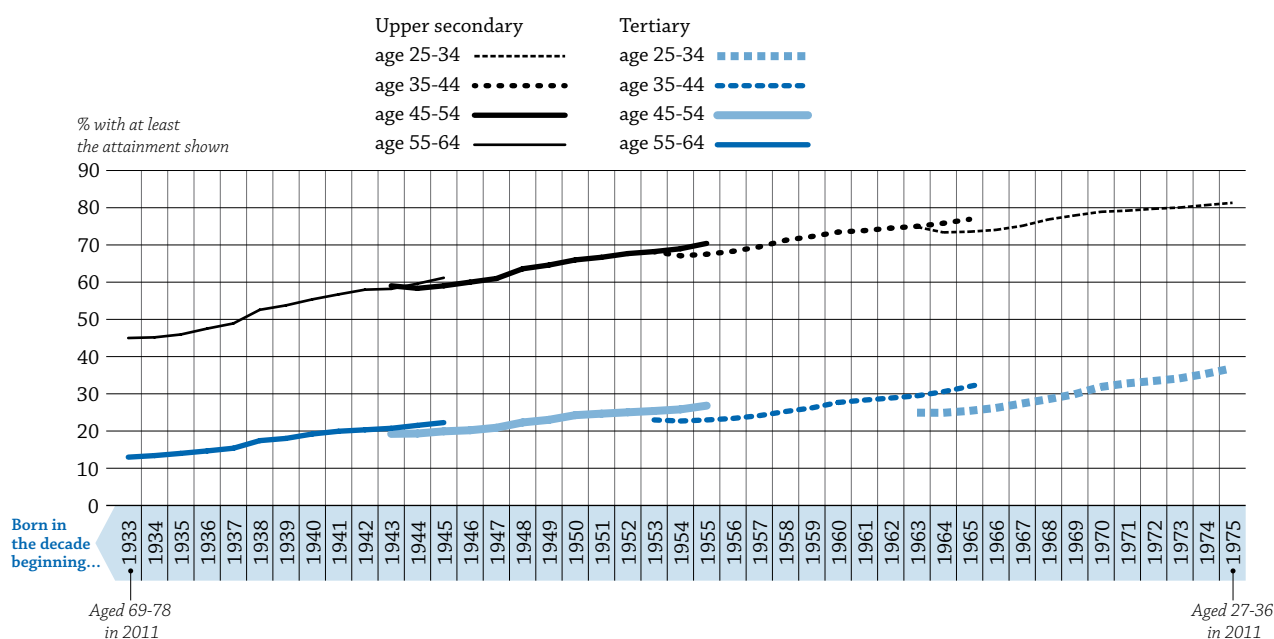
During the past 50 years, the expansion of education has contributed to a fundamental transformation of societies in OECD countries. In 1961, higher education was the privilege of the few, and even upper secondary education was denied to the majority of young people in many countries. Today, the great majority of the population completes secondary education, one in three young adults has a tertiary degree and, in some countries, half of the population could soon hold a tertiary degree.

It hasn't always been possible to quantify such changes over time: for most of the past half-century, a lack of consistent data made it virtually impossible to track the pace of change. Data on educational attainment was not sufficiently standardised until the 1990s. However, age-based attainment levels can be used to estimate how many people earned education qualifications over their lifetimes. For example, the number of people aged 55-64 who have a degree is a proxy for the number of people who graduated three or four decades ago. This method somewhat overestimates the qualification rates among older compared to younger groups of people, because it measures the attainment of the latter group after those individuals have had a chance to acquire qualifications later in life. However, now that consistent attainment data have been around for over a decade, we can also chart this “lifelong learning” effect by comparing the qualifications held by the same cohort at different times during their lives.

Chart 1 offers a broad estimate based on this method. It provides information on qualifications held by adults born as far apart as 1933 (now aged 78) and 1984 (now aged 27). The oldest among them completed their initial education in the 1950s, the youngest in the 2000s. These data show clearly that the rise in attainment both at upper secondary and tertiary levels has not only been large but it has been continuous over the entire half-century, spurred by strong and generally rising economic and social outcomes for the better qualified. Among the 34 OECD countries, most of those in which college enrolment expanded the most over the past decades still see rising earnings differentials for college graduates, suggesting that an increase in the supply of highly educated workers does not lead to a decrease in their pay, as is the case among low-skilled workers.

On average across OECD countries, the proportion of people with at least an upper secondary education has risen from 45% to 81%, and the proportion of those with tertiary qualifications has risen from 13% to 37%. The chart suggests that about 7% of the cohort now aged 35-44 have gained tertiary qualifications that they did not have at age of 25-34, and that 4% of individuals have these qualifications at age 45-54 but did not have them at age 35-44. If people now aged 25-34, 37% of whom already have tertiary qualifications, make similar progress in the next two decades, half of this cohort could have tertiary qualifications by the time they reach their middle age.

**Chart 1. Educational attainment, by age and birth cohort (OECD average)**



**Source:** OECD. See Annex 3 for notes ([www.oecd.org/edu/eag2011](http://www.oecd.org/edu/eag2011)).  
**StatLink** <http://dx.doi.org/10.1787/888932478964>

**How to read this chart**

This chart shows the percentage of adults born during a certain time period who have attained a given level of attainment by a particular age – based on reported attainment between 1997 and 2009. Each year shown represents an age cohort in a ten-year period starting with that year: for example 1933 represents people born from 1933 to 1942, inclusive. As a result, the age cohorts shown for successive starting years overlap.

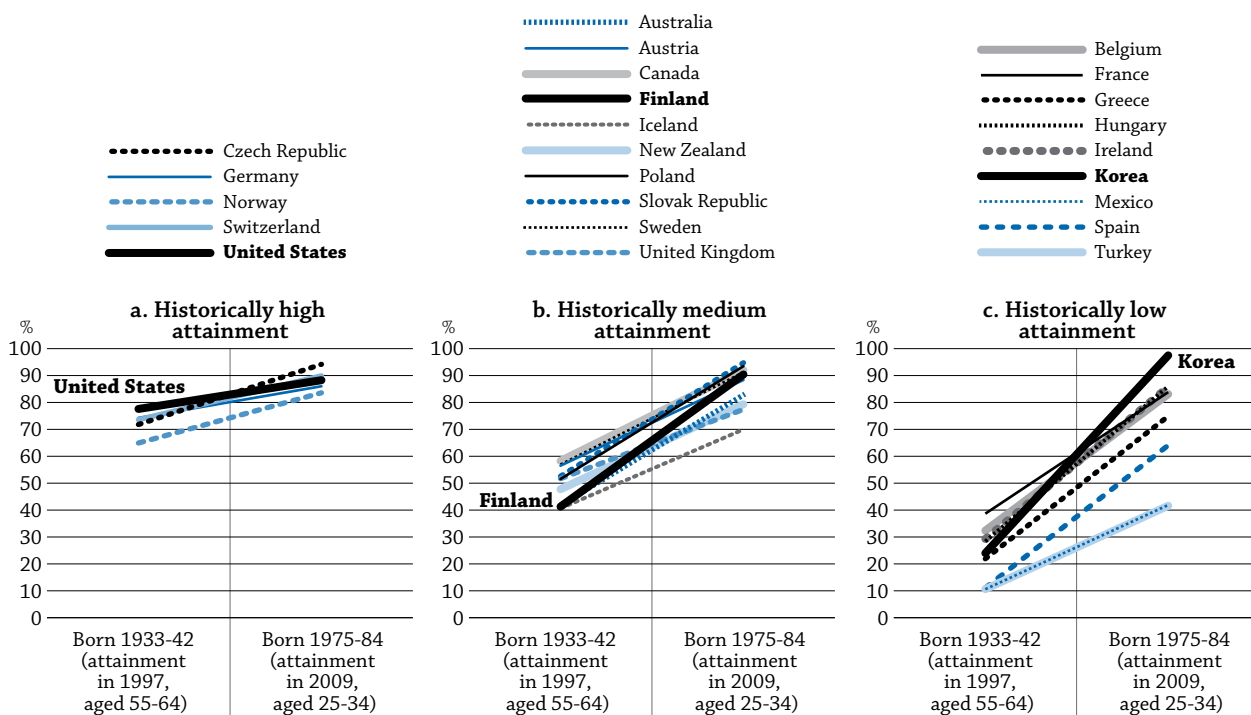
The chart shows that cohorts born in later years have progressively higher levels of attainment, regardless of the age at which this is measured. Measuring attainment at a later age allows for the acquisition of qualifications later in life. However, in most cases where the same cohort reports attainment at different ages (i.e. where the lines overlap), the result is similar. The greatest apparent increase is shown on the bottom right of the chart, for the cohort born in the decade starting in 1965 (now aged 37-46). Of this cohort, 25% reported having a tertiary education in 1999 when they were 25-34, but 32% had this level of education in 2009, when they were ten years older.

(Note, however, that these results do not measure the educational progress of cohorts precisely, because the composition of the age groups changed due to migration and mortality.)

These data also tell us that rates of educational expansion have varied greatly among countries over recent decades. Charts 2 and 3 show the attainment rates for the oldest and youngest cohorts of those shown in Chart 1, by individual countries. Chart 2 shows a general increase in upper secondary education, with those countries that had low attainment levels “catching up” with those that had higher levels of attainment. Now, at least 80% of young adults in all OECD countries complete an upper secondary education. Within this general pattern, the United States has seen only a small improvement, having started out from the highest high-school completion rate, while Finland and Korea transformed themselves from countries where only a minority of students graduated from secondary school to those where virtually all students do.

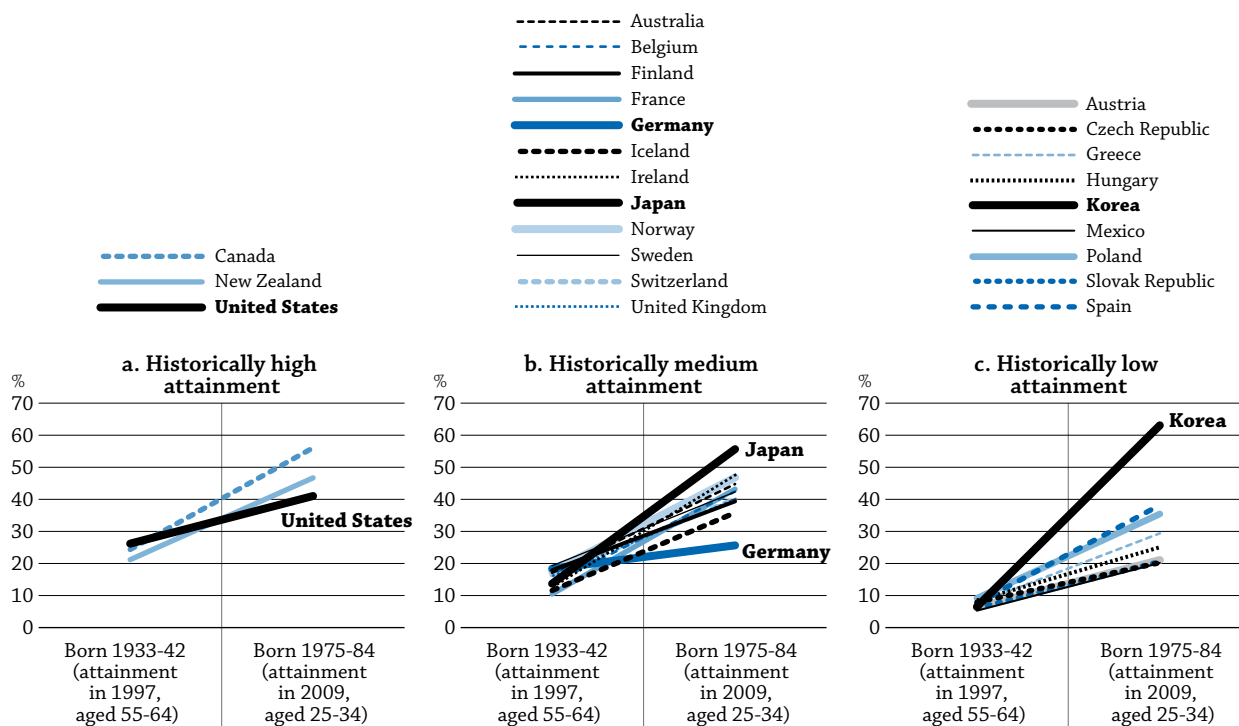
Attainment at the tertiary level varies more by country (Chart 3). The growth rate has been relatively slow in the United States, for example, where attainment was originally relatively high, and in Germany, which had lower levels of attainment. In contrast, Japan and Korea have made higher education dramatically more accessible. In both countries, among the cohort who were of graduation age in the late 1950s and early 1960s (born 1933-42), only about one in ten had tertiary qualifications by late in their working lives. Among younger Japanese and Koreans, who reached graduation age around the turn of the millennium, most now have tertiary degrees. On this measure, Korea has moved from the 21st to the first rank among 25 OECD countries with comparable data.

**Chart 2. Progress in attainment of upper secondary education over half a century, by country**



Source: OECD. See Annex 3 for notes ([www.oecd.org/edu/eag2011](http://www.oecd.org/edu/eag2011)).  
 StatLink <http://dx.doi.org/10.1787/888932478983>

**Chart 3. Progress in attainment of tertiary education over half a century, by country**



Source: OECD. See Annex 3 for notes ([www.oecd.org/edu/eag2011](http://www.oecd.org/edu/eag2011)).  
 StatLink <http://dx.doi.org/10.1787/888932479002>

Half a century ago, employers in the United States and Canada recruited their workforce from a pool of young adults, most of whom had high school diplomas and one in four of whom had degrees – far more than in most European and Asian countries. Today, while North American graduation rates have increased, those of some other countries have done so much faster, to the extent that the United States now shows just over the average proportion of tertiary-level graduates at age 25-34. In Europe, Germany stands out as the country that has made the least progress: it has a population of tertiary graduates only around half the size, relative to its total population, of many of its neighbours’.

### **The OECD and education: An evolving narrative of human capital**

From its inception, the OECD has stressed the importance of human competencies for economic and social development. At the new organisation’s Policy Conference on Economic Growth and Investment in Education, held in Washington, DC in 1961, emerging theories of human capital then being developed by Gary Becker, Theodore Schultz and others were brought centre-stage in the international dialogue. Hard evidence to substantiate these theories did not emerge, however, until the 1980s, with the work on endogenous growth theories by economists such as Paul Romer, Robert Lucas and Robert Barro. They formulated and tested models measuring positive associations between growth at the national level and crude indicators of human capital, especially educational attainment.

The fact that these measured associations remained weak did not surprise analysts of educational outcomes. The level of education that an adult has completed may be a proxy for the competencies that contribute to economic success, but it is a highly imperfect measure. First, each country has its own different processes and standards for accrediting completion of secondary or tertiary education. Second, the knowledge and skills acquired in education are by no means identical to those that enhance economic potential. And third, it has become increasingly evident that to realise human potential in today’s societies and economies, lifelong learning is required, not just an initial period of formal schooling.

Once the association between education and development was made, countries were keen to better understand the nature of education outcomes and to compare them internationally. From the 1970s onwards, the OECD has been in the vanguard of those promoting lifelong learning as a paradigm. More recently, it has formulated broad interpretations of what comprises human capital and the related concept of social capital. It has also developed a comprehensive framework for defining and selecting necessary competencies.

The development of indicators has been central to this process of improved understanding about the outcomes of education, and to the ability of countries to learn from each other about what works. By the mid-1980s, it was evident that the lack of internationally comparable education data was greatly hindering the ability to make valid comparisons or to develop policy conclusions from the experiences of countries with successful education systems. This was a time when national governments were starting to ask themselves new questions about the direction and outcomes of their education systems. The idea that simply getting more people through high school or university was an end in itself was being challenged. Issues of quality and value-for-money arose during periods of shrinking public budgets, when early international tests were starting to show markedly different levels of performance between students in different countries.

These concerns contributed to the 1988 launch of OECD’s Indicators of Education Systems (INES) project – a major effort, managed through a series of OECD networks of national experts, to produce reliable international indicators on a broad range of educational topics. Initially, INES involved standardising existing data on the resources, organisation and participation rates of education systems to make them internationally comparable. Its more ambitious objective of producing new, internationally comparable measures of educational performance was realised more gradually.

The first indicators to emerge from INES were internationally standardised measures of participation in education, such as students enrolled at different levels of education, graduation rates and resources invested per student. But it was only when more direct measures of educational outcomes were developed, which involved testing students and adults, that the effectiveness of investment in education and educational processes could start to be evaluated.

The International Adult Literacy Survey (IALS) in the mid-1990s showed that although adults who have attained higher levels of education have, on average, greater levels of literacy, those with a given level of educational attainment have very different ranges of literacy skills from one country to another. This showed that direct measures of human capital could produce different results from proxy measures based on people's educational experiences and qualifications. Subsequently, IALS was analysed to consider the economic effect of countries' stock of human capital, and identified a substantially stronger relationship between measured literacy levels and economic growth than previous studies had found (Coulombe, *et al.*, *Literacy scores, human capital and growth across fourteen OECD countries*, Statistics Canada, 2004). This confirmed that the effectiveness of education systems should not just be considered in terms of the rate at which they award qualifications, but could be related to the acquisition of measurable competencies.

But it is the OECD's Programme for International Student Assessment (PISA) survey, which tests young people's acquisition of knowledge and skills for life, that is the most powerful and extensive tool for considering educational outcomes and transforming public policy. The triennial PISA surveys, which began in 2000, have shown large differences between what students know and can do in different countries as they near the end of compulsory education.

One of the most common ways of comparing educational quality before PISA existed, spending per student, is shown to be positively associated with outcomes, but explains only about a quarter of the differences among countries. PISA results show that no single aspect of the educational process provides the key to success; but a combination of a range of policies and practices measured in PISA can jointly account for 80% of the variation in school performance among countries. Such findings, combined with existing research in education, have begun to shape policy development. Indeed, the world of education has moved a long way from 1961, when the standards guiding education policy relied principally on national beliefs, based only on precedent and tradition, about what constituted a good education.

### Indicators as a catalyst for change

As the quality of international indicators improves, so does their potential for influencing the development of education systems. At one level, indicators are no more than a metric for gauging progress towards goals. Yet increasingly, they are performing a more influential role. Indicators can prompt change by raising national concern over weak educational outcomes compared to international benchmarks; sometimes, they can even encourage stronger countries to consolidate their positions. When indicators build a profile of high-performing education systems, they can also inform the design of improvements for weaker systems.

The "shock" effect of international comparisons on educational reform is nothing new. Reforms in the United States following the publication of *A Nation at Risk* in 1983 were partly triggered by evidence from international tests showing that American students were lagging behind. However, while such early international comparisons acted as a "wake-up call", they offered few clues about solutions, and reforms were designed mainly against national analyses of what was wrong with the education system. In contrast, when PISA published its first results in 2001 showing that German students were performing below the OECD average, the initial shock in Germany was swiftly followed by an outward-looking response: a determination to emulate successful practices that work elsewhere. The education system was reviewed in light of internationally comparable data, internationally benchmarked national standards were introduced, and evidence-based practices were emphasised.

More systematic analysis suggests that the uses and impact of the OECD's education indicators are varied:

- By showing what is possible in education, the indicators have helped countries not just to optimise existing policies but also to reflect on what lies behind them. This involves questioning, and sometimes changing, the paradigms and beliefs that underlie current policies.
- The indicators have helped countries to set policy targets as measurable goals achieved by other systems, identify policy levers and establish trajectories for reform.
- Using the indicators as a reference, countries can better gauge the pace of progress in education and review how education is delivered at the classroom level. The indicators show that while educational reform may be politically difficult to initiate, the benefits almost inevitably accrue to successive governments if not generations.

### Opening eyes and minds to new possibilities

Indicators have a particularly powerful impact when they contradict the self-perception of a national education system, and therefore challenge the beliefs and assumptions that guide it. The impact of the PISA survey in Germany was strong not just because the country's initial performance in the survey was below average, but also because those results prompted a rethink of the assumption that the system produced socially equitable outcomes (Box 1). Governments in a number of countries have used PISA results showing their relative standing internationally as a starting point for a peer review to study the policies and practices of countries in similar circumstances that achieve better results.

#### **Box 1. Germany rethinks its assumptions about education and social equity**

Before PISA, equity in learning opportunities across schools in Germany had often been taken for granted, as significant efforts were devoted to ensuring that schools were adequately and equitably resourced. The PISA 2000 results, however, revealed large socio-economic disparities in educational outcomes between schools. Further analysis linked this in large part to the tendency for students from more privileged social backgrounds to attend more prestigious academic schools and those from less privileged social backgrounds to attend less prestigious vocational schools, even when their performance on the PISA assessment was similar. This raised concern that the education system was reinforcing rather than moderating the influence of socio-economic background on student performance. These results, and the ensuing public debate, inspired a wide range of equity-related reform efforts in Germany, some of which have been transformational in nature. These include: giving an educational orientation to early childhood education, which had hitherto been considered largely an aspect of social welfare; establishing national educational standards in a country where regional and local autonomy had long been the overriding paradigm; and enhancing support for disadvantaged students, such as students from immigrant backgrounds.

For many educators and experts in Germany, the socio-economic disparities that PISA had revealed had not been surprising. That disadvantaged children would do less well in school was often taken for granted and outside the scope of public policy discussions. The fact that PISA revealed that the influence of socio-economic background on students and school performance varies so considerably across countries, and that other countries appeared to moderate socio-economic disparities so much more effectively, showed that improvement was possible and provided the momentum for policy change.

As international benchmarks, such as PISA, are disseminated more widely, the debate about improving education moves from a circle of specialised experts to a larger public. Indicators make international comparisons both accessible and powerful. As students will now compete in a global economy, people realise that their country's educational performance must exceed average levels if their children are to earn above-average wages later on.

### Putting national targets into a broader perspective

The OECD education indicators have also played an important role in putting national performance targets into perspective. If the percentage of students who perform well in school increases, some will claim that the school system has improved; others will claim that standards must have been lowered. Behind the suspicion that better results reflect lowered standards is often a belief that overall performance in education cannot be improved. International benchmarks enable countries to relate those perceptions to a wider reference framework by allowing schools and education systems to look at themselves through the prism of the performance of schools and education systems in other countries. Some countries have actively embraced this perspective and, for example, established PISA-based performance targets for their education systems.

### Assessing the pace of change in educational improvement

International comparisons also provide a frame of reference to assess the pace of change in educational development. While a national framework allows countries to assess progress in features such as expanded



participation in absolute terms, the OECD's education indicators have allowed countries to assess whether that progress matches the pace of change observed elsewhere. Indeed, as noted earlier, all education systems in the OECD area have seen quantitative growth in attainment over past decades; but international comparisons reveal that the pace of change in educational output has varied markedly, such that the relative standing of countries on many indicators is now very different from that two decades ago.

### Helping to make reform happen

Last but not least, international benchmarks can help make reform happen. At its most straightforward, this can take the form of creating a public clamour for improved standards that politicians and administrators cannot ignore. However, the pressure to improve systems does not always come via public opinion. In Mexico, the PISA results contradicted the view of parents that the education system was serving their children well, by showing how far standards lag behind OECD norms (Box 2). In Japan, PISA has shown weaknesses in a generally strong system, and thus helped justify to parents and the public why the existing style of education in Japan needs to be adapted (Box 3).

#### **Box 2. Mexican reform based on PISA benchmarks**

In the 2007 Mexican national survey of parents, 77% of those interviewed reported that the quality of education services provided by their children's school was good or very good even though, measured by OECD's PISA 2006 assessment, roughly half of the Mexican 15-year-olds who were then enrolled in school performed at or below the lowest level of proficiency established by PISA (IFIE-ALDUCIN, 2007; OECD, 2007a). There may be many reasons for such a discrepancy between perceived educational quality and performance on international benchmarks. For example, the education services that Mexican children receive are significantly better than those that their parents received. Still, justifying the investment of public resources into areas for which there seems no public demand poses challenges to reform. One response by the Mexican President has been to include a "PISA performance target" in the new Mexican reform plan. This internationally benchmarked performance target, which is to be reached by 2012, will highlight the gap between national performance and international standards and monitor how educational improvement can help close that gap. It is associated with the introduction of support systems, incentive structures and improved access to professional development to assist school leaders and teachers in meeting the target. Much of the reform draws on the experience of other countries. Brazil has taken a similar route, providing each secondary school with information on the amount of progress that is needed to perform at the OECD average level on PISA by 2021.

#### **Box 3. Japan adapts assessment style to mirror PISA**

Japan is one of the best-performing education systems. However, PISA revealed that while students tended to do very well on tasks that require reproducing subject content, they did much less well on open-ended tasks requiring them to demonstrate their capacity to extrapolate from what they know and apply their knowledge in novel settings. Convincing parents and a general public who are used to certain types of tests is difficult. One policy response in Japan has been to incorporate "PISA-type" open-constructed tasks into the national assessment, coupled with corresponding changes in curriculum and instructional practices. The aim of doing so is to ensure that skills that are considered important become valued in the education system. And indeed, a decade later, PISA outcomes in these areas had improved markedly. Like Japan, Korea has made PISA tasks part of national assessments, incorporating them into university entrance examinations, in order to build the capacity of its students to access, manage, integrate and evaluate written material. In both countries, these are fundamental changes that would have been much harder to imagine, much less achieve, without evidence from PISA.

### Unfinished business

The OECD education indicators and related analyses cannot provide a blueprint for educational reform: the OECD's analysis is always careful not to imply that any one factor associated with strong performance can provide the single key to improvement. However, as the evidence base grows, the combination of factors indicative of strong education systems is becoming clearer. More fundamentally, the emergence of international standards has stopped education from being delivered in largely "closed" national systems. International indicators have made education systems more outward-looking. Moreover, as countries compete to excel in a knowledge-oriented global economy, international benchmarks allow them to track the evolution of the level of skills and knowledge of their own populations compared to those of their competitors.

As a result, the past 50 years have brought a fundamental transformation, not just in the level of educational activity but in how educational outcomes are monitored. The size of the investment in education is now too big, and its benefits too central to the success of economies and societies, for the design of effective education systems to take place in the dark. With economic competition now global, countries can no longer afford to measure their education systems against national standards. The OECD has recognised from the outset that education plays a central role in economic development; today, the Organisation is better equipped than ever to both track and support that role.



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**From:**  
**Education at a Glance 2011**  
OECD Indicators

**Access the complete publication at:**  
<https://doi.org/10.1787/eag-2011-en>

**Please cite this chapter as:**

Gurría, Angel (2011), "Editorial", in OECD, *Education at a Glance 2011: OECD Indicators*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/eag-2011-2-en>

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