Measuring Innovation in Education
United States Country Note

In this country note:

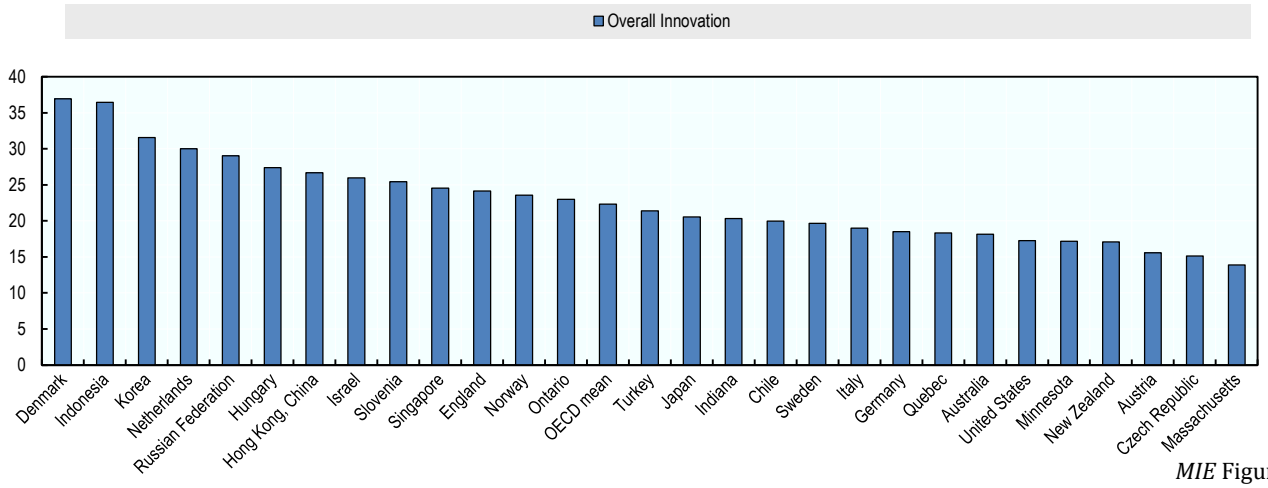
The purpose of the *Measuring Innovation in Education* report

The ability to measure innovation is essential to an improvement strategy in education. Knowing whether, and how much, practices are changing within classrooms and educational organisations, how teachers develop and use their pedagogical resources, and to what extent change can be linked to improvements would provide a substantial increase in the international education knowledge base.

The OECD *Measuring Innovation in Education* report offers new perspectives to address this need for measurement in educational innovation through a comparison of innovation in education to innovation in other sectors, identification of specific innovations across educational systems, and construction of metrics to examine the relationship between educational innovation and changes in educational outcomes. This country brief provides a short overview of the key findings of the report, as well as the top five US pedagogic and organisational innovations identified in this report.

Key findings on innovation in education – did you know?

Overall composite innovation index, 2000-2011



MIE Figure 17.1

- In education, innovation can take place through either significant changes in the use of a particular educational practice or the emergence of new practices in an educational system.
- Contrary to common belief, there is a fair level of innovation in the education sector, both relative to other sectors and in absolute terms.
- Within education, innovation intensity is greatest in higher education, with secondary and primary education approximately equal.
- Compared to other sectors, knowledge and method innovation is above average in education, product and service innovation is below average, and technology innovation is at the average sectorial level.
- In Europe, higher education stands out in terms of speed of adopting innovation compared to the economy average as well as the rates in primary and secondary education.

- There have been large increases in innovative pedagogic practices across all countries studied for this report in areas such as relating lessons to real life, higher order skills, data and text interpretation and personalisation of teaching.
- In their pedagogic practice, educators have innovated in their use of assessments and in the accessibility and use of support resources for instruction.
- Educational organisations have innovated in the areas of special education, creation of professional learning communities for teachers, evaluation and analytics and relationship building with external stakeholders, such as parents.
- In general, countries with greater levels of innovation see increases in certain educational outcomes, including higher (and improving) 8th grade mathematics performance, more equitable learning outcomes across ability and more satisfied teachers.
- Innovative educational systems generally have higher expenditures than non-innovative systems; however, their students are no more satisfied than those in less innovative systems.

Approach to measuring system innovations

While *Measuring Innovation in Education* identifies and analyses hundreds of innovations at the classroom and organisational levels, this brief identifies the top five US innovations in pedagogic and organisational practices between 2003 and 2011. To determine each educational system's top five innovations in pedagogic and organisational practices, data from three international education datasets – Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), and the Programme on International Student Assessment (PISA) – were analysed to identify the areas in which each education system has demonstrated emerging or changing organisational and pedagogic practices over a specific period. For a full description of the data and methods used for analysis in this report, see report Annex A: Data Sources and Methods.

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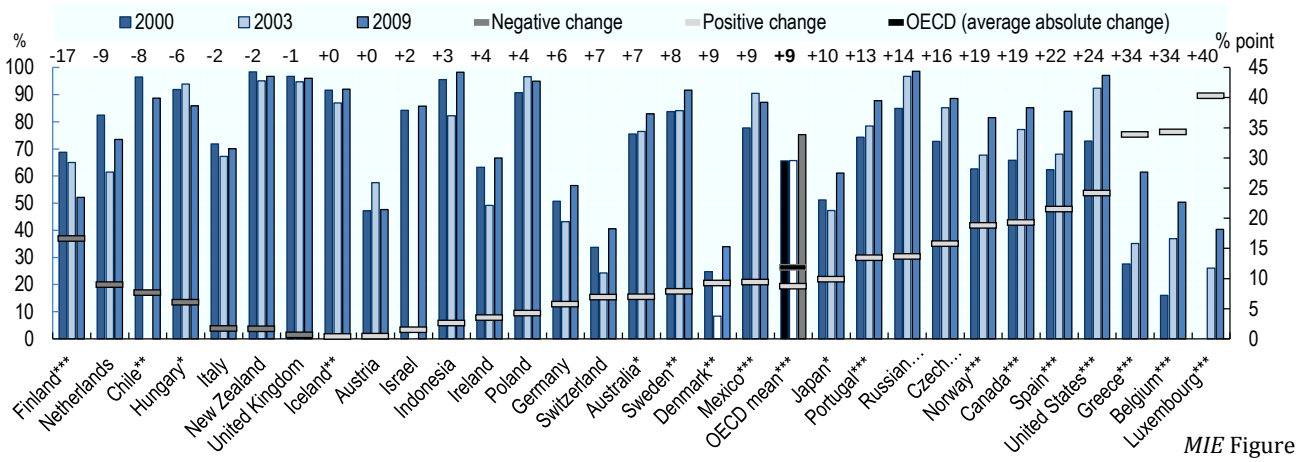
Country Note Authors:	**Questions can be directed to:**
Dara Fisher	Stéphan Vincent-Lancrin
Dara.Fisher@oecd.org	Stephan.Vincent-Lancrin@oecd.org
Stéphan Vincent-Lancrin	
Stephan.Vincent-Lancrin@oecd.org	

The United States' top five innovations in organisational policy and practice:

(1) More use of student assessments for monitoring school progress…

Percentage of 15-year old students in schools where assessments are used for monitoring progress from year to year and change over time



MIE Figure 14.3

The United States' top organisational innovation was the use of student assessments for monitoring progress over time. Between 2000 and 2009, the United States saw a 24% point difference in the percentage of 15-year old students in schools where assessments are used for monitoring progress from year-to-year; as of 2009, over 97% of all American secondary students were enrolled in schools using this practice.

(2) More use of assessments for national or district benchmarking…

The United States also demonstrated innovation in education through changes in the use of student assessments for district or national benchmarking. Between 2000 and 2009, the percentage of US 15-year olds in schools where assessments are used for comparing school to district or national performance increased by 23% points, to over 95% in 2009.

(3) More use of assessment data to inform parents of student progress…

Between 2000 and 2009, the percentage of 15-year old students in the United States in schools where achievement data is tracked over time by an administrative authority increased by 20.7% points, from 76.2% to 96.9%. This increase was the largest in this metric of any educational system analysed for this report; in contrast, the OECD average change over the same period was 1% point.

(4) More external evaluation of secondary school classrooms…

US secondary schools underwent more frequent observations of teachers' practices by inspectors or other persons external to the school. Between 2003 and 2011, the United States saw a 20% point difference in the percentage of 8th grade mathematics students in schools in which observations by external evaluators were used to evaluate the practices of their teachers and an 18% point difference in 8th grade science students experiencing the same phenomenon.

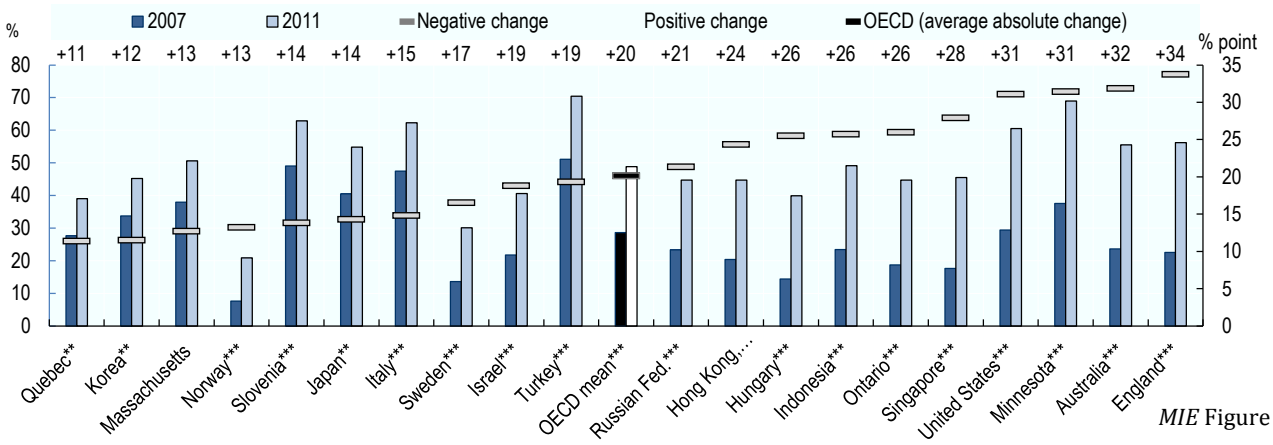
(5) More parental service on secondary school committees…

Innovation in parental involvement can be indicated through increases in parental invitations to join school committees at either the primary or the secondary level. Between 2003 and 2007, invitations for parental participation in 8th grade school committees in the United States saw a significant increase of 15% points, an increase well above the OECD average difference in this metric, which saw no change over the same period.

The United States' top five innovations in pedagogic practice:

(1) More observation and description in secondary school science lessons…

Percentage of 8th grade science students whose teachers ask them to observe and describe natural phenomena in at least half their lessons and change over time



MIE Figure 6.13

The United States' top pedagogic innovation was the requirement that students explain and elaborate on their answers during secondary school science lessons, which enhances students' curiosity and scientific communication skills. Between 2007 and 2011, according to teachers, the United States saw a 31% point increase in the percentage of students asked to observe and describe natural phenomena during 8th grade science lessons, compared to a mean difference of 20% points for OECD countries over the same period.

(2) More individualised reading instruction in primary school classrooms…

Change in the use of individualised instruction is one indicator of educational innovation at the primary school level. Between 2001 and 2011, the United States saw a 27% point increase in the proportion of 4th grade students whose teachers always or almost always use individualised instruction for reading, the fourth-largest change of any educational system examined in this report.

(3) More use of answer explanation in primary mathematics…

Innovation in the form of an increase in the practice of asking students to elaborate on their answers occurred in primary mathematics classes in the United States. Between 2003 and 2011, the proportion of students explaining answers during 4th grade math lessons increased by 17% points (based on teacher reporting), the sixth-largest gain in this metric of any system included in this report. Over the 2007 to 2011 period, US students reported a 6% point gain for this metric, confirming the positive change.

(4) More relating of primary school lessons to everyday life…

Between 2007 and 2011, based on teacher reports, the United States experienced a 17% point increase in the percentage of 4th grade mathematics students whose teachers ask them to relate what they learn in class to their daily life in at least half of their lessons. Between 2003 and 2011the share of 4th grade science students whose teachers ask them to relate what they learn in class to their daily life also increased by 13% points.

(5) More text interpretation in primary lessons…

Finally, US students were asked to interpret text in 4th grade reading lessons to a greater extent than before. Between 2001 and 2011, the percentage of students whose teachers ask them to make generalisations and draw inferences from a text one or more times per week increased by 9% points, to 98%. Having become nearly universal, this practice increased less in the US than the OECD mean increase (16% points).