

In this system note:

- Background on the 2014 OECD *Measurement of Innovation in Education* report (p. 1)
- Key report findings on innovation in education (p. 1)
- Report approach to measuring educational system innovation (p. 2)
- Sweden’s top five organisational education innovations, 2003-2011 (p. 3)
- Sweden’s top five pedagogic education innovations, 2003-2011 (p. 4)

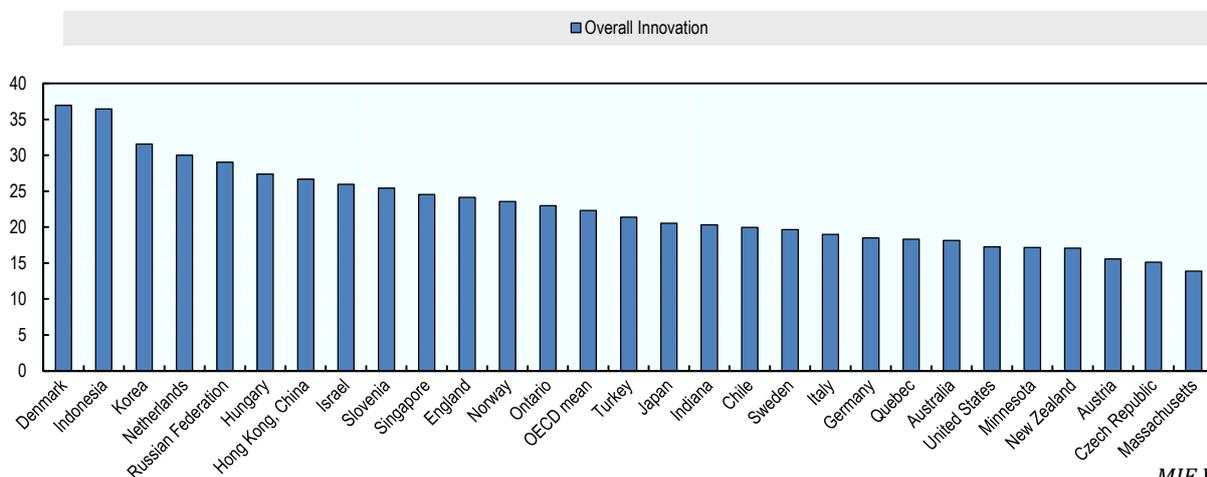
The purpose of the *Measuring Innovation in Education* report

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 pedagogic and organisational innovations in Sweden as identified by 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 innovations in pedagogic and organisational practices in Sweden 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.

Please cite this publication as: OECD (2014), *Measuring Innovation in Education: A New Perspective*, Educational Research and Innovation, OECD Publishing. <http://dx.doi.org/10.1787/9789264215696-en>

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Note regarding data from Israel

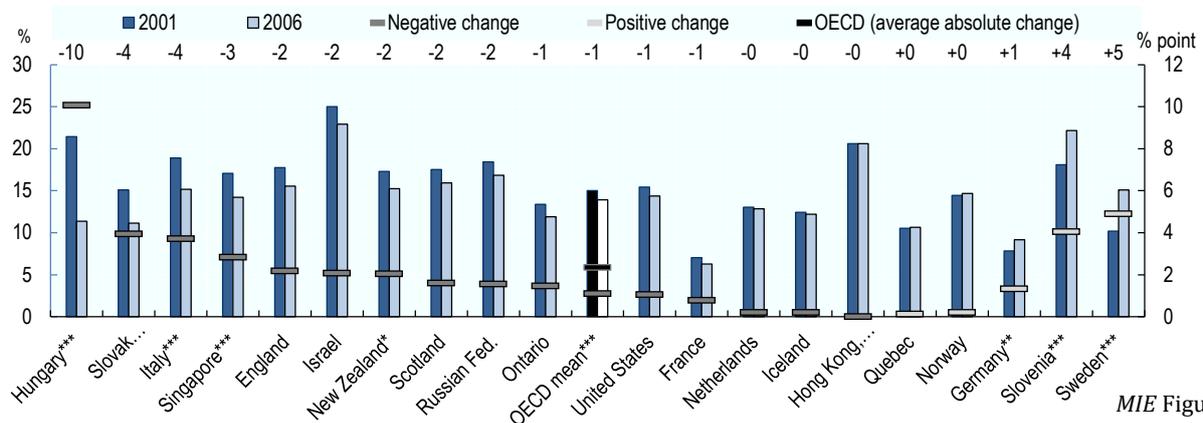
The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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Sweden's top five innovations in organisational policy and practice:

(1) More principal engagement in primary-level curriculum development...

Percentage of primary school principals' time devoted to developing curriculum and pedagogy in their school and change over time



MIE Figure 14.6

In primary education, a major innovation in Sweden was an increase in the proportion of principals' time dedicated to curriculum and pedagogy development. Between 2001 and 2006, the percentage of principals' time devoted to developing curriculum and pedagogy in their school increased by 5% points, well above the OECD mean decrease of -1% points over the same period and the largest change observed in any educational system included in this report.

(2) More peer evaluation of teachers in secondary education...

Another top innovation in Swedish secondary schools is the increased use of teacher peer review. The country saw significant changes in peer review evaluation of teacher practices for both 8th grade mathematics and science classrooms (increases by 16% points and 18% points, respectively, between 2003 and 2011).

(3) More use of student assessments for monitoring school progress...

Between 2000 and 2009, Sweden saw an 8% point difference in the percentage of 15-year old students in schools where assessments are used for monitoring progress from year-to-year. Although significant, this change was lower than the OECD average change over the same period, which was an increase of 9% points.

(4) More parental involvement in school projects, programs and trips...

In secondary education, another major innovation was increased parental volunteering in projects, programmes or trips in their child's school. Between 2003 and 2007, parents of 8th grade students in Sweden saw an increase of 9% points in the frequency of invitations to volunteer for projects, programmes and trips, the fourth-largest change in this metric of any educational system included in this report.

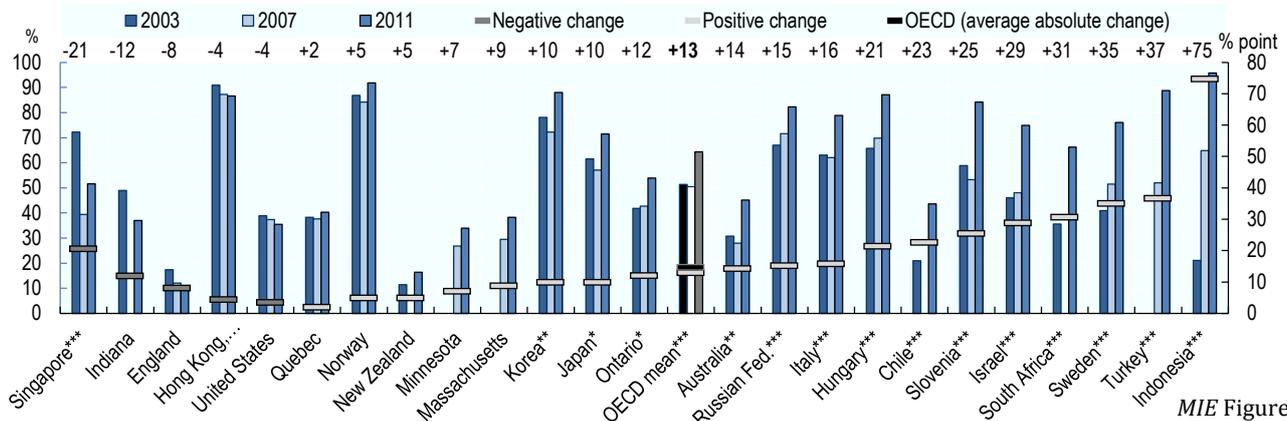
(5) More external evaluation of secondary school classrooms...

Swedish secondary schools underwent frequent observations of teachers' practices by inspectors or other persons external to the school. Between 2003 and 2011, Sweden saw a 6% 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 a 5% point difference in 8th grade science students experiencing the same phenomenon. Both of these increases were less than the OECD average changes in this metric over the same period, which were 9% points for 8th grade mathematics students and 8% points for 8th grade science students.

Sweden's top five innovations in pedagogic practice:

(1) More use of textbooks as primary resources in secondary classrooms...

Percentage of 8th grade science students whose teachers use textbooks as a basis for instruction and change over time



MIE Figure 8.2

Sweden's top pedagogic innovation was the use of textbooks as primary resources in 8th grade maths and science instruction. Between 2003 and 2011, the percentage of Swedish 8th grade students whose teachers use textbooks as a primary basis for mathematics instruction increased by 7% points, while the use of textbooks as primary resources in 8th grade science increased by 35% points. While this change in practice for 8th grade science is far higher than the OECD average difference over the same period (13% points), the Swedish change in textbook use for 8th grade science is lower than the mean difference for OECD countries (9% points).

(2) More use of explanation in primary and secondary science lessons...

Teachers in Sweden reported significant increases in the extent to which students explain what they are studying during primary and secondary science lessons. Between 2007 and 2011, the percentage of 8th grade students whose science teachers ask them to explain what they are studying in at least half their lessons rose from 54.8% to 74.3%; for 4th grade science, this value over the same period rose from 34.9% to 64.6%.

(3) More observation and description in secondary science lessons...

Between 2007 and 2011, the percentage of students whose teachers ask them to observe and describe natural phenomena in at least half their science lessons. This difference was slightly smaller than the OECD mean change over the same period, which was 20% points.

(4) More relating of secondary mathematics lessons to everyday life...

Between 2003 and 2011, Swedish teachers reported an 18% point increase in the percentage of 8th 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 rose by 18% points, according to teachers. Between 2003 and 2007, Swedish students reported a similar 14% point increase in this metric. Both of these reported changes were greater than the OECD average differences in these metrics over the same periods.

(5) More use of answer explanation in secondary mathematics...

Finally, between 2003 and 2007, Sweden experienced a 6% point increase in the proportion of students whose teachers ask them to explain their answers in at least half their 8th grade mathematics lessons, according to students. Over the same period, Swedish teachers reported a 16% point difference in this metric, confirming the direction of the change.