Measuring Innovation in Education
England System Note

In this system note:

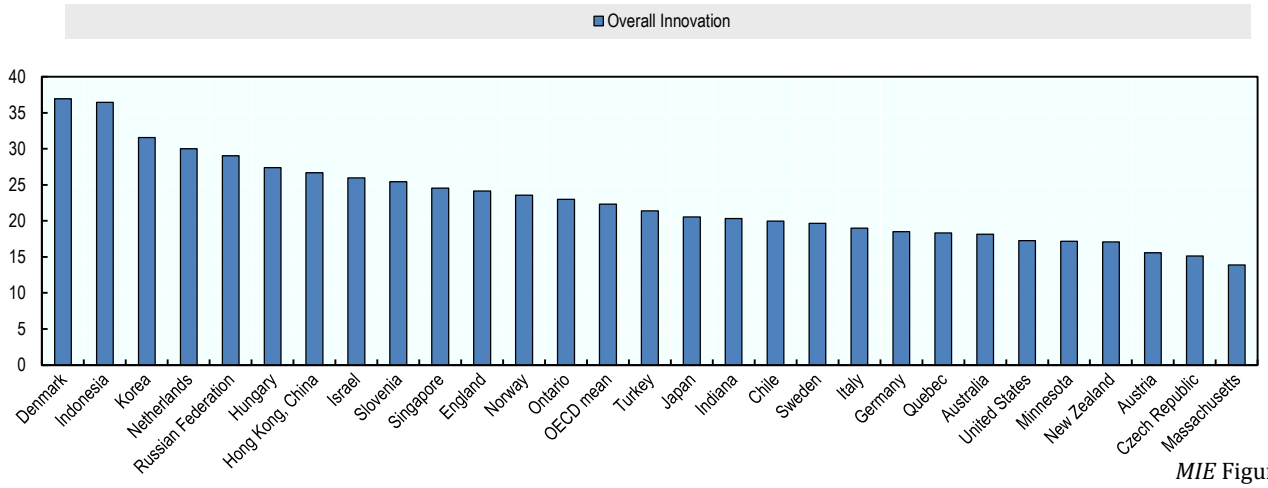
The purpose of the *Measuring Innovation in Education* report

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 English 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 English 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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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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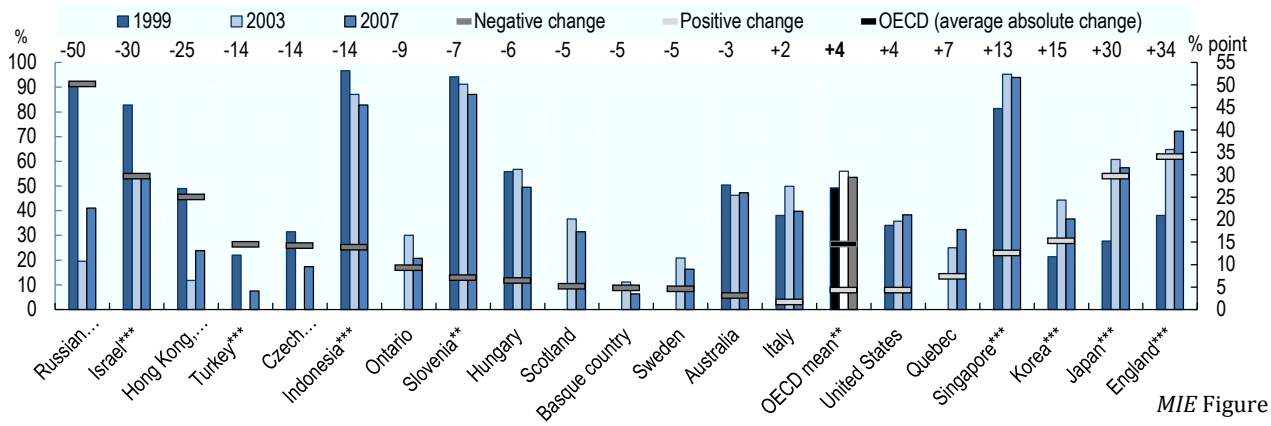
England's top five innovations in organisational policy and practice:

(1) More remedial mathematics and science education in secondary schools…

One of the top innovations in English secondary schools is the availability of remedial education in math and science. Between 1999 and 2007, the proportion of 8th grade students in schools offering remedial mathematics education increased by 33% points, while the proportion of 8th grade students in schools offering remedial science education increased by 37% points. These increases are both higher than the average change in remedial education for OECD countries, which was 14% points for mathematics and 4% points for science.

(2) More enrichment education in primary and secondary schools…

Percentage of 8th grade students in schools that offer enrichment science and change over time



MIE Figure 12.7

England stands out as one of the two education systems studied in this report where innovation took the form of increased enrichment education provision in several education levels or disciplines simultaneously. In 8th grade, the percent of English students enrolled in schools with enrichment mathematics and science education programs rose by 31% points and 34% points, respectively, from 1999 to 2007. The English educational system also saw a gain from 2003 to 2007 in the percentage of 4th grade students enrolled in schools with mathematics and science enrichment, with changes of 7% points and 15% points, respectively, over this period.

(3) More external evaluation of primary and secondary school classrooms…

Teachers in England underwent frequent observations of their practices by inspectors or other persons external to the school. Between 2003 and 2011, England saw a 7% point increase in the percentage of 4th grade students in schools in which observations by external evaluators were used to evaluate the practices of their teachers. Over the same period, 8th grade science and mathematics students saw respective 21% point and 20% point increases in this metric.

(4) More peer discussions amongst secondary mathematics teachers…

Between 2003 and 2011, the level of peer-to-peer discussion amongst 8th grade mathematics teachers to exchange pedagogic ideas increased by 17% points. Of the educational systems analysed in this report, England saw the third-largest change in this metric, after Slovenia (+21% points) and Israel (+24% points).

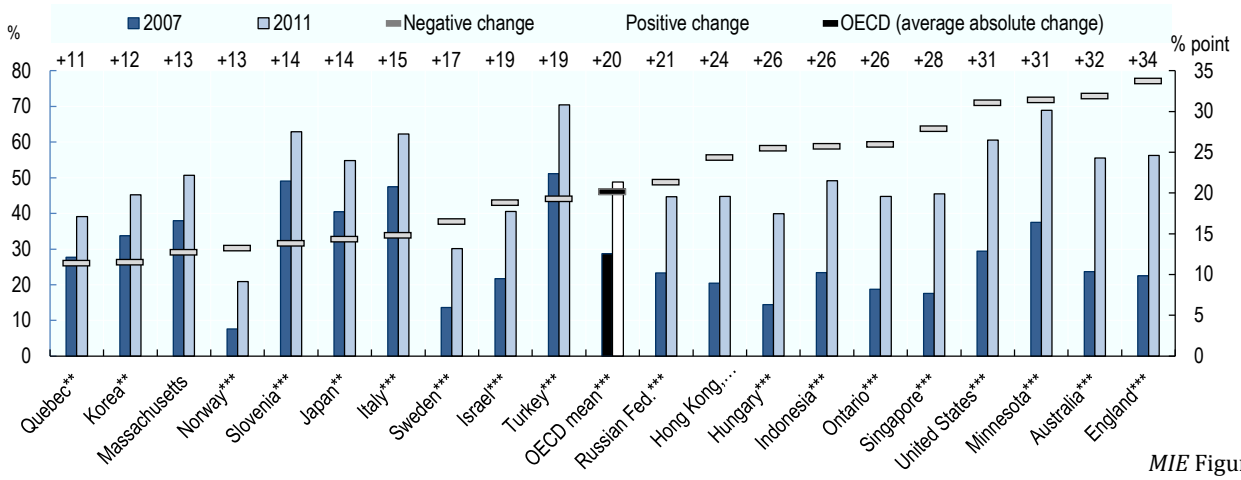
(5) More teacher observations of primary school classrooms…

While still limited, primary school teacher observations of other classrooms to learn about teaching practices is a new, emerging practice in England. Between 2003 and 2011, the percentage of 4th grade students in England who had a teacher that observed other classrooms one or more times per week increased by 8% points, slightly above the OECD average difference over this period of 6% points.

England's top five innovations in pedagogic practice:

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

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



MIE Figure 6.13

England's top pedagogic innovation is the requirement that students explain and elaborate on their answers during secondary school science lessons, which may enhance students' curiosity and scientific communication skills. Between 2007 and 2011, England saw a 34% point increase in teacher reports of observing and describing natural phenomena during 8th grade science lessons, compared to a mean difference of 20% points of OECD countries over the same period.

(2) More self-directed experiments in secondary science lessons…

Between 2001 and 2011, 8th grade teachers in England reported a 26% point increase in the percentage of students whose teachers ask them to design or plan experiments or investigations at least once a month. This change was greater than the mean OECD country change over the same period (a 7% point increase) and the second-largest change of all educational systems analysed in this report, after Minnesota's 29% point increase.

(3) More group work in secondary mathematics classrooms…

Another of England's top pedagogic innovations is the practice of using group work as a classroom activity in secondary mathematics classrooms. Between 2003 and 2007, 8th grade students in England reported an 18% point increase in the proportion of students working together in small groups in mathematics lessons. In contrast, the OECD average change in this metric over this period was 13% points.

(4) More relating of lessons to real life in secondary school science…

Over the period of interest, England also saw increases in the practice of relating content in secondary science lessons to students' daily life. Between 2003 and 2011, England saw an 18% point difference in teacher reports of the percentage of 8th grade students whose science teachers ask them to relate what they learn in class to their daily life; between 2003 and 2007, English students self-reported an increase of 5% points in this metric.

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

Finally, England also saw change in the use of individualised instruction at the primary school level. Between 2001 and 2011, England saw a 17% point increase in the proportion of 4th grade students whose teachers always or almost always use individualised instruction for reading, slightly above the OECD average change of 11% points over the same period.