Measuring Innovation in Education
Australia Country Note

In this country note:

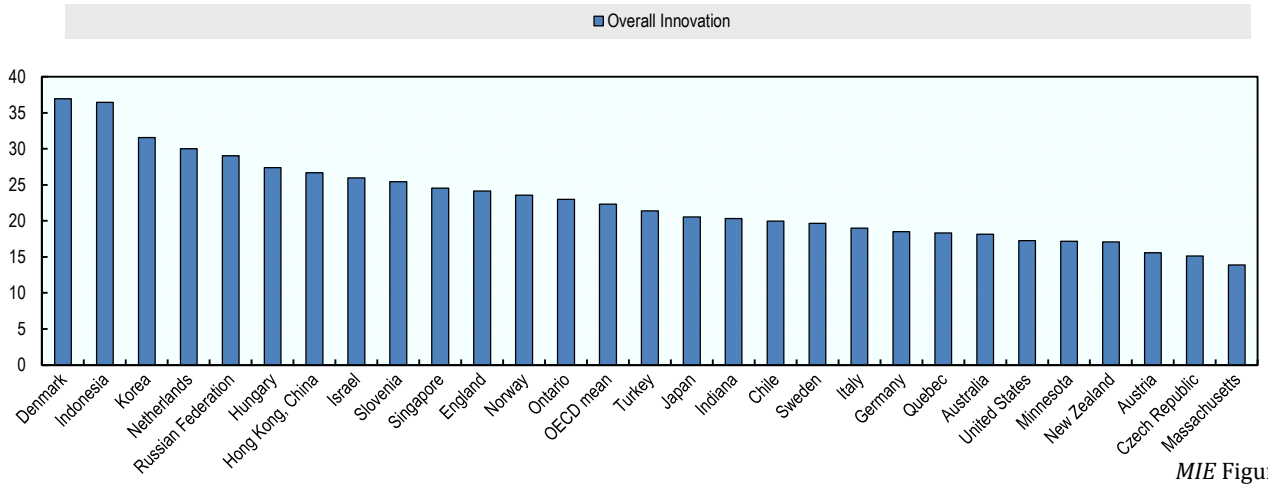
The purpose of the *Measuring Innovation in Education* report

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 Australian 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 Australian 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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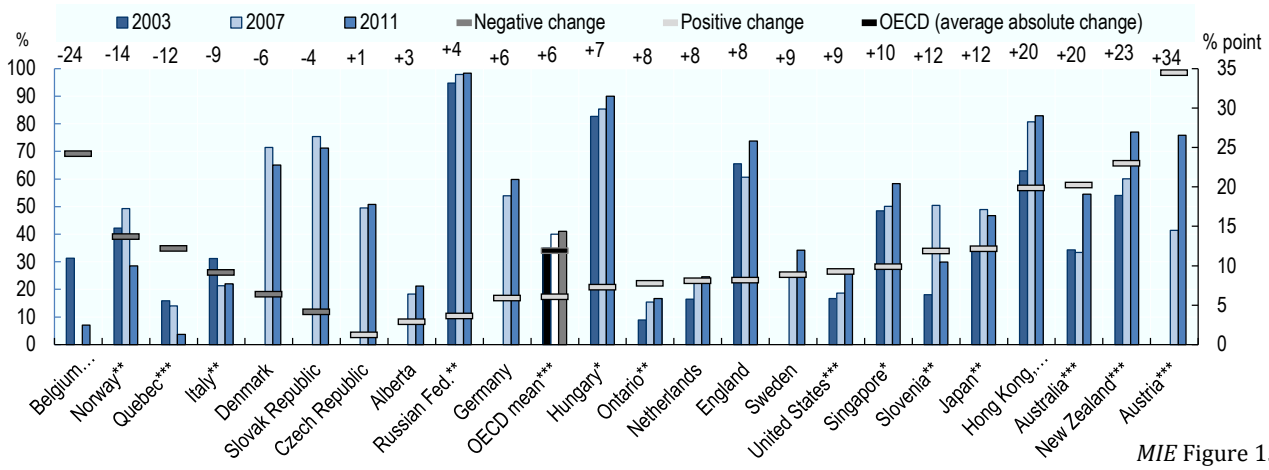
Australia's top five innovations in organisational policy and practice:

(1) More peer evaluation of teachers in primary and secondary education…

Percentage of 4th grade students in schools in which peer review is used to evaluate the practice of teachers and change over time



MIE Figure 15.9

One of the top innovations in Australian primary and 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 20% points and 19% points, respectively, between 2003 and 2011). In addition, significant changes were observed in peer review evaluation of teachers' practices in 4th grade, with an observed difference of 20% points in the same period.

(2) More external evaluation of primary school classrooms…

Australian primary schools underwent frequent observations of teachers' practices by inspectors or other persons external to the school. Between 2003 and 2011, Australia saw a 13% point difference in the percentage of students in schools in which observations by external evaluators were used to evaluate the practices of their teachers.

(3) More parental involvement in school projects, programmes and trips…

In both primary and secondary education, another major innovation was increased parental volunteering in projects, programmes or trips in their child's school. Between 2003 and 2007, parents in Australia saw an increase of 7% points in the frequency of invitations to volunteer for projects, programmes and trips.

(4) More parental service on school committees…

Innovation in parental involvement can also 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 Australia saw a significant increase of 7% points; over the same period, invitations for parental participation in 4th grade committees increased by 3% points.

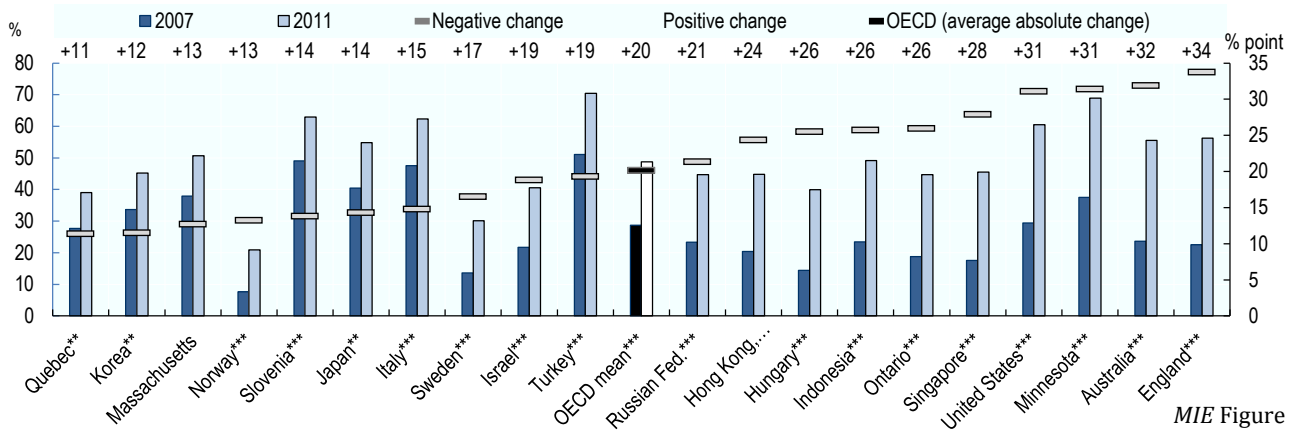
(5) More comparative information provided to parents…

Between 2006 and 2009, Australia saw an increase of 10% points in the proportion of 15-year old students in schools that provide information to parents on their child's academic performance relative to other students in the school. This type of feedback can be informative and helpful to parents in assessing their children's achievement within their school context.

Australia's top five innovations in pedagogic practice:

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

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



MIE Figure 6.13

Australia's top pedagogic innovation is the requirement that students explain and elaborate on their answers during secondary school science lessons, which may enhance their curiosity and scientific communication skills. Between 2007 and 2011, Australia saw a 32% 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 use of answer explanation in primary and secondary mathematics…

Innovation in the form of an increase in the practice of asking students to elaborate on their answers occurred in mathematics classes across levels in Australia. Between 2003 and 2011, Australian teachers reported a 21% point increase in students explaining answers during 8th grade math lessons and a 23% point increase in students explaining answers during 4th grade math lessons.

(3) More use of texts as supplementary resources in primary school science…

The use of textbooks as supplementary resources for primary education instruction also increased in Australia from 2003 to 2011. When textbooks are used as supplementary – as opposed to primary – materials in the classroom, students may be exposed to more diverse teaching practices, illustrating potential innovation in pedagogical methods. Between 2003 and 2011 Australia saw a difference of 20% points in the percentage of 4th grade students whose science teachers use textbooks as a supplementary resource in the classroom.

(4) More self-direction in complex decision-making in secondary mathematics…

Innovation in the classroom has also resulted in a change in the use of student self-directed work during lessons in secondary education. Between 2001 and 2011, Australian teachers reported a 22% point increase in the percentage of 8th grade students whose teachers ask them to decide on their own procedures for solving complex problems in at least half of their mathematics lessons.

(5) More active learning in secondary science lessons…

Finally, between 2007 and 2011, Australia saw a 17% point difference in teacher reports of the percentage of students who are asked to explain what they are studying in at least half of their science lessons, a metacognitive practice that fosters understanding and scientific communication. Of the educational systems examined in this report, Australia saw the fifth-largest increase in this metric over the relevant period.