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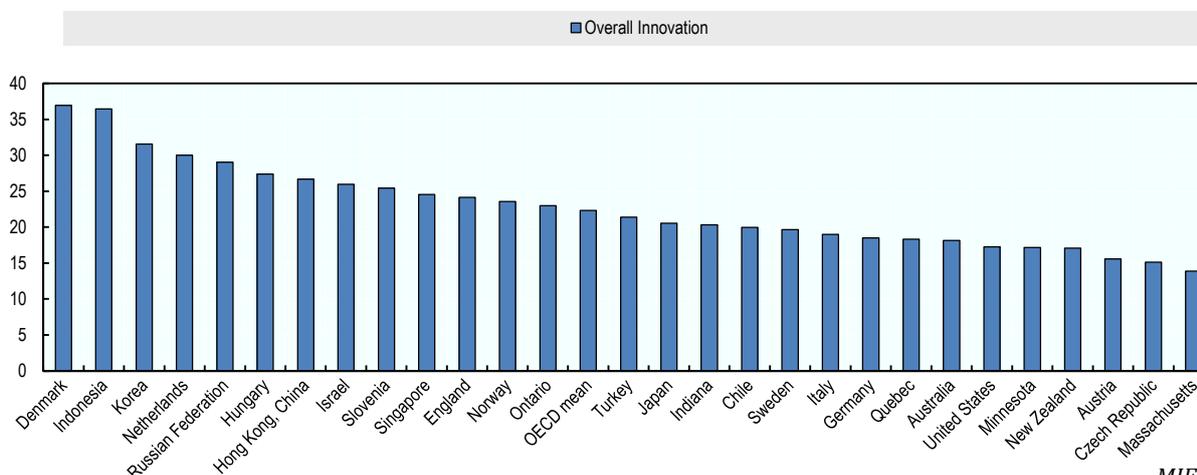
The purpose of the *Measuring Innovation in Education* report

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 brief provides a short overview of the key findings of the report, as well as the top pedagogic and organisational innovations in Québec (Canada) 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 change 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 innovations in pedagogic and organisational practices in Québec between 2003 and 2011. To determine each educational system's top 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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Québec's top innovations in organisational policy and practice:

(1) More external evaluation of primary and secondary school classrooms...

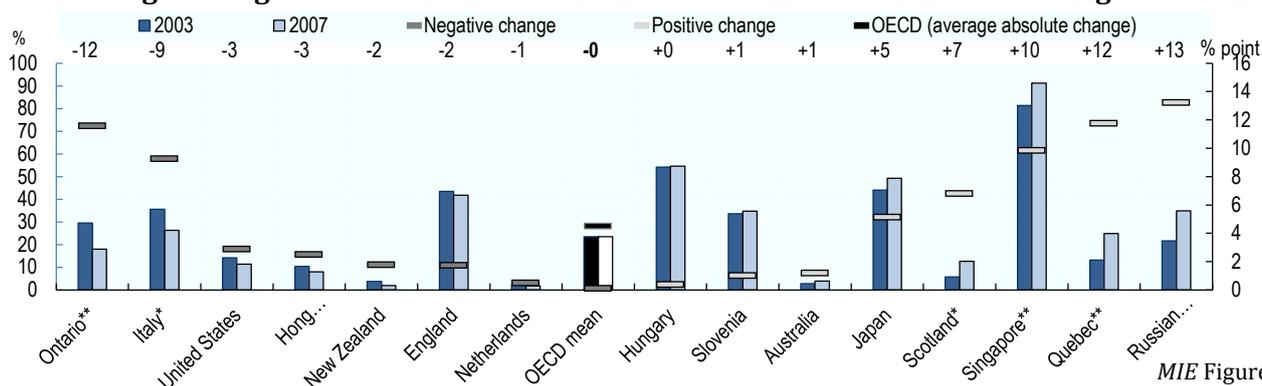
Primary and secondary schools in Québec underwent more frequent observations of teachers' practices by inspectors or other persons external to the school. In 2003, the percentage of students in schools in which observations by external evaluators were used was less than 1% for 8th grade math, 8th grade science, and 4th grade classrooms; by 2011, these practices were being used in the classrooms of 6.5% of 8th grade math students, 6.6% of 8th grade science students, and 5.5% of 4th grade students.

(2) More enrichment education for primary science students...

Another top organisational innovation in primary schools in Québec is the increased availability of enrichment education for 4th grade science students. Between 2003 and 2007, the percentage of 4th grade students in Québec enrolled in schools offering enrichment activities in science increased by 13% points, the second-largest increase of countries analysed for this metric. The OECD mean difference in availability of primary school science enrichment reflected no change over the specified time period.

(3) More remedial mathematics and science education in primary schools...

Percentage of 4th grade students in schools that offer remedial science and change over time



MIE Figure 12.4

The increased availability of remedial education in math and science at the primary school level is another notable innovation in Québec's educational system. Between 2003 and 2007, the proportion of 4th grade students in Québec in schools that offer remedial mathematics education rose by 16% points; over the same period, the percentage of students in schools that offer remedial science education increased by 12% points. Of the systems analysed in this report, only the Russian Federation had larger gains in these educational areas, with increases of 26% points and 13% points in remedial math and science, respectively.

(4) More fundraising and outreach by school principals...

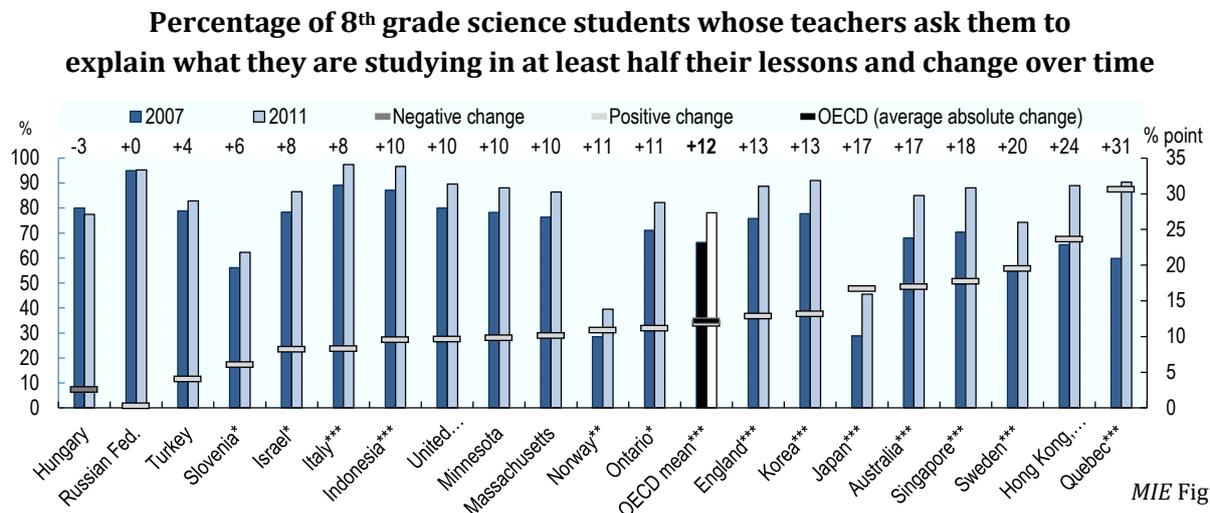
From 2003 to 2007, school principals in Québec experienced a new role in fundraising and public relations, with an increase of 15% points in the percentage of 15-year olds enrolled in schools in which the principal spends 10% or more of his/her time on public relations and fundraising. Of the educational systems analysed in this report, Québec saw the second-largest change in this metric.

(5) More teacher observations of primary school classrooms...

Secondary school teachers in Ontario also frequently observed each other's' classrooms to learn about other instructors' teaching practices. Between 2003 and 2011, the percentage of 8th grade mathematics students in Ontario who had a teacher that observed other classrooms one or more times per week increased from 2.7% to 6.3%. Although as of 2011 use of this practice was less frequent than OECD average (10.7%), this trend may indicate the emergence of new educational practice in Québec.

Québec's top innovations in pedagogic practice:

(1) More active learning in secondary science lessons...



Between 2007 and 2011, Québec saw a 31% point increase the percentage of students who were asked to explain what they are studying in at least half of their science lessons, a practice that encourages critical thinking and scientific communication. Of the educational systems examined in this report, Québec saw the largest increase in this metric over the relevant period.

(2) More relating of lessons to real life in primary school science...

Another pedagogic innovation in Québec's educational system is the practice of relating content in 4th grade science lessons to students' daily life. Between 2003 and 2011, the percentage of 4th grade science 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 32% points (as per teacher reports).

(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 Québec 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 Québec saw a difference of 23% points in the percentage of 4th grade students whose science teachers use textbooks as a supplementary resource in the classroom.

(4) More independent work in primary reading lessons...

In primary school reading lessons, Québec has seen a small change in the emphasis on individual reading. Between 2001 and 2011, Québec saw a 7% point increase in the percentage of teachers asking 4th grade students to read silently on their own one or more times per week (according to teachers).

(5) More group work in secondary mathematics...

Finally, students in Québec reported significant increases in the extent to which they engage in group work in secondary mathematics lessons. Between 2003 and 2007, the percentage of students working together in small groups in at least half of their lessons rose by 23% points, the second-largest increase of any educational system. Japan, the educational system with the largest increase in this metric, saw a difference of 73% points over the same period.