Moscow, 8 October 2014

#### IS INNOVATION IN EDUCATION MEASURABLE?

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## Towards innovation-friendly ecosystems in education?







#### Centre for Educational Research and Innovation

#### **New report**

- 4 objectives:
  - Informative
  - Methodological
  - Heuristic
  - Prospective
- 2 approaches:
  - Innovation surveys
  - Organisational change surveys
- Databases / Coverage:
  - Reflex and Hegesco (19 EU countries + Japan)
  - PISA, TIMSS, PIRLS (broad international coverage)



• Introduction/implementation of a new or significantly improved...

- Product (object, tool)
- Process (pedagogy)
- Organisation
- Marketing method (external relations, pricing, etc.)

- New to the world
- New to the sector
- New to the organisation





#### innovation in education: the "innovation survey" approach

## What kinds of questions does this approach allow us to answer?



- Is there more/less innovation in education than in other sectors?
- What kinds of innovation are more prevalent?
- Are there big differences in the differences across educational sectors?
- How do countries compare in terms of innovation in education?

## Level of highly innovative jobs in education by country



Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data Source: OECD (Scoreboard on Innovation in Education), based on REFLEX and HEGESCO data

## Percentage of highly innovative jobs, by sector (2005-2008)



Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data

## Percentage of highly innovative jobs in product or service (2005-2008)



Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data

#### Percentage of highly innovative jobs in technology, tools or instruments (2005-2008)



## Percentage of highly innovative jobs in knowledge or methods (2005-2008)



Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data

#### Highly innovative jobs in education and other sectors of the economy



Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data Source: OECD (Scoreboard on Innovation in Education), based on REFLEX and HEGESCO data





Source: Measuring Innovation in Education (2014), based on REFLEX and HEGESCO data



#### innovation in education: the "organisational change" approach

## What kinds of questions does this approach allow us to answer?



- What does innovation look like in primary and secondary education?
- How much change has there been in a particular practice?
- What is the aggregate level of innovation? Where is it located?
- Are all countries implementing similar innovations at the same time?

# What areas are covered by the Scoreboard?



#### **Classroom changes**

- Teaching style
- Class organisation
- Forms of student assessment
- Use of textbooks
- Availability and use of computers

#### Percentage of class time spent on lecturestyle presentations in 8th grade



Source: Measuring Innovation in Education (2014), based on TIMSS data (student reports)

#### Percentage of 8th grade students asked to relate maths learning to their daily life (teacher report)



Source: Measuring Innovation in Education (2014), based on TIMSS data (teacher reports)

Percentage of 8th grade students asked to relate maths learning to their daily life (student report)



Source: Measuring Innovation in Education (2014), based on TIMSS data (student reports)

#### Percentage of 8th grade students with computers available in science classrooms



Source: Measuring Innovation in Education (2014), based on TIMSS data (teacher reports)

#### Percentage of 8th grade science students using computers to practice skills and procedures at least sometimes



Source: Measuring Innovation in Education (2014), based on TIMSS data (teacher reports)

# What areas are covered by the Scoreboard?



#### **School changes**

- Supply of special education
- Teacher collaboration
- External evaluation and feedback
- External relations (parents)

#### Percentage of 8th grade students whose science teachers have at least weekly peer discussions



Source: Measuring Innovation in Education (2014), based on TIMSS data (teacher reports)

Percentage of 8th grade students in school which currently use any incentives to recruit or retain science teachers





## how much change counts as innovation

## Change in use of non-test based, student assessment methods



Source: OECD Scoreboard on Innovation in Education

## Effect sizes: example of changes in teachers' practice evaluation

	Change in external (inspector's) observations of teacher practices			Change in peer review evaluation of teachers' practices		
	8th grade		4th grade	8th grade 4th g		4th grade
	Maths 03-11	Science 03-11	03-11	Maths 03-11	Science 03-11	03-11
Australia	0,04	-0,02	0,40	0,40	0,38	0,41
Chile	0,54	0,50	m	-0,34	-0,30	m
England	0,45	0,49	0,22	0,12	0,06	0,18
Germany	m	m	0,17	m	m	0,12
Hungary	0,16	0,17	0,17	0,10	0,13	0,21
Israel	0,68	0,52	m	0,44	0,38	m
Italy	0,05	-0,03	0,05	-0,23	-0,30	-0,21
Japan	0,01	0,03	0,25	0,16	0,16	0,25
Korea	0,37	0,29	m	0,84	0,82	m
Netherlands	m	m	0,30	m	m	0,20
New Zealand	0,25	0,24	0,53	0,50	0,53	0,49
Norway	0,22	0,21	0,74	-0,24	-0,36	-0,29
Ontario	0,53	0,51	0,50	0,19	0,10	0,24
Quebec	0,41	0,43	0,47	-0,13	-0,19	-0,43
Slovak Republic	m	m	0,19	m	m	-0,09
Slovenia	-0,32	-0,38	-0,40	0,10	0,15	0,28
Sweden	0,18	0,16	-0,08	0,34	0,36	0,19
Turkey	-0,16	-0,08	m	-0,31	-0,34	m
United States	0,41	0,39	0,20	0,29	0,28	0,23
OECD	0,25	0,21	0,29	0,18	0,15	0,13
OECD (absolute average)	0,30	0,28	0,35	0,28	0,28	0,28



## how much innovation in school education that makes

#### Composite innovation index (primary and secondary education)



# School and classroom level composite innovation indices for period 2000-2011

Classroom change

School change





#### Russian top innovations



- More use of textbooks as primary resources in secondary science classrooms
- More use of same-ability grouping in secondary education
- More use of computers as reference resources
- More Internet availability in primary and secondary classrooms



- More use of incentives for recruiting and retaining teachers
- More use of student assessments for monitoring school progress over time
- More remedial mathematics and science education in primary schools
- More enrichment education in primary schools
- More parental service on school committees



#### preliminary associations between innovation and educational outcomes to reflect upon

### Overall Innovation and change in 8th grade mathematics teacher satisfaction (2003-2011)



Source: OECD Scoreboard on Innovation in Education

## Overall education innovation and 8th grade mathematics outcomes



Source: Measuring Innovation in Education (2014)

## Overall education innovation and 8th grade mathematics outcome trends



Source: Measuring Innovation in Education (2014)



#### a few remarks

### Answers to questions not raised yet



- Why are the two measures not consistent (ex: Hungary)?
- How can Indonesia rank second and Massachussets, last?
- How can the use of textbook be an innovation?
- Why are some small changes sometimes considered an innovation?
- How do « innovative » practices relate to « alternative » practices?



#### conclusions





- What we propose:
  - Develop an instrument for a matched survey (that could ultimately be linked to longitudinal information systems)
  - Cover 3 areas: instructional practices, establishment organisation, external relations
  - Mix subject- and object-based approaches
  - Privilege the organisational change method





- To see whether awaited change follows reform
- To see whether changes are coherent with what we know about « good practices »
- To be able to relate change in practices to outcomes
- To better understand innoation
- To put innovation on the education policy agenda



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THANK YOU www.oecd.org/edu/innovation

