Improving Learning: What can we learn from reforms around the world?

Changes in societies are creating pressures for school change.
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Schooling in the Medieval Age: The school of the church

Source: Andreas Schleicher, OECD

Schooling in the Industrial Age: Educating for discipline

Source: Andreas Schleicher, OECD
The challenges today:
Motivated and self-reliant citizens
Risk-taking entrepreneurs, converging and continuously emerging professions tied to globalizing contexts and technological advance

How the demand for skills has changed
Economy-wide measures of routine and non-routine task input (U.S.)

The dilemma of schools: The skills that are easiest to teach and test are also the ones that are easiest to digitize, automate, and outsource
Expectations for learning are changing

The new context means new expectations. Most studies include:

- Ability to communicate
- Adaptability to change
- Ability to work in teams
- Preparedness to solve problems
- Ability to analyse and conceptualise
- Ability to reflect on and improve performance
- Ability to manage oneself
- Ability to create, innovate and criticise
- Ability to engage in learning new things at all times
- Ability to cross specialist borders.

Chris Wardlaw, "Mathematics in Hong Kong/China – Improving on Being First in PISA"

20th Century teaching cannot meet 21st Century demands. 21st Century learning requires:

- An understanding of the meaning and relevance of ideas to concrete problems
- An ability to apply core concepts and modes of inquiry to complex real-world tasks
- A capacity to transfer knowledge and skills to new situations, to build on and use them
- Abilities to communicate ideas and to collaborate in problem solving
- An ongoing ability to learn to learn.
What do effective teachers know and do?  
**Effective teachers…**

- Engage students in active learning
- Create intellectually ambitious tasks
- Use a variety of teaching strategies
- Assess student learning continuously and adapt teaching to student needs
- Create effective scaffolds and supports
- Provide clear standards, constant feedback, and opportunities for revising work
- Develop and effectively manage a collaborative classroom in which all students have membership.

### PISA 2009 Results

<table>
<thead>
<tr>
<th>Reading</th>
<th>Mathematics</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai</td>
<td>Shanghai</td>
<td>Shanghai</td>
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<tr>
<td>Korea</td>
<td>Singapore</td>
<td>Finland</td>
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<tr>
<td>Finland</td>
<td>Hong Kong</td>
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<td>Hong Kong</td>
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<td>Singapore</td>
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<td>Singapore</td>
<td>Chinese Taipei</td>
<td>Japan</td>
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<td>Canada</td>
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<td>Korea</td>
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<td>New Zealand</td>
<td>Lichtenstein</td>
<td>New Zealand</td>
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<tr>
<td>Japan</td>
<td>Switzerland</td>
<td>Canada</td>
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<tr>
<td><strong>Australia</strong></td>
<td>Japan</td>
<td>Estonia</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Canada</td>
<td><strong>Australia</strong></td>
</tr>
</tbody>
</table>
What are the highest-achieving nations doing?

- Societal supports for children’s welfare
- Equitable resources with greater investments in high-need schools and students
- Substantial investments in initial teacher education and ongoing support
- Schools designed to support teacher and student learning
- Equitable access to a rich, thinking curriculum
- Performance assessments focused on higher order skills

Key differences in reform approaches:

**Teachers and Teaching**
- Do policies develop and share expertise or foster low skills, high turnover, isolation, and remote control of teaching?

**Standards, Curriculum and Testing**
- Do standards and curriculum emphasize higher order thinking and performance or memorization of content?
- Do tests ask students to produce high-quality work or answer multiple choice questions?
- Are teachers involved in assessment design and scoring?

**Accountability and Improvement**
- Are assessment results used primarily to improve teaching or to rank, reward, and punish schools and teachers?
- Do policies foster competition or collaboration among schools?
Different Theories of Change

- **Theory X:**
  The key problem is motivation. People respond only to rewards and sanctions (“carrots and sticks”). Incentives are the major element of reform.

- **Theory Y:**
  The key problem is learning. People want to be competent. They respond to information about how to succeed in doing their work. Investments in knowledge and capacity are the major elements of reform.

Professional learning opportunities in high-achieving nations

The highest-achieving nations:

- Ensure extensive initial preparation that includes clinical training in model schools
- Provide beginners with intensive mentoring
- Offer sustained learning opportunities embedded in practice:
  - Teachers have 15-25 hours a week for collaboration plus 100 hours a year for professional learning
  - Teachers engage regularly in Lesson Study, Action Research, and Peer Observation and Coaching to evaluate and improve practice.
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Well-prepared teachers matter a great deal

Research finds that student learning gains are related to:
- Strong academic background
- Quality preparation prior to entry (vs. lateral entry)
- Certification in the field taught
- Experience (> 3 years)
- The skills measured by National Board Certification

In combination, these can predict more of the difference in student learning gains than race and parent education combined (Clotfelter, Ladd, & Vigdor, 2008). Policies should strengthen and equalize these features.

What works to improve teaching?

- Professional teaching standards guiding evaluation and development
- Strong clinical preparation
- Expert mentoring and coaching
- Sustained professional development in collaborative professional communities
- Career ladders that develop and spread expertise.
We have learned more about how to prepare teachers well

- Deep and careful clinical training
- Focus on learning and development in social & cultural contexts
- Focus on the teaching of students who learn in different ways
- Understanding of content-specific pedagogy
- Engagement with curriculum and assessment design and use
- Examining learning beyond the data.

Learning about Practice in Practice

The effects of well-designed professional development

A review of experimental studies found that student achievement increased by 21 percentile points for teachers engaged in high-quality professional development programs of about 50 hours on average over 6 to 12 months. (Yoon et al., 2007)

PD of less than 14 hours had no effect on student learning.
Professional learning opportunities that impact practice are:

- Focused on learning specific curriculum content
- Organized around real problems of practice
- Connected to teachers' work with children
- Linked to analysis of teaching and student learning
- Intensive, sustained and continuous over time
- Supported by coaching, modeling, observation, and feedback
- Connected to teachers' collaborative work in professional learning communities
- Integrated into school and classroom planning around curriculum, instruction, and assessment.

What doesn’t work?
Pathways that reduce preparation for teaching

<table>
<thead>
<tr>
<th>Fall-to-Spring Test Score Gains / Losses of Students Taught by Alternative Route and Traditional Route Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in NCE Score</td>
</tr>
<tr>
<td>Reading               Math</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Low-Coursework AC</td>
</tr>
<tr>
<td>Low-Coursework TC Counterpart</td>
</tr>
<tr>
<td>High-Coursework AC</td>
</tr>
<tr>
<td>High-Coursework TC Counterpart</td>
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Based on actual (unadjusted) fall and spring scores
What also doesn’t work

- Annual bonus pay for individual teachers allocated competitively based on evaluations or student test scores
  - Nashville experiment (Springer, 2010)
  - New York City experiment (Fryer, 2011)
  - Portugal experiment ( Martins, 2009)

What about standards-based reform?

“Today you’re going to learn the meaning of ‘irony.'”
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**No child left behind: Noble goals and unintended effects**

- Goal to focus on all groups of students
- Demand for “highly qualified teachers,” but incentives for reducing preparation
- Demand for higher achievement, but incentives for
  - Narrowing curriculum to limited tests
  - Excluding low-scoring students
  - Chasing teachers from high-need schools.

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**Outcomes of NCLB**

- State scores have ‘increased’
- National gains have slowed and flattened
- International scores have dropped

- Graduation rates have declined
- Student exclusions have increased
- Teacher attrition has grown
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Ranking Schools: Success or Failure?

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
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<tbody>
<tr>
<td>Laura</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>James</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>Felipe</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>Kisha</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>Jose</td>
<td>60</td>
<td>55</td>
</tr>
<tr>
<td>Raul</td>
<td>20</td>
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</tr>
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Ave. Score = 70
% meeting standard = 66%

Ave. Score = 72
% meeting standard = 80%

What happens when new standards meet old inequalities?

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</thead>
<tbody>
<tr>
<td>9th Grade 1996-1997</td>
<td>14320</td>
<td>6307</td>
<td>6875</td>
<td>6645</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade 1997-1998</td>
<td>16707</td>
<td>6447</td>
<td>6901</td>
<td>6645</td>
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Ranking schools for accountability can create unintended consequences

“Student selection provides the greatest leverage in the short-term accountability game…. The easiest way to improve one’s chances of winning is (1) to add some highly likely students and (2) to drop some unlikely students, while simply hanging on to those in the middle.

School admissions is a central thread in the accountability fabric.” (Smith, et al., 1986).

Side effects of standardized testing

“I have seen more students who can pass [the test] but cannot apply those skills to anything if it’s not in the test format. I have students who can do the test but can’t look up words in a dictionary and understand the different meanings…. As for higher quality teaching, I’m not sure I would call it that. Because of the pressure for passing scores, more and more time is spent practicing the test and putting everything in the test format”

- A teacher in Texas
Teachers in states with high-stakes testing feel understanding is harmed

“I believe [the test] is pushing students and teachers to rush through curriculum much too quickly. Rather than focusing on getting students to understand a concept fully in math, we must rush through all the subjects so we are prepared to take the test in March. This creates very little knowledge in a lot of areas.”

- A teacher in Florida

What we’ve learned: Testing ≠ Accountability

- Test scores are information for an accountability system. They are not the system itself.
- Influences of tests on instruction may be positive or negative depending on:
  - the quality of the tests
  - whether they are used to inform instruction or simply to rank students and schools
  - how teachers are involved in developing and scoring assessments.
Rethinking Assessment

“I am calling on our nation’s Governors and state education chiefs to develop standards and assessments that don’t simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical thinking, entrepreneurship and creativity.”
- President Barack Obama
March 10, 2009

Typical science test item

1. What two gases make up most of the Earth's atmosphere?
   - A) Hydrogen and oxygen
   - B) Hydrogen and nitrogen
   - C) Oxygen and carbon dioxide
   - D) Oxygen and nitrogen

2. Is a hamburger an example of stored energy?
   Explain why or why not.
   ________________________________
   ________________________________
A rich task: Science and ethics confer (Queensland, Australia)

Students must identify, explore, and make judgments on a biotechnological process to which there are ethical dimensions. They must:

1) **Undertake laboratory activities that help them understand some of the laboratory practices.**

2) **Provide a written explanation of the fundamental technological differences** in some of the techniques used in this area.

3) **Consider the range of ethical issues raised and present a deep analysis of an ethical issue about which there is a debate** in terms of an ethical framework.

4) **Select six real-life people who have made relevant contributions to this area and write a 150-200 word précis about each one indicating his/her contribution, as well as a letter of invitation to one of them to an international conference.**

School-based science practical assessment in Singapore

To Assess Experimental Skills and Investigations, Students:

- Identify a problem, design and plan an investigation, evaluate their methods and techniques
- Follow instructions and use techniques, apparatus and materials safely and effectively
- Make and record observations, measurements, methods, and techniques with precision and accuracy
- Interpret and evaluate observations and experimental data
Assessment measures are structured to continuously improve teaching and learning.

Hong Kong’s rationale for increasing school-based assessments

“School Based Assessments, which typically involve students in activities such as making oral presentations, developing a portfolio of work, undertaking fieldwork, carrying out an investigation, doing practical laboratory work or completing a design project, help students to acquire important skills, knowledge and work habits that cannot readily be assessed or promoted through paper-and-pencil testing.”

“Not only are they outcomes that are essential to learning within the disciplines, they are also outcomes that are valued by tertiary institutions and by employers.”

(Hong Kong Education Examinations Authority, 2009).
Improving Educational Outcomes

Student achievement is found to increase where:

- Teachers have stronger training in both content and pedagogy and more opportunities to plan and evaluate teaching with one another
- Teachers are engaged in “authentic pedagogy” that supports active learning in real-world contexts
- Schools use performance assessments to guide student work and inform teaching.

Strategies that go straight to the periphery of the issues

- Targets and sanctions without resources and supports for development
- Closing schools serving low-income students without creating policies that reduce poverty and support successful schools
- Requiring charters without ensuring access and supporting system-wide innovation
- Merit Pay without competitive, equitable salaries and working conditions
- Firing low-performing teachers without investing in a stable supply of well-prepared teachers.
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Policy strategies for an equitable system of good schools

1) Meaningful learning goals
2) Intelligent, reciprocal accountability systems;
3) Equitable and adequate resources;
4) Strong professional standards and supports; and
5) Schools designed for empowering forms of student and teacher learning.

Tackling the agenda that matters most

"On some positions, Cowardice asks the question, 'Is it safe?'
Expediency asks the question, 'Is it politic?'
And Vanity comes along and asks the question, 'Is it popular?'
But Conscience asks the question 'Is it right?'
And there comes a time when one must take a position that is neither safe, nor politic, nor popular, but he must do it because Conscience tells him it is right."
- Martin Luther King, 1968