It's Time to Begin An Adult Conversation on PISA

CTF Research and Information
December 2013

Canadian Teachers' Federation
Fédération canadienne des enseignantes et des enseignants

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Another round of PISA reporting has come and gone and the world is still spinning. So is the media. For the classroom teacher, generally, today is another day where they will teach and children and youth will learn. So do the PISA results impact on a day in the life of a classroom teacher? I would suggest that they do but the degree of impact is probably related to where you live. Nevertheless, I believe it is time we had an adult conversation about PISA.

Are there positive things one could say about PISA? Supporters would say absolutely. They would argue:

- ✓ There is a need to have some way of comparing education systems in a global economy within a global village.

- ✓ Increasingly, with the exponential growth of a knowledge economy, human capital is the most important capital asset.

- ✓ This type of assessment, using a sampling of students, is positive in the sense that it is not 'high stakes' in that it has nothing to do with an individual student's evaluation for advancement or promotion, being anonymous. Yet the results can inform jurisdictions on where changes to the curriculum, teacher in-service or professional development might be appropriate.

- ✓ There is data in these results that help to confirm what we believe or know about what is important. Information that confirms, as PISA does, that our system attracts strong teachers and prepares and in-services them well. This is essential in the turning out of students who achieve exceptionally well compared to international peers. But in addition, PISA confirms that the Canadian system has an almost incomparable system of equity.

All these points have validity, particularly the last two. It is totally appropriate to have a mechanism that illustrates where some parts of a country are achieving greater success in one curriculum area over another. What can we learn from each other to help us improve? And the last point is an appreciation of PISA validating Canadian values of equity and social justice.

Yet there are those who would criticize PISA. They would argue that:

- ✓ There is an agenda behind PISA. The OECD is essentially about economics. Using PISA to channel the conversation about education through a narrow economic funnel is inappropriate to say the least.

- ✓ The narrow focus of the tests on numeracy, literacy and science does not give a valid picture of the whole school experience. Adding "financial literacy" to the areas tested in the future does not address the concern.

- ✓ The ranking of countries internationally, and provinces nationally, is problematic from many perspectives. There are so many factors that come into play when looking at the reasons why some finish high and some finish low. Should we just believe that the

teachers and administrators in what is considered “low performing” jurisdictions are all lazy and incompetent? That examples of excellence don’t happen there? Isn’t there a risk of stigmatizing these educators based on PISA results?

- ✓ If we must compare jurisdictions, then let’s use fair comparisons, apples to apples. Including Chinese “economies” in the ranking seems odd. Other comparisons are at least questionable.

When the first PISA tests were written in 2000, Canada ranked 6th in mathematical literacy.

The following did not participate:

- ✓ Shanghai-China (a city)
- ✓ Singapore (a city state)
- ✓ Hong Kong-China (a ‘special’ administrative region of China)
- ✓ Chinese Taipei
- ✓ Macao-China (a ‘special’ administrative region of China)

These all ranked ahead of Canada in 2012, when considering “statistical significance”. The other countries still ranked ahead of us are Korea, Japan, Liechtenstein and Switzerland. (Liechtenstein is the sixth smallest country in the world with a population of 35,000. It has the highest gross domestic product in the world). It would seem that there is some room for questioning the appropriateness of comparisons.

Finally, these are undoubtedly “high stakes” tests. The degree to which PISA has informed government decision making: legislation, expenditures, resource allocation etc., has been unparalleled, and at least some of those decisions, in some jurisdictions, seem not to have been in the best interest of children and youth.

In the analysis that follows, CTF Researcher Rick Riel examines more closely the OECD data from a Canadian perspective, expanding on this commentary. There is an argument here to take a closer look, continue to have an adult conversation, especially when individuals like John Manley, President and CEO of the Canadian Council of Chief Executives declares the results to be a “national emergency” for Canada.

You can look forward to receiving additional commentary on PISA in the future as we continue this adult conversation.

PISA 2012: Selected Results for Canada
Based on the OECD Report: PISA 2012 Results in Focus, What the 15-year-olds know and what they can do with what they know

Richard Riel, Researcher

Top performers in reading (Level 5 or 6).

On average across OECD countries, 8% of students are top performers in reading (Level 5 or 6). These students can handle texts that are unfamiliar in either form or content and can conduct fine-grained analyses of texts. Shanghai‑China has the largest proportion of top performers – 25% – among all participating countries and economies.

More than 15% of students in Hong Kong‑China, Japan and Singapore are top performers, in reading as are more than 10% of students in Australia, Belgium, **Canada**, Finland, France, Ireland, Korea, Liechtenstein, New Zealand, Norway, Poland and Chinese Taipei.

PISA Mathematics Score

Comparison to Other OECD Countries/Economies

- Canada's mean score in 2012 was 518, exceeding the OECD average of 494.
- Canada's score exceeds 5 of the 6 other G7 countries including Germany (514), France (495), the United Kingdom (494), Italy (485), and the United States (481); and is second in the G7 behind only Japan (536).
- Canada's score also exceeded the mean score in countries including Belgium (515), Austria (506), Australia (504), New Zealand (500), Norway (489), Spain (484), and Sweden (478).
- Canada trailed Shanghai-China which is reported to have the highest mean at 613.
- Although Canada ranks 13th among the 65 countries and economics, 3 of those listed above Canada are various economies within the same country of China, and possibly 4 if we were to include Chinese Taipei.
- Other than Japan, notable countries that Canada trailed in 2012 include Switzerland (531), the Netherlands (523) and Finland (519).

Share of Low Achievers in Mathematics (Below Level 2)

- Canada's share is reported to be 13.8%, well below the OECD average of 23.1%
- Canada's share exceeds Japan (11.1%) but falls below the 5 remaining G7 countries, which experienced shares ranging from 25.8% in the USA to 17.7% in Germany.
- The Netherlands had a slightly higher share (14.8%) than Canada despite having a higher mean score (523).
- Shanghai-China experienced the lowest share at 3.8%.

Share of top performers in mathematics (Level 5 or 6)

- 16.4% of Canadians tested are reported to be top performers in math, exceeding the 12.6% OECD average.
- Canada's share ranked third among G7 countries behind Japan (23.7%) and Germany (17.5%), but significantly above the USA (8.8%). Shanghai-China had the highest reported share at 55.4%.

Change in Math Scores from a Country's/Economy's Earliest Participation in PISA to PISA 2012

- Canada's mean PISA score for math dropped by 1.4 points on an average annual basis, while the OECD average dropped by 0.3 points.
- G7 countries that experienced an average annual increase in mean math score points included Italy (2.7), Germany (1.4), Japan (0.4), and the USA (0.3),
- France(-1.5) was the only G7 country whose annualized mean math score points change declined by more than Canada, while United Kingdom (-0.3) had a smaller decline.

Countries/economies whose mean score is NOT statistically significantly different from Canada`s Score

- Canada's score is not significantly different, from the Netherlands, Estonia, Finland, Poland, Belgium, Germany and Viet Nam, which are all statistically significantly above the OECD average.

Countries whose PISA Math Scores Were Above Average in 2003 But Deteriorated in 2012

- Some of the countries whose performance deteriorated more than Canada in 2012 following above OECD average PISA performance in 2003 include the Netherlands, Denmark, Australia, New Zealand, Finland and Sweden.

PISA Reading Scores

- Canada's mean reading score in PISA 2012 was 523, exceeding the OECD average of 496.
- Canada's 2012 score trailed Japan (538), but exceeded the remaining G7 countries of Germany (508), France (505), the United Kingdom (499), the USA (498), and Italy (490).
- Canada's mean score for reading declined by an average annualized change of 0.9 points from its earliest participation in PISA to the 2012 PISA, compared to an average annual increase of 0.3 for the OECD average.
- Canada incurred the most significant average annualized decline among the G7 countries from their earliest participation in PISA to the 2012 PISA, with the USA being the only other G7 country to experience an annualized decline in its mean score (-0.3).

PISA Science Scores

- Canada's mean science score in PISA 2012 was 525, exceeding the OECD average of 501.
- Canada's score trailed Japan (547), but exceeded the remaining G7 countries including the G7 low in Italy (494).
- Canada's mean score for sciences declined by an average annualized change of 1.5 points from its earliest participation in PISA to the 2012 PISA, compared to an average annual increase of 0.5 points for the OECD average.
- Italy (3.0) had the highest increase in science scores among the G7 countries from its earliest participation in PISA to the 2012 PISA, and the United Kingdom was the only other G7 country to experience a decline in score (-0.1).

Excellence through Equity: Giving Every Student the Chance to Succeed

What the data tell us

Performance and equity

- Canada combined high levels of performance with equity in education opportunities as assessed in PISA 2012. The following countries did the same: Australia, Estonia, Finland, Hong Kong-China, Japan, Korea, Liechtenstein and Macao-China.
- Canada is reported to have had an above-average performance in mathematics and above-average equity in education opportunities. Japan was the only other G7 country for which this is the case. In comparison, the United States had below-average math performance and below average equity in education opportunities.
- The strength of the relationship between student performance in math and socio-economic status in Canada is weak, falling below the OECD average, while France was the only G7 country for which the relationship is above the OECD average.

Student's Engagement, Drive and Self-Beliefs

- 35%of Canadian students in PISA 2012 reported having skipped classes or days of school, resulting in reduction of 29 score points. In comparison, the OECD average was 25% and accounted for an average reduction of 37 score points.
- Canada's score-points were raised 37 per unit of the index of openness to problem solving, exceeding the OECD average of 31 points.
- The change in Canada`s score-points associated with mathematics self-efficiency was an increase of 47, falling below the OECD average of 49.
- 60% of students in Canada reported in PISA 2012 that their teachers often present problems for which there is no immediately obvious way of arriving at a solution, and 66% reported that their teachers often present them with problems that require at least one week to complete. Canada is therefore more successful in this regard compared to the OECD average which is reported to have shares of 47% and 17% respectively.
- The percentage of students in PISA 2012 who reported being happy at school was above the OECD average in Canada, ranking fourth among G7 countries behind Japan, the United Kingdom and France.

Teachers' salaries and mathematics performance

- When examining teachers' salaries relative to GDP per capita, compared to the mean mathematics score, Canada's performance in math is above average among countries and economies with per capita GDP over 20,000$US.
- The United States, France, Italy and the United Kingdom are G7 countries that had both lower salaries relative to per capita GDP and lower mean mathematics scores than Canada in PISA 2012.

With respect to teachers' salaries, the OECD states the following:

> *"The quality of a school cannot exceed the quality of its teachers and principals. Countries that have improved their performance in PISA, like Brazil, Colombia, Estonia, Israel, Japan and Poland, for example, have established policies to improve the quality of their teaching staff by either adding to the requirements to earn a teaching license, providing incentives for high-achieving students to enter the profession, increasing salaries to make the profession more attractive and to retain more teachers, or by offering incentives for teachers to engage in in-service teacher-training programs. While paying teachers well is only part of the equation, higher salaries can help school systems to attract the best candidates to the teaching profession. PISA results show that, among countries and economies whose per capita GDP is more than USD 20 000, high-performing school systems tend to pay more to teachers relative to their national income per capita."*