



## Student Performance in PISA 2012

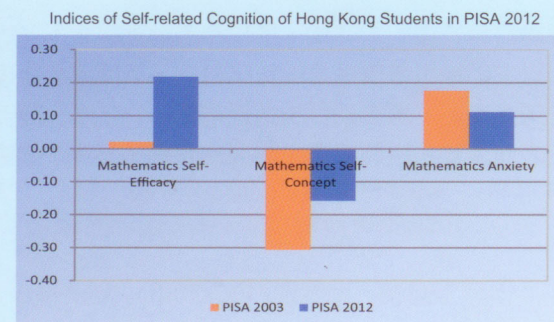
- Mathematical Literacy**  
 When compared with their overall math proficiency, Hong Kong students perform the best in formulating, score the highest on the space and shape sub-scale, but perform relatively less well in interpreting math and handling uncertainty and data. They have made a significant improvement in math when compared with PISA 2006.
- Scientific Literacy**  
 Hong Kong students perform consistently well and outperform most of the other countries/regions. They have made a significant improvement in science when compared with PISA 2000+, 2003 and 2006.
- Reading Literacy**  
 Hong Kong students perform consistently well and outperform most of the other countries/regions. Compared with the previous four PISA cycles, Hong Kong students perform the best in PISA 2012.

- CBA Problem Solving**  
 Hong Kong students perform well and rank fourth in CBA problem solving. As for the problem solving process, they have a stronger-than-expected performance in exploring and understanding but a weaker-than-expected performance in planning and executing.

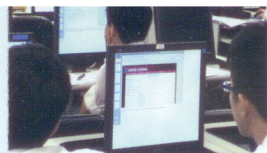
- CBA Mathematics**  
 Hong Kong students perform well and rank fourth in CBA math.
- Digital Reading**  
 Hong Kong ranks third in digital reading in PISA 2012. A remarkable improvement has been made in 2012 when compared with 2009.

## Non-cognitive Performance

Hong Kong students' self-efficacy and self-concept in math have improved from 2003 to 2012. Yet, their self-concept in math is still lower than the OECD average, while their anxiety towards learning math is still higher than the OECD average.



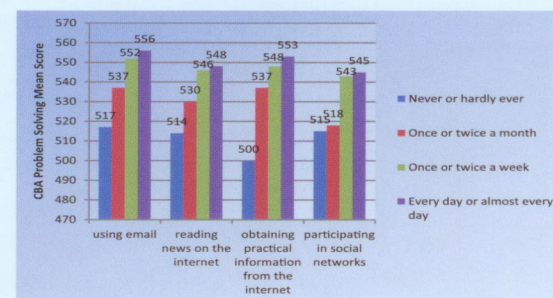
Note: OECD averages of the indices are set at 0.00



## Online Activities and CBA Performance

Activities found to be positively correlated with students' performance include using email, reading news on the Internet, obtaining practical information from the Internet, and participating in social networks.

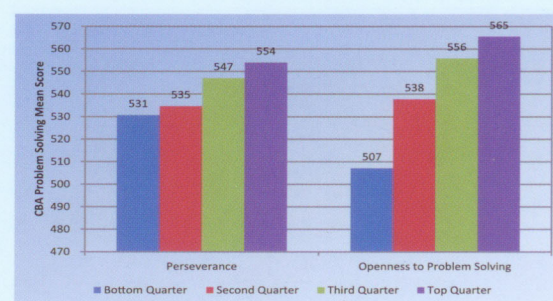
Relationship between Online Activities and CBA Problem Solving Performance of Hong Kong Students



## Relationship between Attitudes towards Problem Solving and CBA Problem Solving Performance

As for the attitudes towards problem solving, the level of perseverance of Hong Kong students is higher than the OECD average, while their openness is far below the OECD average. These two kinds of attitudes are found to be significantly positively correlated with students' performance in CBA problem solving.

Relationship between Perseverance and Openness towards Problem Solving and CBA Problem Solving Performance of Hong Kong Students



## Hints for Educators

- Given the generally outstanding math performance of Hong Kong students, math teachers may have sufficient room for attempting to bring our math teaching in line with a broader conception of math for the Information Age by making a liberal move to de-emphasise the current demands for skills in fast, complicated, symbolic and other routine mathematical manipulations such as formulae, but instead, to give students more opportunities to analyse, to conceptualise, to reason, to argue and to reflect in working out math in the classroom.
- The survey of students' self-related cognition and learning motivation indicates that a wide array of students' non-cognitive (affective) factors, such as math self-efficacy, math self-concept, and intrinsic and instrumental motivation, are positively associated with math performance. It can be contended that the cognitive and the non-cognitive (affective) domains are inter-related and interacting with each other; both are important elements in nurturing future citizens.
- Stronger focus should be put on classroom pedagogy to support curriculum innovation and improvement of using computers to better effect. Educators can examine the circumstances under which ICT activities can enhance students' learning, problem solving skills and overall competencies to promote their autonomous and lifelong learning in a digital world.
- Despite their satisfactory digital performance, there is room for improvement in the attitudes towards problem solving (perseverance and openness) among Hong Kong students.
- In the new digital age, schools and teachers may explore different ways to proactively guide students to make good use of information technology. Students should be encouraged to persist in in-depth learning with an open mind, to exercise their creativity, and to broaden their horizons by using computers, rather than to merely browse and copy information, chat with friends or even be addicted to computer games.

## Prof. Wong Hin Wah

"We have to work together to improve the unenthusiasm for learning among Hong Kong students as reflected by their low academic self-concept and high anxiety."



## Hints for Parents

Regardless of parents' socio-economic status, home-based parental involvement in children's education is a promising avenue by which children's performance can be enhanced. Enhancing communication among family members, discussing school life with the children and spending time just chatting with them are important measures that parents may take to support their children's learning. Besides, the proper and positive role of home-school communication should be promoted in order to facilitate partnership between school and parents. This partnership will lead to a more thorough understanding of the children, which is essential for providing the children with appropriate guidance and support.

Things you can do to promote your child's learning:

- Discuss school life with your child
- Have dinner with your child
- Spend time chatting with your child
- Invest on educational resources for your child
- Purchase books and classical literature for your child

Things you can do to promote your child's learning in the Information Age:

- Allow your child to use computer and Internet at home for learning and guide him/her
- Encourage your child to read online news and search for practical information
- Understand the need of your child regarding using email and participating in social network
- Encourage your child to communicate with his/her teachers and classmates for learning purpose via the Internet.

**Organiser of PISA in Hong Kong:**  
**Hong Kong Centre for International Student Assessment**  
 (Programme commissioned by Education Bureau)

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For more information about OECD/PISA, please visit the website:  
<http://www.oecd.org/pisa>

## Prof. Esther Ho

"In face of the digital age, it is essential that students be able to take advantage of but not be lost in the digital world so that they may develop their independent and critical thinking skills."

The Programme for International Student Assessment (PISA) is a project led by the Organisation for Economic Co-operation and Development (OECD). PISA takes place every three years starting from 2000, assessing the knowledge and skills of 15-year-olds in reading, mathematical and scientific literacy. In addition to the conventional paper-based tests, computer-based assessments (CBA) were administered to assess students' digital problem-solving, mathematical and reading literacy. About 510,000 students from 65 countries/regions participated in PISA 2012.

## Top 10 Countries/Regions in PISA 2012

Reading		Mathematics		Science	
Countries / Regions	Mean score	Countries / Regions	Mean score	Countries / Regions	Mean score
Shanghai-China	570	Shanghai-China	613	Shanghai-China	580
Hong Kong-China	545	Singapore	573	Hong Kong-China	555
Singapore	542	Hong Kong-China	561	Singapore	551
Japan	538	Chinese Taipei	560	Japan	547
Korea	536	Korea	554	Finland	545
Finland	524	Macao-China	538	Estonia	541
Ireland	523	Japan	536	Korea	538
Chinese Taipei	523	Liechtenstein	535	Vietnam	528
Canada	523	Switzerland	531	Poland	526
Poland	518	Netherlands	523	Canada	525

Note: Shaded area indicates scores significantly different from those of Hong Kong.

## Top 10 Countries/Regions in CBA in PISA 2012

CBA Problem Solving		CBA Mathematics		Digital Reading	
Countries / Regions	Mean score	Countries / Regions	Mean score	Countries / Regions	Mean score
Singapore	562	Singapore	566	Singapore	567
Korea	561	Shanghai-China	562	Korea	555
Japan	552	Korea	553	Hong Kong-China	550
Macao-China	540	Hong Kong-China	550	Japan	545
Hong Kong-China	540	Macao-China	543	Canada	532
Shanghai-China	536	Japan	539	Shanghai-China	531
Chinese Taipei	534	Chinese Taipei	537	Estonia	523
Canada	526	Canada	523	Australia	521
Australia	523	Estonia	516	Ireland	520
Finland	523	Belgium	512	Chinese Taipei	519

Note: Shaded area indicates scores significantly different from those of Hong Kong.