

To News Editor

7 December 2010

CUHK Releases the Results of Programme for International Student Assessment

The Hong Kong Centre for International Student Assessment of the Institute of Educational Research at The Chinese University of Hong Kong (CUHK) released the survey results of Programme for International Student Assessment (PISA 2009) today (7 December). During April to June 2009, about 5,000 students from 151 schools including government, aided and independent schools were randomly selected for the assessment of student performance in reading, mathematics and science.

The survey reveals that Hong Kong 15-year-old students again stand in the top tier among 65 countries and regions. They rank fourth in reading and third in both mathematics and science (Figure 1 and Appendix 1). Regarding equity in education, the difference in performance between students of different socio-economic background changes little when compared with that in 2002, the first PISA survey in Hong Kong. The difference in student performance between schools is getting smaller. The impact of socio-economic status (SES) aggregated at school level is considerably reduced. Taking together, these changes suggest that the basic education of Hong Kong is heading toward a quality education with equality. However, it is found that the within-school difference of student performance has increased significantly (Figure 2), suggesting that the academic ability of students within the school is becoming more diverse. As such, how secondary school teachers should equip themselves, and what support measures the education authority should provide schools in order to take care of the widened learning difference of the students in schools would be the timely agenda.

Equality in education in terms of how students' SES, gender, and immigrant status affect their performance in schools is examined. It is found that the impact of students' SES including occupation and education level of their parents has relatively small impact on their performance (Figure 3 and Appendix 2). Yet significant gender difference is evident in the performance of both mathematics and reading. Boys outperform girls by 14 points in mathematics and girls outperform boys by 33 points in reading (Figure 4), both differences are statistically significant. Also, the performance of immigrant students who were born outside Hong Kong is significantly poorer than that of local-born students, the difference is up to 30 to 40 points (Figure 5).

Various student and parent factors that might have impact on students' literacy performance are also examined. Results show that students' reading performance is correlated with students' engagement in reading. Engagement in reading refers to three aspects: reading enjoyment, reading diversity, and reading online. Findings in PISA 2009 show that Hong Kong 15-year-olds enjoy reading significantly more compared with their counterparts in the 2002 survey (Figure 6). Moreover, students who enjoy reading tend to have better performance in reading. Regarding reading diversity, while the 2009 cohort read fictions, non-fictions and newspapers more than their counterparts

in 2002, they also read less magazines and comics. Those who read fictions, non-fictions and newspapers more are found to perform better than those who do less. In contrast, frequent readers of magazines and comics perform poorer than those who read less. Regarding online reading activities, Hong Kong students generally engage in more online reading than students of other participating countries apart from two particular types, namely, discussion forum and email. Among the three factors of engagement in reading, reading for enjoyment is the most significant factor impacting on reading performance, whereas reading more diversely or engaging in more online reading may not facilitate high reading performance on the part of the student (Figure 7).

Regarding parental factors, parents' perception of school quality is found to be correlated with their children's reading performance. For parents who are more satisfied with their children's school, the students tend to perform better. Parents' involvement in the child's education at home also has a positive impact on the latter's learning. If the parent interacts more with the child while the latter is learning at home (e.g. discussing with the child about current affairs, movies or television programmes, books or school life), the child tends to do better in reading. However, parents' involvement in the school such as to act as parent volunteers or to attend parental programmes is found to be negatively correlated with students' performance. One possible explanation of this negative relationship could be that at the stage of secondary education, parents' contact with or involvement in the school's activities are quite often initiated by the students' behavioural or academic problems. In other words, parents' involvement in the school is largely problem-oriented. This undesirable condition needs to be further explored for improvement (Figure 8).

The survey has also collected data concerning other educational issues such as teaching and learning in the classroom, parents' investment of resources, and the medium of instruction. These will be further studied and reported.

Organised by the Organisation for Economic Co-operation and Development (OECD), PISA compares and evaluates the effectiveness of education systems by assessing how well 15-year-olds approaching the end of compulsory education have acquired the knowledge and skills essential for participation in society. The assessment is conducted every three years.

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Figure 1-8 and App 1-2 for Reporters

Figure 1 Comparison of Hong Kong Students' Performance in Reading, Mathematics and Science in PISA 2000+, PISA 2003, PISA 2006 and PISA 2009

Year	Reading		Mathematics		Science	
	Mean	S.E.	Mean	S.E.	Mean	S.E.
2000+	525	2.9	560	3.3	541	3.0
2003	510	3.7	550	4.5	539	4.3
2006	536	2.4	547	2.7	542	2.5
2009	533**	2.1	555*	2.7	549**	2.8

* indicates significant difference in mathematics performance between 2009 vs. 2006.

** indicates significant differences in reading and science performance between 2009 vs. 2003 and 2009 vs. 2000+.

Figure 2 Student variance within school and between schools

	Total variance	Between-school variance	Within-school variance
2000	7050	3357	3646
2009	7058	3143	4360
Diff	8	-214	714

Figure 3 Relationship between Student Performance in Reading and ESCS in Twelve Countries/Regions

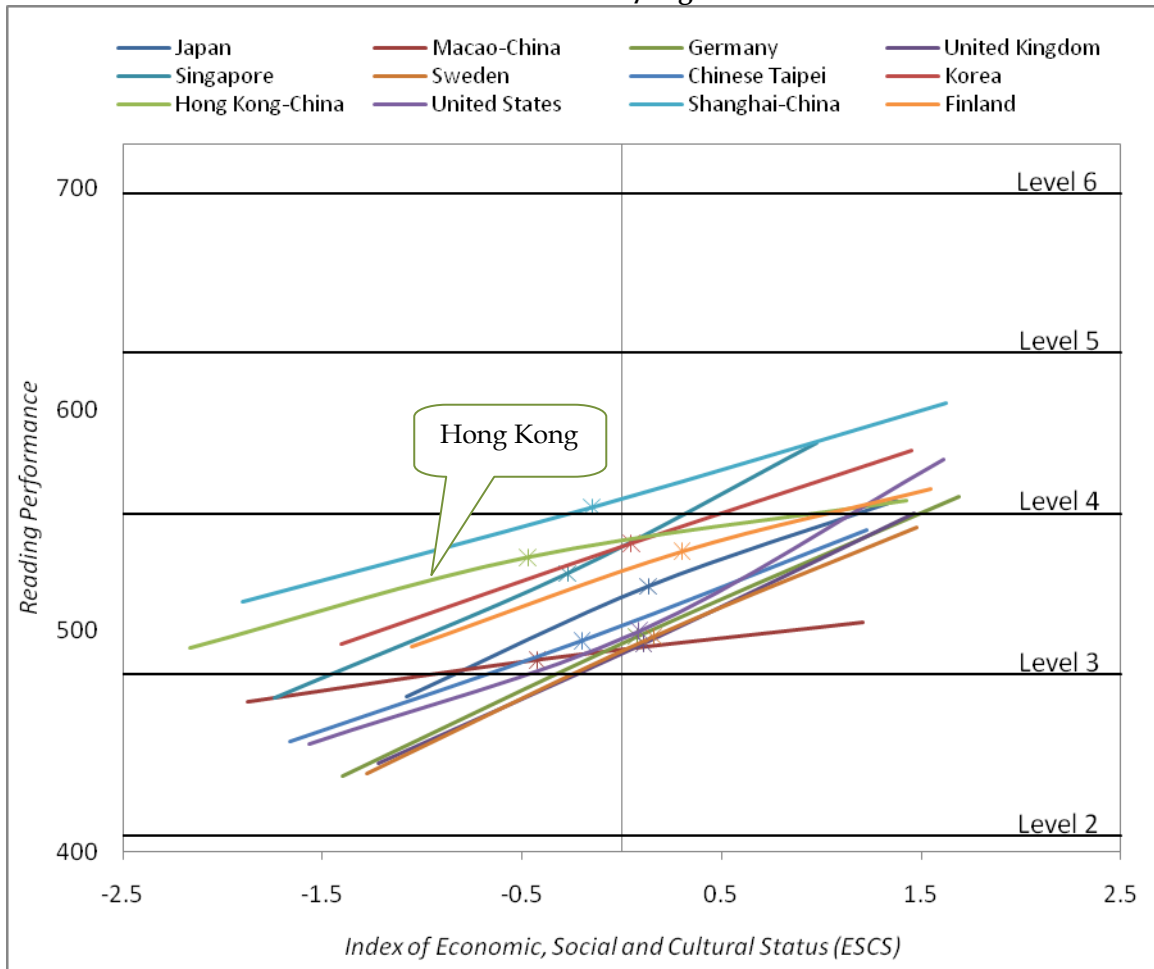
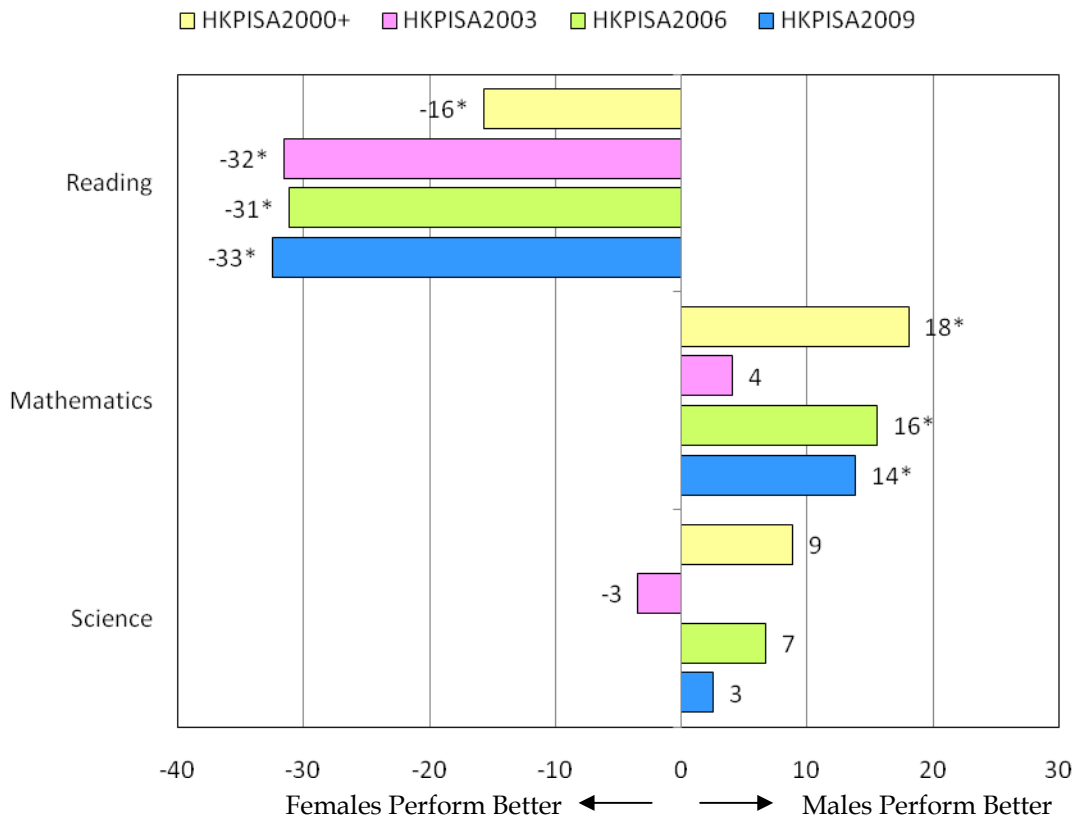


Figure 4 Gender Differences in Reading, Mathematical and Scientific Literacy in PISA 2000+, PISA 2003, PISA 2006, and PISA 2009



* Note: Values that are statistically significant are indicated by an asterisk *.

Figure 5 PISA 2009 Literacy Performance of Hong Kong Students by Immigration Status

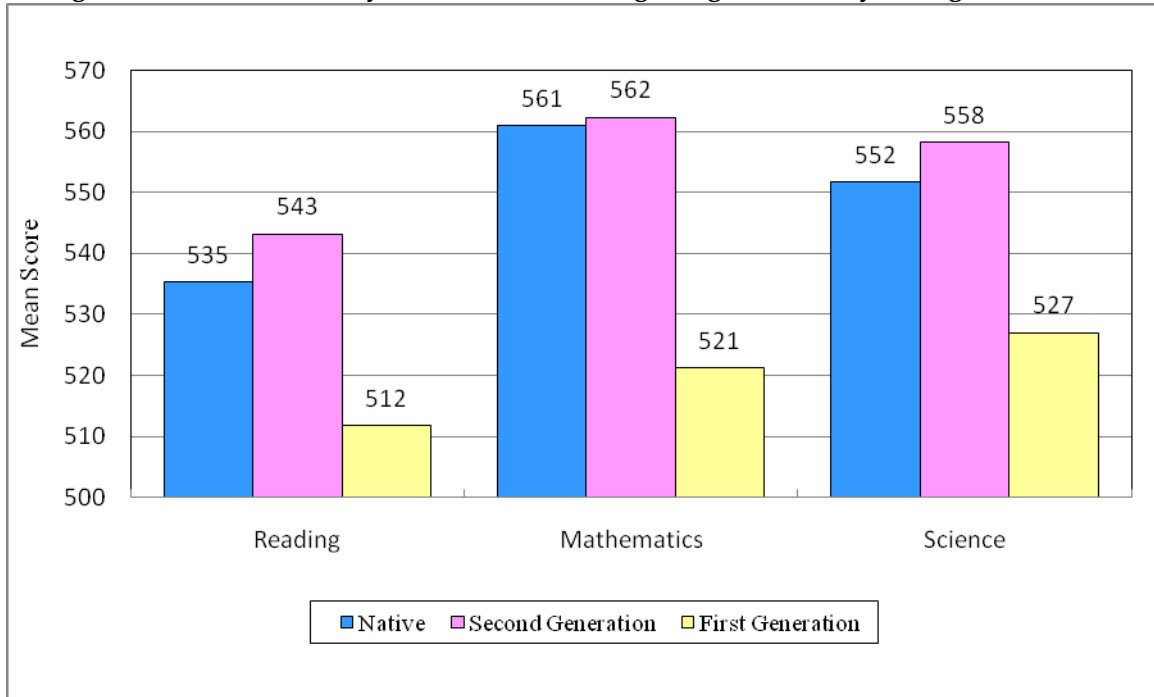


Figure 6 Improvement in Students' Reading Engagement

Reading Attitude from PISA2000+ to PISA2009

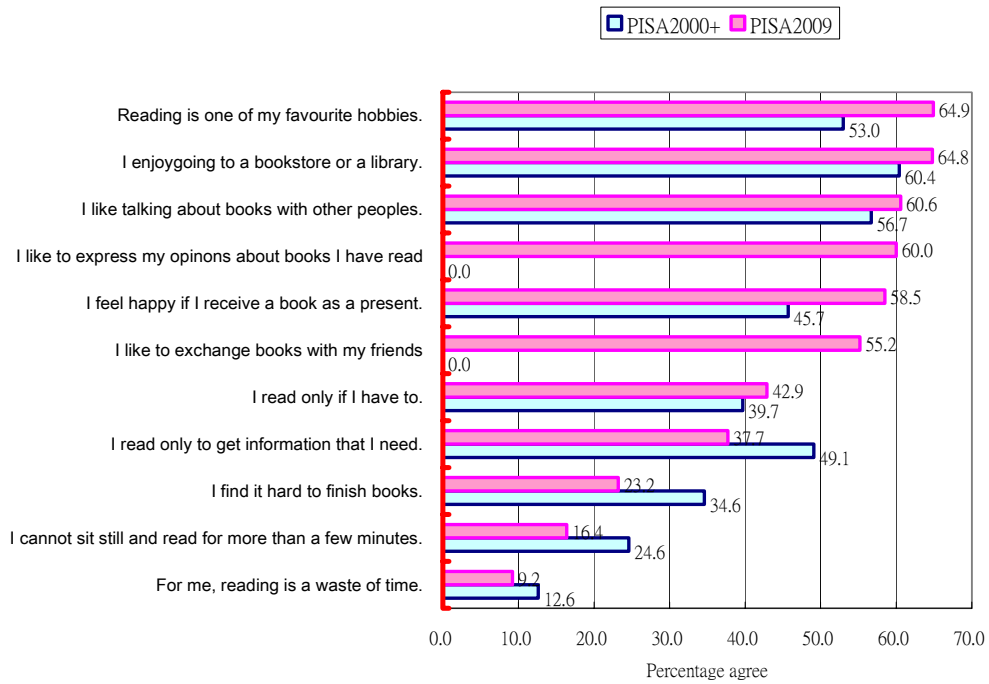


Figure 7 Relationship between Students' Reading Engagement and Their Reading Performance

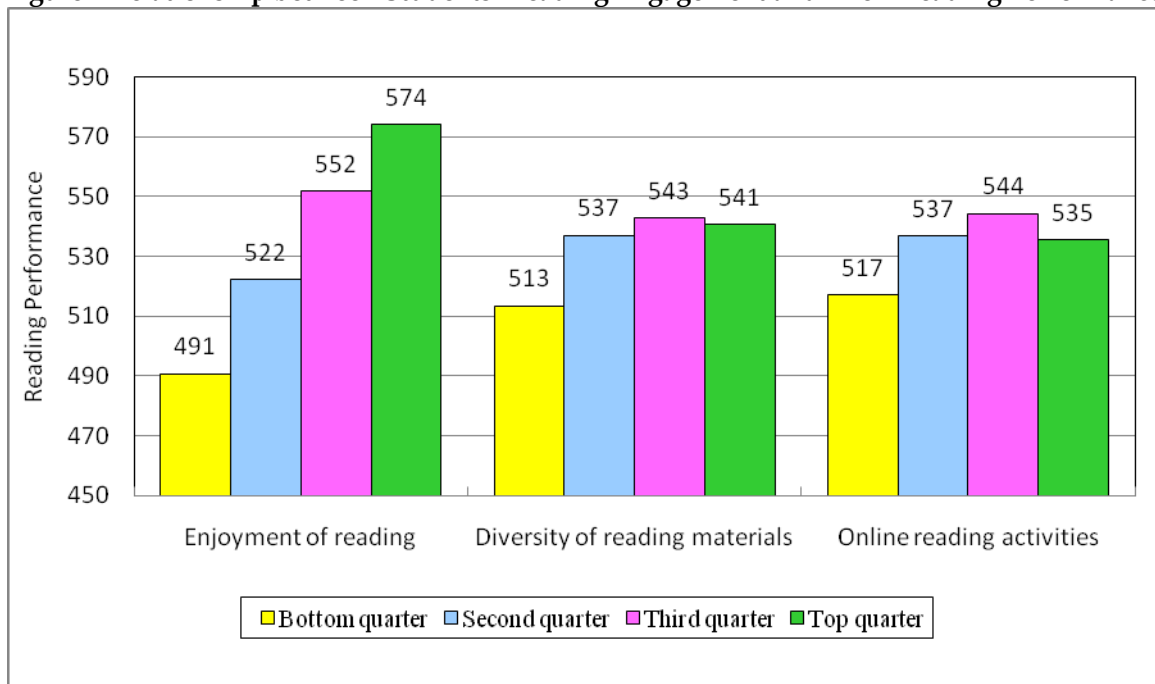
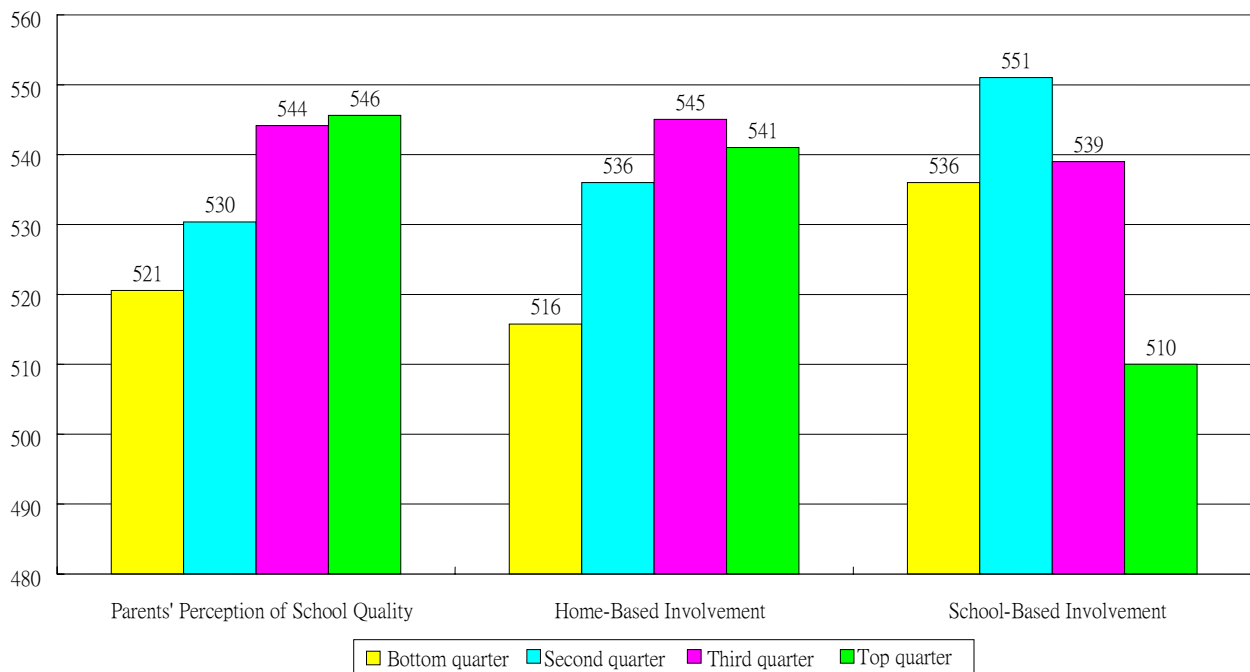


Figure 8 Relationship between Family Involvement and Students' Reading Literacy Performance



Appendix 1 Performance of 15-Year-Old Students in Reading, Mathematical, and Scientific Literacy in PISA 2009

Reading			Mathematics			Science		
Countries / Regions	Mean	SE	Countries / Regions	Mean	SE	Countries / Regions	Mean	SE
Shanghai-China	556	(2.4)	Shanghai-China	600	(2.8)	Shanghai-China	575	(2.3)
Korea	539	(3.5)	Singapore	562	(1.4)	Finland	554	(2.3)
Finland	536	(2.3)	Hong Kong-China	555	(2.7)	Hong Kong-China	549	(2.8)
Hong Kong-China	533	(2.1)	Korea	546	(4.0)	Singapore	542	(1.4)
Singapore	526	(1.1)	Chinese Taipei	543	(3.4)	Japan	539	(3.4)
Canada	524	(1.5)	Finland	541	(2.2)	Korea	538	(3.4)
New Zealand	521	(2.4)	Liechtenstein	536	(4.1)	New Zealand	532	(2.6)
Japan	520	(3.5)	Switzerland	534	(3.3)	Canada	529	(1.6)
Australia	515	(2.3)	Japan	529	(3.3)	Estonia	528	(2.7)
Netherlands	508	(5.1)	Canada	527	(1.6)	Australia	527	(2.5)
Belgium	506	(2.3)	Netherlands	526	(4.7)	Netherlands	522	(5.4)
Norway	503	(2.6)	Macao-China	525	(0.9)	Chinese Taipei	520	(2.6)
Estonia	501	(2.6)	New Zealand	519	(2.3)	Germany	520	(2.8)
Switzerland	501	(2.4)	Belgium	515	(2.3)	Liechtenstein	520	(3.4)
Poland	500	(2.6)	Australia	514	(2.5)	Switzerland	517	(2.8)
Iceland	500	(1.4)	Germany	513	(2.9)	United Kingdom	514	(2.5)
United States	500	(3.7)	Estonia	512	(2.6)	Slovenia	512	(1.1)
Liechtenstein	499	(2.8)	Iceland	507	(1.4)	Macao-China	511	(1.0)
Sweden	497	(2.9)	Denmark	503	(2.6)	Poland	508	(2.4)
Germany	497	(2.7)	Slovenia	501	(1.2)	Ireland	508	(3.3)
Ireland	496	(3.0)	Norway	498	(2.4)	Belgium	507	(2.5)
France	496	(3.4)	France	497	(3.1)	Hungary	503	(3.1)
Chinese Taipei	495	(2.6)	Slovak Republic	497	(3.1)	United States	502	(3.6)
Denmark	495	(2.1)	Austria	496	(2.7)	Czech Republic	500	(3.0)
United Kingdom	494	(2.3)	Poland	495	(2.8)	Norway	500	(2.6)
Hungary	494	(3.2)	Sweden	494	(2.9)	Denmark	499	(2.5)
Portugal	489	(3.1)	Czech Republic	493	(2.8)	France	498	(3.6)
Macao-China	487	(0.9)	United Kingdom	492	(2.4)	Iceland	496	(1.4)
Italy	486	(1.6)	Hungary	490	(3.5)	Sweden	495	(2.7)
Latvia	484	(3.0)	Luxembourg	489	(1.2)	Austria	494	(3.2)
Slovenia	483	(1.0)	United States	487	(3.6)	Latvia	494	(3.1)
Greece	483	(4.3)	Ireland	487	(2.5)	Portugal	493	(2.9)
Spain	481	(2.0)	Portugal	487	(2.9)	Lithuania	491	(2.9)
Czech Republic	478	(2.9)	Spain	483	(2.1)	Slovak Republic	490	(3.0)
Slovak Republic	477	(2.5)	Italy	483	(1.9)	Italy	489	(1.8)
Croatia	476	(2.9)	Latvia	482	(3.1)	Spain	488	(2.1)
Israel	474	(3.6)	Lithuania	477	(2.6)	Croatia	486	(2.8)
Luxembourg	472	(1.3)	Russian Federation	468	(3.3)	Luxembourg	484	(1.2)
Austria	470	(2.9)	Greece	466	(3.9)	Russian Federation	478	(3.3)
Lithuania	468	(2.4)	Croatia	460	(3.1)	Greece	470	(4.0)
Turkey	464	(3.5)	Dubai (UAE)	453	(1.1)	Dubai (UAE)	466	(1.2)
Dubai (UAE)	459	(1.1)	Israel	447	(3.3)	Israel	455	(3.1)
Russian Federation	459	(3.3)	Turkey	445	(4.4)	Turkey	454	(3.6)
Chile	449	(3.1)	Serbia	442	(2.9)	Chile	447	(2.9)
Serbia	442	(2.4)	Azerbaijan	431	(2.8)	Serbia	443	(2.4)
Bulgaria	429	(6.7)	Bulgaria	428	(5.9)	Bulgaria	439	(5.9)
Uruguay	426	(2.6)	Romania	427	(3.4)	Romania	428	(3.4)
Mexico	425	(2.0)	Uruguay	427	(2.6)	Uruguay	427	(2.6)
Romania	424	(4.1)	Chile	421	(3.1)	Thailand	425	(3.0)
Thailand	421	(2.6)	Thailand	419	(3.2)	Mexico	416	(1.8)
Trinidad and Tobago	416	(1.2)	Mexico	419	(1.8)	Jordan	415	(3.5)
Colombia	413	(3.7)	Trinidad and Tobago	414	(1.3)	Trinidad and Tobago	410	(1.2)
Brazil	412	(2.7)	Kazakhstan	405	(3.0)	Brazil	405	(2.4)
Montenegro	408	(1.7)	Montenegro	403	(2.0)	Colombia	402	(3.6)
Jordan	405	(3.3)	Argentina	388	(4.1)	Montenegro	401	(2.0)
Tunisia	404	(2.9)	Jordan	387	(3.7)	Argentina	401	(4.6)
Indonesia	402	(3.7)	Brazil	386	(2.4)	Tunisia	401	(2.7)
Argentina	398	(4.6)	Colombia	381	(3.2)	Kazakhstan	400	(3.1)
Kazakhstan	390	(3.1)	Albania	377	(4.0)	Albania	391	(3.9)
Albania	385	(4.0)	Tunisia	371	(3.0)	Indonesia	383	(3.8)
Qatar	372	(0.8)	Indonesia	371	(3.7)	Qatar	379	(0.9)
Panama	371	(6.5)	Qatar	368	(0.7)	Panama	376	(5.7)
Peru	370	(4.0)	Peru	365	(4.0)	Azerbaijan	373	(3.1)
Azerbaijan	362	(3.3)	Panama	360	(5.2)	Peru	369	(3.5)
Kyrgyzstan	314	(3.2)	Kyrgyzstan	331	(2.9)	Kyrgyzstan	330	(2.9)
<i>OECD average</i>	<i>493</i>	<i>(0.5)</i>	<i>OECD average</i>	<i>496</i>	<i>(0.5)</i>	<i>OECD average</i>	<i>501</i>	<i>(0.5)</i>

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

Appendix 2 Performance in Reading and the Impact of Socio-economic Background

Average performance of countries on the PISA reading scale and the relationship between performance and the index of economic, social and cultural status

