

# SAVE OUR SCHOOLS

## Education Research Brief

### Education Quality and Inequity is Worsening in Australia

The latest international test results show that Australian education is still a high quality, low equity system, but that quality is declining and inequity is increasing.

The new test results released for the Programme for International Assessment (PISA) show Australia has high average results in reading, mathematics and science which are well above the OECD average. However, reading and mathematics performance has declined since 2000. Australia's international ranking slipped slightly, although this is partly due to new countries participating in PISA.

About 15% of Australian 15 year-old students did not achieve the international proficiency benchmarks in reading, mathematics and science in 2009. The achievement gaps between high socio-economic status (SES) and low SES students are high and have increased since 2006. Low SES students are now two to three years behind high SES students in learning.

#### High average, but declining results

In reading, Australian students had a mean score of 515 points which was much higher than the OECD average of 493 points. Australia's mean score in mathematics was 514 points compared to the OECD average of 496 and for science it was 527 points compared to the OECD average of 501.

Australia remains amongst the top performing countries in reading, mathematics and science.

In reading, Australia was significantly outperformed by only six countries: Shanghai – China, Korea, Finland, Hong Kong – China, Singapore and Canada and two of these (Shanghai – China and Singapore) participated for the first time in PISA 2009. Australia's performance was similar to that of New Zealand, Japan and the Netherlands. The reading results for the other 55 countries participating in the tests were significantly lower than Australia.

In mathematics, Australia was outperformed by twelve countries: Shanghai – China, Singapore, Hong Kong – China, Korea, Chinese Taipei, Finland, Liechtenstein, Switzerland, Japan, Canada, the Netherlands, and Macao – China. Australia had a similar mean score to New Zealand, Belgium, Germany and Estonia.

Australia was outperformed by six countries in science: Shanghai – China, Finland, Hong Kong – China, Singapore, Japan and Korea. Australia's performance was similar to New Zealand, Canada, Estonia, the Netherlands, Chinese Taipei, Germany and Liechtenstein.

There was a small decline in reading performance since PISA 2000 and a larger decline in mathematics. Australia was the only high performing country to show a decline in reading with its mean score falling by 13 points since 2000. Australia's average score in mathematics fell by 19 points between 2000 and 2009 while the science score was about the same as in

2000. The 2006 and 2009 PISA reports attributed the declines in mathematics and reading, respectively, to falling proportions of students achieving at the most advanced levels.

Reading performance decreased significantly between 2000 and 2009 in four states and territories. There was a 31 score point decline in Tasmania and South Australia, which is the equivalent of nearly one year of schooling. New South Wales and the ACT reported declines of around 20 points, representing about half a year of schooling.

All states except Queensland recorded significant declines in mathematics since 2000. The largest changes were in Tasmania (30 points) and NSW (28 points). The ACT score fell by 20 points while Victoria, Northern Territory, South Australia and Western Australia had declines of 15-18 points.

Significant declines in science mean scores occurred in South Australia (20 points) and Tasmania (13 points) between 2000 and 2009.

### **High inequity in education**

The new results show that about three in every 20 Australian students are not achieving international benchmarks in reading, mathematics and science at the age of 15. In 2009, 14% of students did not achieve the reading benchmark, 16% did not achieve the mathematics benchmark and 12% did not achieve the science benchmark.

The range of test scores between the highest and lowest achieving students remains high by international standards. The score range in reading was 325 points compared to the OECD average of 305, 258 for Korea and 284 for Finland. Australia's score range in mathematics was 308 compared to 300 for the OECD, 270 for Finland and 286 for Canada. In science, Australia's score range was 333 compared to 308 for the OECD, 266 for Korea and 294 for Finland.

There are very large achievement gaps between high SES students and low SES, Indigenous and remote area students.

Low SES students are two to three years in learning behind their high SES counterparts. Students in the highest SES quartile achieved a mean score of 562 points in reading compared to students in the lowest quartile who achieved a mean score of 471 points, a gap of 91 points. This is the equivalent of nearly three years of schooling. In mathematics, the achievement gap between high and low SES students is the equivalent of just over two years of schooling and in science it is about 2½ years.

These achievement gaps have increased since 2006: by 7 points in reading; 12 points in mathematics and 9 points in science. The achievement gaps in reading and science increased because of small declines in the average results for low SES students and small increases for high SES students. The gap widened in mathematics because of a significant decline in the average point score for low SES students.

Indigenous students are three to four years in learning behind high SES students and two to 2½ years behind non-Indigenous students. In 2009, the average mean score in reading by Indigenous students was 436 compared to 518 for non-Indigenous students and 562 for high SES students. The gap between Indigenous and non-Indigenous students was 82 points, which is the equivalent of about 2½ years of schooling. The gap between Indigenous students

and high SES students was 126 points, which is the equivalent of nearly four years of schooling.

In mathematics, the achievement gap between Indigenous and high SES students is the equivalent of three years of schooling and in science it was about 3½ years. There was little change in these gaps between 2006 and 2009.

Remote area students are two to three years behind high SES students and about 18 months behind metropolitan students. In 2009, the average mean score in reading for remote area students was 465 compared to 521 for metropolitan students and 562 for high SES students. The gap of 56 points between remote area and metropolitan students is the equivalent of about 18 months of schooling while the gap of 97 points between remote area and high SES students is the equivalent of about three years of schooling. The achievement gap between remote area and high SES students in mathematics is the equivalent of nearly 2½ years of schooling and in science it is over 2½ years.

The gap in reading between remote area and high SES students has increased significantly since 2006, but there was little change in the mathematics and science gaps.

Very high proportions of low SES, Indigenous and remote area students are performing at the lowest levels.

One-quarter of all low SES students are not achieving the reading proficiency benchmark, 28% are not achieving the mathematics benchmark and 22% are not achieving science benchmark. This compares with only 4-5% of high SES students not achieving these benchmarks. This gap has worsened since 2006 as the proportion of low SES students not achieving the reading and mathematics benchmarks has increased from 22-23% in 2006.

About 40% of Indigenous students did not achieve the reading and mathematics benchmarks in 2009 and 35% did not achieve the science benchmark. There has been little change since 2006.

One-quarter to a third of remote area students are not achieving the proficiency benchmarks: 29% did not achieve the reading benchmark in 2009; 33% did not achieve the mathematics benchmark and 24% did not achieve the science benchmark. The percentage of students not achieving the reading and mathematics benchmarks has increased since 2006, while the percentage not achieving the science benchmark decreased slightly.

### **School sector results**

For the first time, PISA has reported the results separately for government, Catholic and Independent schools. The average results for government schools are below those of Catholic and Independent schools. However, once differences in students' socio-economic background were taken into account (by adjusting the mean scores for student's individual socio-economic background and for the school average socio-economic background), there were no longer any statistically significant differences in the average reading, mathematical and scientific literacy scores of students from the different school sectors.

### **Conclusion**

The PISA report for Australia highlights several challenges facing Australian education. One is the decline in average results reading and mathematics over the past few years. A major

challenge is the large achievement gaps between rich and poor and which are up to three years of schooling. The report states:

This gap places an unacceptable proportion of 15-year-old students at serious risk of not achieving levels sufficient for them to effectively participate in the 21st century work force and to contribute to Australia as productive citizens. [298]

The report also highlights the low levels of achievement amongst remote area students and the achievement gaps between these and metropolitan students.

The large majority of low SES and remote area students attend government schools. Consequently, as the separate summary of the report concludes “...so more must be done to address the level of resourcing in schools that the majority of Australian students attend” [20].

Trevor Cobbold  
National Convenor  
8 December 2010

PISA 2009 Results at a Glance follows

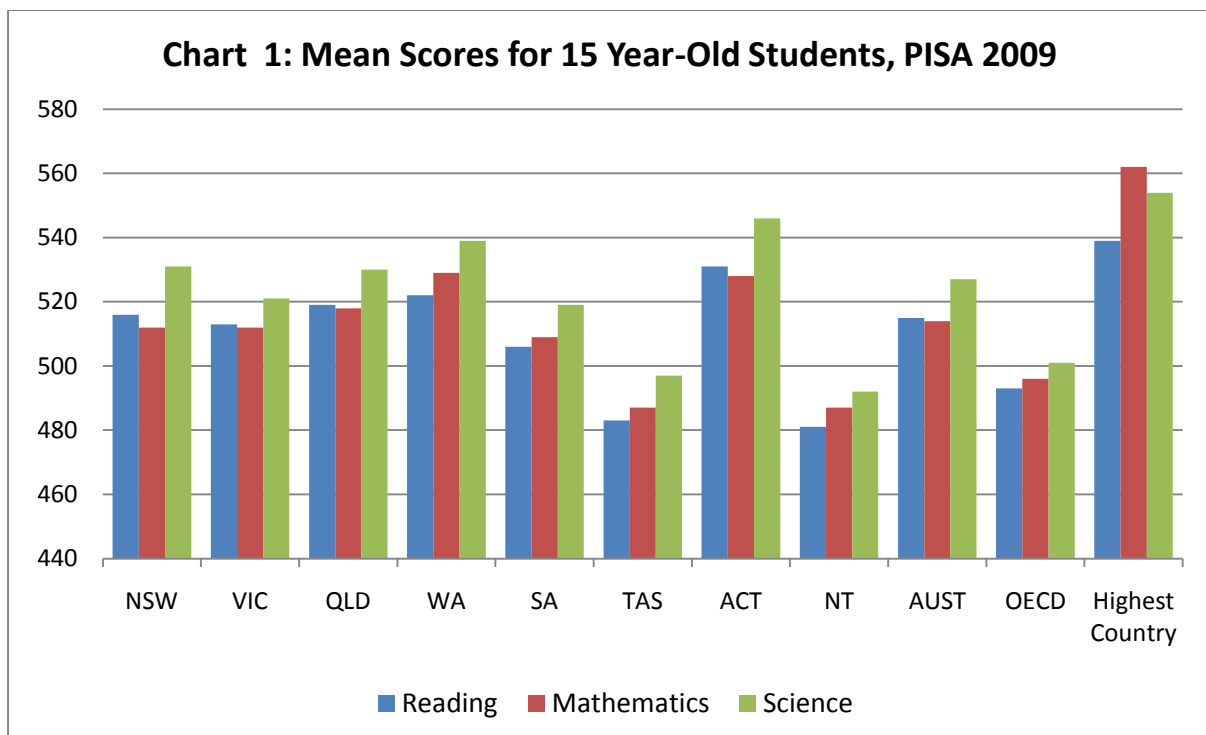
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# PISA 2009 Results At a Glance

## Summary outcomes

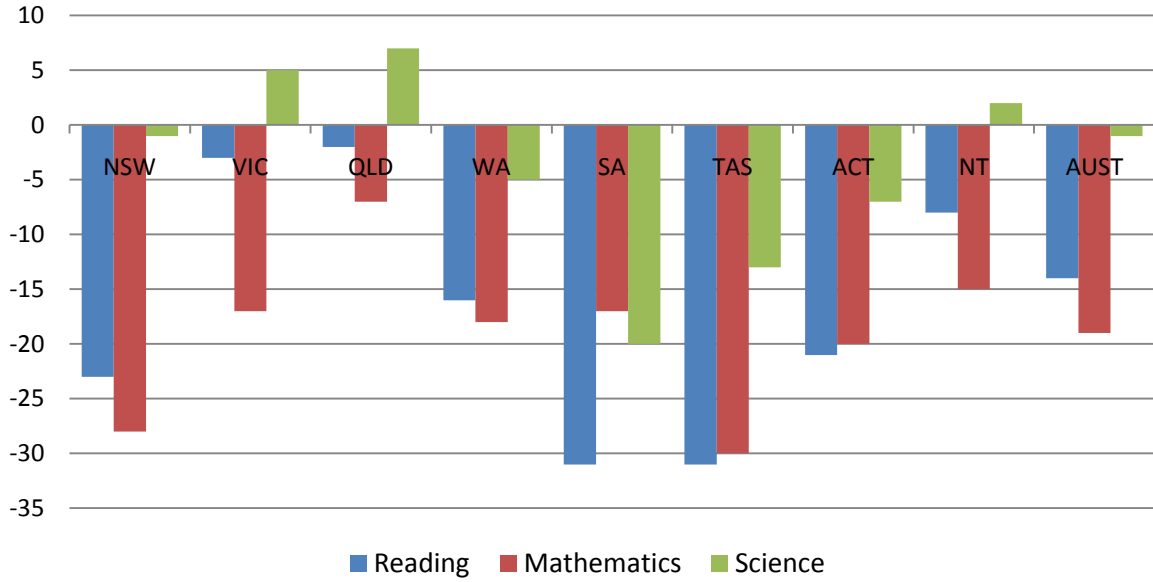
- High average results – Australia still has amongst the highest results in the world.
- 12-16% of students are not achieving international proficiency benchmarks.
- Declining average results in reading and mathematics – equal to about 6 months of schooling in the case of mathematics.
- No difference between government, Catholic and Independent school results when SES composition is taken into account.
- High inequality in school outcomes:
  - The range of scores between the highest and lowest achieving students is high by international standards.
  - Very low proportions of low SES, Indigenous and remote area students performing at the highest levels.
  - High proportions of low SES, Indigenous and remote area students performing at the lowest levels:
    - 22-28% of low SES students not achieving proficiency benchmarks compared with 4-5% of high SES students.
    - 35-40% of Indigenous students not achieving benchmarks.
    - 24-33% of remote area students not achieving benchmarks.
- Achievement gap between low SES and high SES students increased between 2006 and 2009 and is equivalent to over two years of schooling.



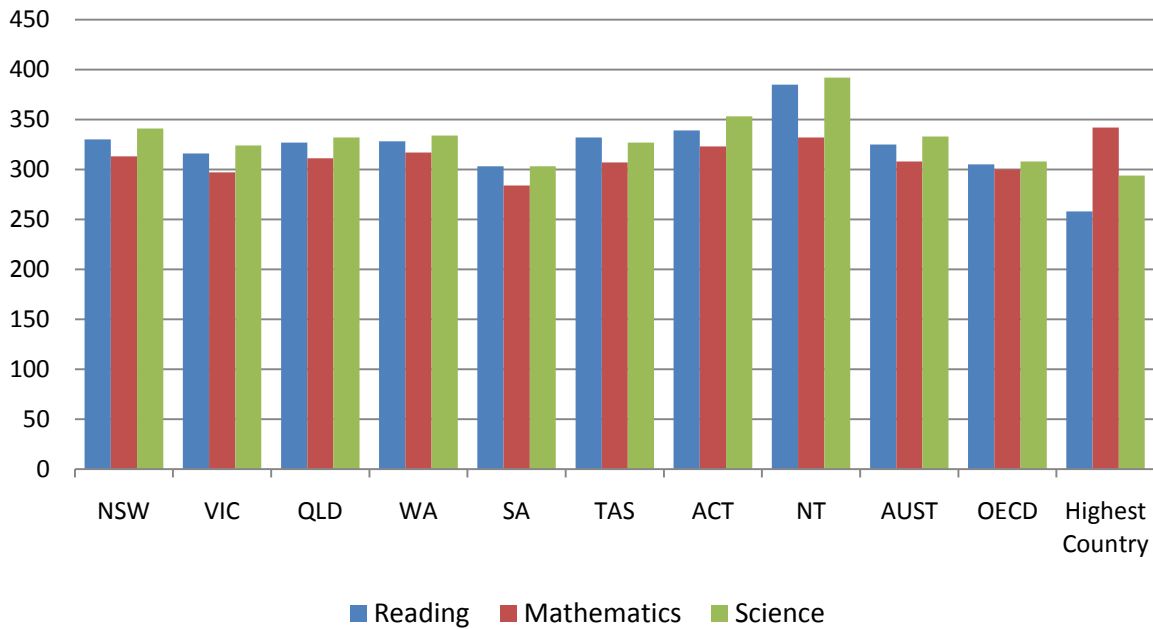
### Notes:

The highest country refers to sovereign countries. Shanghai was the highest performer in reading, mathematics and science. Korea was the highest achieving country in reading, but Shanghai's reading score was 556. Singapore was the highest country in mathematics, but Shanghai's mathematics score was 600. Finland was the highest country in science, but Shanghai's science score was 575.

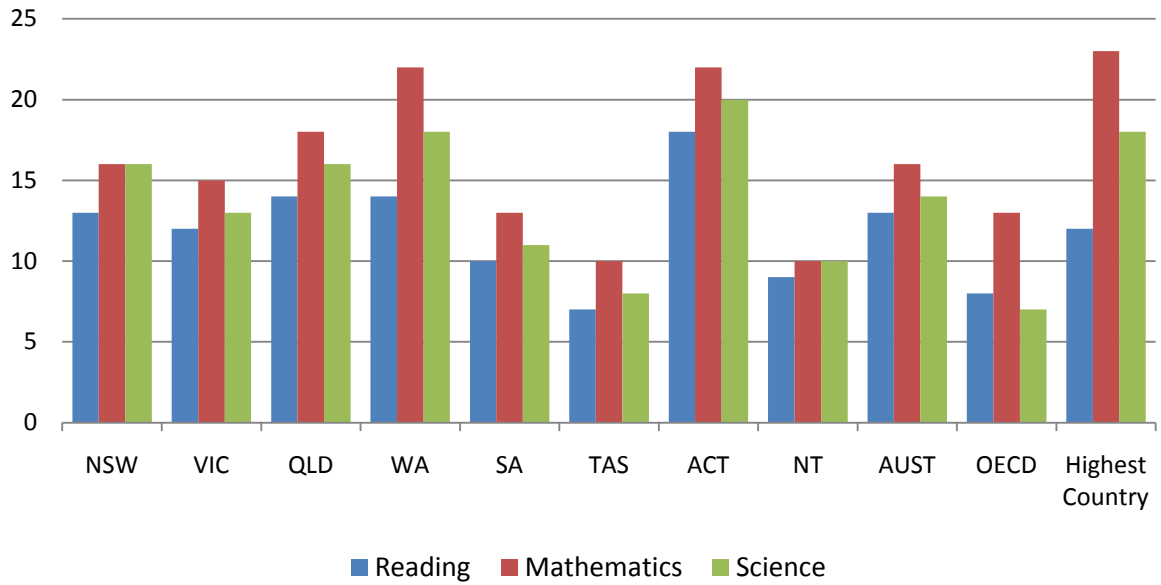
**Chart 2: Change in Mean Scores for 15 Year-Old Students, 2000 - 2009**



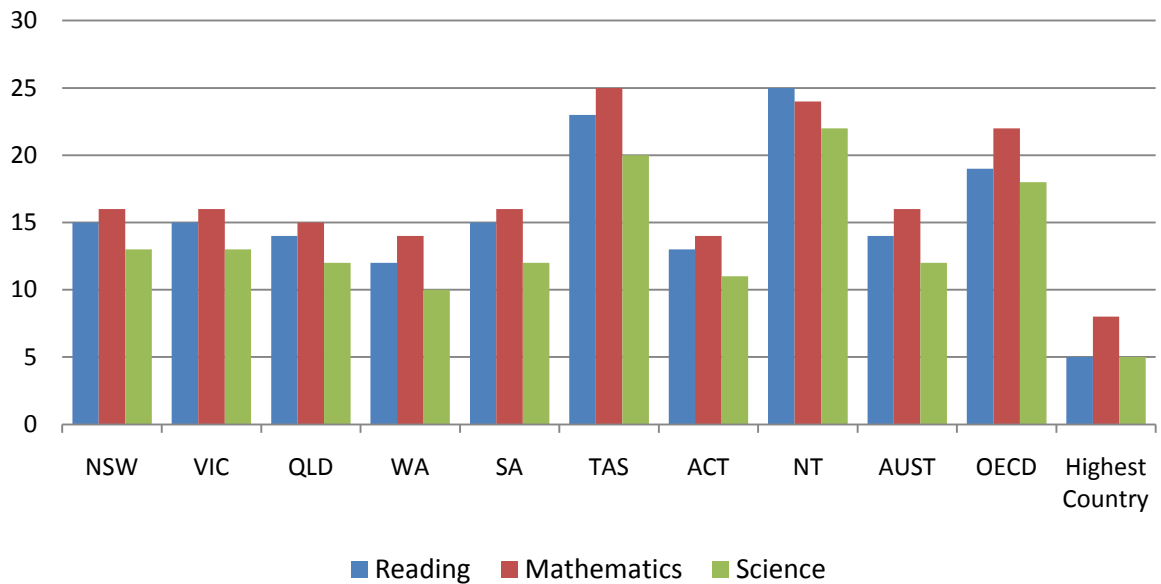
**Chart 3: Score Ranges for 15 Year-Old Students, PISA 2009**



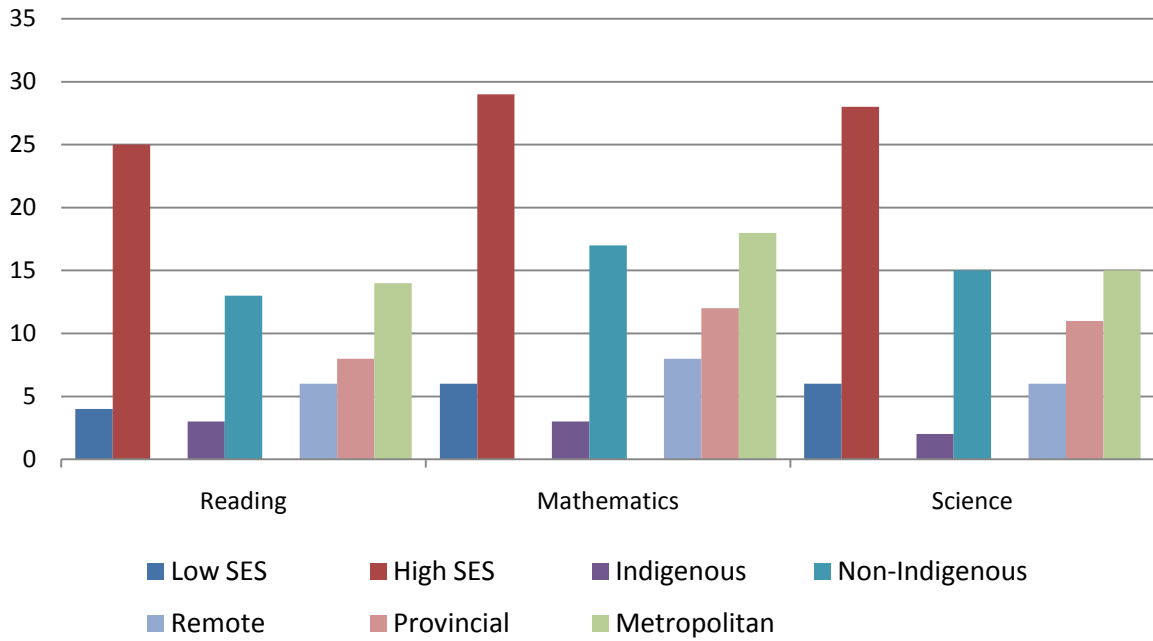
**Chart 4: Proportion of 15 Year-Old Students at Level 5 and Above, PISA 2009 (%)**



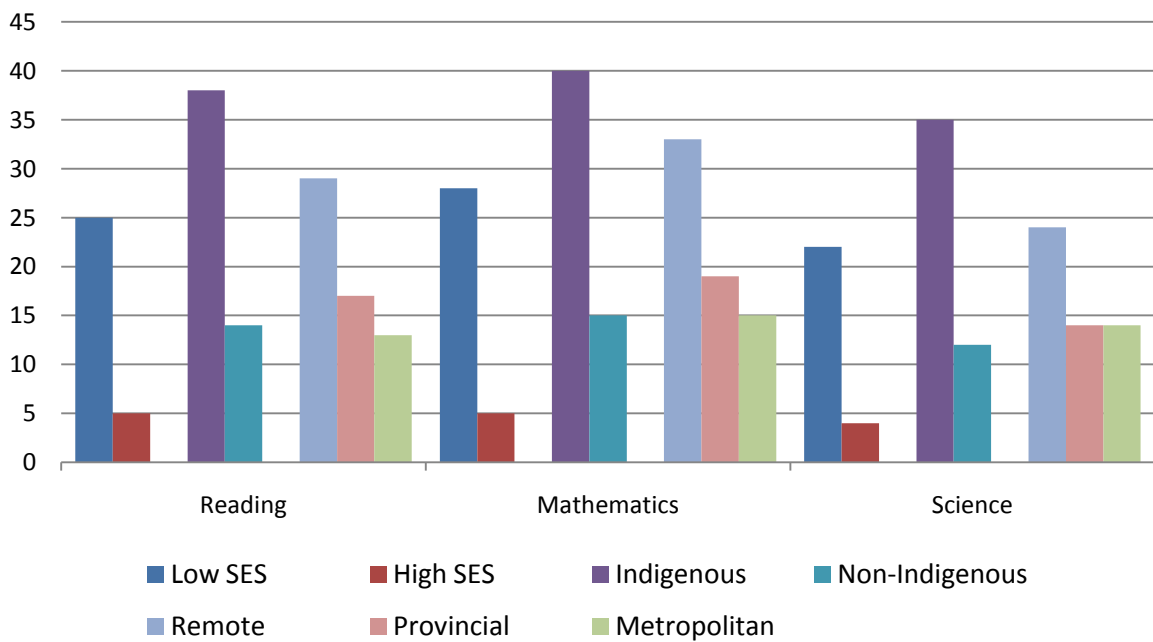
**Chart 5: Proportion of 15 Year-Old Students Below Proficiency Benchmark, PISA 2009 (%)**



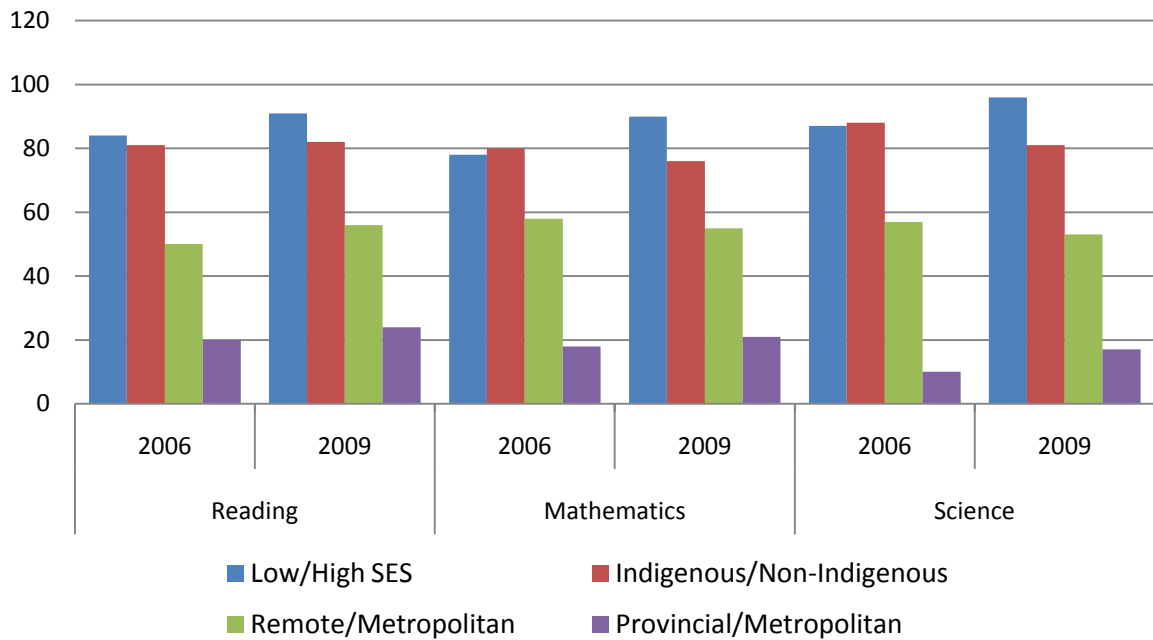
**Chart 6: Proportion of Equity Group Students at Level 5 and Above, PISA 2009 (%)**



**Chart 7: Proportion of Equity Group Students Below Proficiency Benchmark, PISA 2009 (%)**



**Chart 8: Achievement Gaps for Equity Groups, 2006-2009  
(PISA Point Scale)**



**Chart 9: Achievement Gaps Between Equity Groups and High SES Students, 2006-2009  
(PISA Point Scale)**

