

## **PISA 2009: Results for Ireland and Changes Since 2000**

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The Educational Research Centre (ERC) has released a new in-depth report examining the results for Ireland from the latest round of the OECD's PISA study. The report includes attempts to explain the performance of students in Ireland and a set of recommendations arising from the results. The full report, as well as previous national publications on PISA, can be accessed at [www.erc.ie/pisa](http://www.erc.ie/pisa).

### ***Background Note:***

The OECD's Programme for International Student Assessment (PISA) is an international survey of the achievement of 15-year-old students in reading, mathematical and scientific literacy, carried out every three years beginning in 2000. The focus of the most recent PISA cycle, which took place in 2009, was on reading literacy, though in all cycles, all three areas are assessed. International reports and national summaries on PISA 2009 were published in December 2010 and June 2011.

An important new component of PISA 2009 was that students in 19 of the participating countries, including Ireland, took part in a computer-based test of reading.

The first published reports of PISA 2009 indicated that the average reading score of Irish students dropped by 31 points (about a third of a standard deviation) since 2000. Also, the percentage of low achievers in reading (below the OECD's benchmark proficiency Level 2) rose from 11% to 17%. In mathematics, Ireland's average score dropped by 16 points (since 2003, when mathematics was last a major focus in PISA). Though only half the size of the decline in reading, in 2009, it was estimated that one in five (21%) of students in Ireland performed below the OECD's benchmark Level 2 in mathematics. In contrast to reading and mathematics, Ireland's achievement in science has not changed since 2006 (when science was a major focus of PISA), and the Irish mean of 508 was significantly above the OECD average of 500.

### ***Key Findings:***

Print and digital reading performance compared: Unlike achievement in print reading on which the Irish mean did not differ from the OECD average, the mean score for Ireland on digital reading (509) was significantly above the OECD average (499). The gender difference on the digital assessment was smaller than on the print one, due to the relatively higher performance of boys: while 23% of boys scored below proficiency Level 2 on print reading, just 17% did so on digital reading.

Possible reasons for changes in reading and mathematics scores: The decline in print reading and mathematics scores raises the question as to whether this signals a decline in literacy and numeracy standards, or whether other factors may be at play. An independent review by Statistics Canada has ruled out a number of aspects of PISA that might have been relevant. These include the sampling procedures (e.g. the extent to which the PISA sample is representative of the population), participation rates, and test administration procedures. While none of these could explain the changes in performance in 2009, researchers at the ERC note five factors that may help to explain some of the changes in student scores, though they are careful to point out that in their view, these do not account for all of the decline. These are:

- (i) An increase in immigrant students since 2000 (from 2.3% to 8.3%) and a decrease in the socioeconomic scores of the immigrant group.
- (ii) A small drop in the number of early school leavers (from 2.1% to 1.5%).

- (iii) A possible increase in the participation of students with special educational needs (though the increase is not quantifiable).
- (iv) An increase from 16% to 24% in the percentage of PISA students in Transition Year, with a corresponding decrease in Fifth Year. Transition Year students showed the largest declines in mathematics, while students in Fifth Year had the largest drop in reading scores.
- (v) Eight schools had very low average performance in 2009, while there were no schools in 2000 with similarly low scores. It is not possible to conclude whether these eight schools represent chance relating to sampling, changes in the social and demographic characteristics of students in some schools, or a combination of these and other factors.

While each of these factors has been examined in previous work by the ERC, the present report contains new insights on student engagement with the test and on potentially problematic issues with the PISA survey design and methodology.

New findings on students' responses to the test are, according to the ERC, important in understanding the changes in achievement scores. These show that students did not engage in, or try as hard on, the PISA tests in 2009 compared to previous cycles. This is evident in the increase in the number of questions that students did not attempt.

In particular, students in Ireland skipped many more questions in the last quarter of their test booklets in 2009 compared to previously, while the percentages of correct responses in the first quarter of the booklets did not change. This effect was particularly pronounced in reading, while results for mathematics suggest that declines in both proficiency and engagement may have been at play. Students in Ireland did not show a fall-off in engagement in science or digital reading in the same way as they did for print reading and mathematics.

Commenting on the findings for print reading and mathematics on one hand, and science and digital reading on the other, the ERC notes that (i) the science questions are presented with less stimulus text 'all in one go', which contrasts with print reading, where students often encounter longer, denser text passages, usually followed by a larger number of questions, and (ii) the digital reading test had the look and feel of a web-based environment that may have appealed more to 15-year-olds; also, it took just 40 minutes while the print-based assessment of reading took two hours. This suggests that in Ireland, an increase in the prevalence of 'don't-care' may be as important, if not more so, than 'can't-do', in interpreting the PISA 2009 results.

The report includes a commentary on the technical aspects of PISA – how it produces achievement scores and links achievement from cycle to cycle. The authors conclude that while PISA is administered using rigorous technical standards, aspects of its measurement of achievement, particularly measure of change, could be improved. For example, comparisons of reading achievement in 2000 and 2009 are based on a relatively small number of test questions, which makes the link prone to being unstable. As common sense suggests, it would be foolish to make definitive conclusions on the basis of the findings from one study, though the results for reading and mathematics certainly give cause for concern about literacy and numeracy standards in Ireland.

Changes in reading behaviours and attitudes: Since 2000, there has been an increase in the percentages of students who don't read at all for enjoyment, from 33% to 42%, and this increase was greater among students with lower socioeconomic scores. Female students in Ireland also reported that they enjoyed reading less in 2009 than in 2000. Both frequency of reading and enjoyment of reading have relatively strong, robust relationships with achievement.

Characteristics that are important in explaining achievement: The report includes analyses that examine several background characteristics and their relationships with achievement simultaneously ('multilevel modelling'). Findings indicate that:

- (i) Gender differences in reading engagement and reading strategies in themselves explain two-thirds of the gender difference in reading achievement.
- (ii) The size of the gender gap in achievement varies considerably across mixed-sex schools (with a large gap in some mixed-sex schools, and a small gap in others).
- (iii) A majority of the characteristics that emerged as important in explaining achievement differences relate to individual student demographics and behaviours/attitudes, including language spoken at home, parental education and occupation, books in the home, engagement in part-time work, use of reading strategies, and positive attitudes towards reading.

Results suggest that schools in Ireland differed more from one another in average reading achievement in 2009 than they did in 2000, which raises some equity concerns. However, schools in Ireland in 2009 were less different to one another in terms of achievement than on average across the OECD.

### *Recommendations:*

The report contains 31 recommendations, some of which are already being at least partially advanced in the context of the *National Strategy to Improve Literacy and Numeracy Among Young People* ([www.education.ie](http://www.education.ie)), and the report on *Reading Literacy in PISA 2009: A Guide for Teachers* ([www.erc.ie](http://www.erc.ie)). The recommendations are grouped under 10 headings and cover areas such as:

- support for literacy development across the post-primary curriculum, including the provision of direct instruction in reading comprehension strategies to students across subject areas
- enhancement of students' engagement with reading, both print and digital
- evaluation of *Project Maths* that draws from other sources such as responses to individual PISA questions and mathematics assessments at primary level
- a review of Transition Year mathematics programmes
- identification of school characteristics associated with smaller gender differences in reading
- strengthening of national assessment data as spelled out in the *National Strategy to Improve Literacy and Numeracy*
- maintaining equity in the Irish education system in the face of demographic and curricular change.

### *Further Information:*

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