

Briefing Note

National Assessments of English Reading and Maths 2014

Summary

The National Assessments of English Reading and Mathematics

- National assessments of English reading and mathematics at Second and Sixth classes were conducted in May 2014 by the Educational Research Centre in a representative sample of 150 primary schools using secure tests.
- The ERC report (published today, January 12, 2015) focuses on the performance of pupils in National Assessments 2014 (NA 2014) relative to the performance of pupils who participated in National Assessments in 2009 (NA 2009).

Strengths

- Overall performance on reading and mathematics in Second and Sixth classes was significantly higher in NA 2014 than in NA 2009. **These are the first significant improvements in standards in reading and maths recorded by the national assessments in over thirty years.** (The last time improvements were noted was 1980, when the 1980 data was compared to the 1972 data).
- There has been a reduction in the proportion of lower-achieving students and an increase in the proportion of higher achievement students in both English reading and mathematics.
- There has been an improvement in the area of Shape and Space. This is encouraging, given the difficulties that Irish students have had with this element of maths in PISA.
- Gender differences in relation to English reading and mathematics in NA 2014 were relatively small.
- All of the targets in the National Literacy and Numeracy Strategy relating to attainment at primary level have been reached well in advance of the scheduled target date of 2020.

Areas for development

- While the results of NA 2014 are welcome, it is clear that there is much scope for improvement, especially in the case of mathematics and DEIS schools.
- There is considerable scope for pupils in Second and Sixth classes to improve further on higher-level mathematical processes, including their ability to apply and problem solve.
- While there have been improvements in reading in DEIS schools since NA 2009, there has been no real reduction in the gap between pupils in DEIS urban schools and pupils in other school types. The large proportion of very low achievers in reading in DEIS urban Band 1 schools is a particular concern. With some exceptions, performance in mathematics in DEIS schools is still well below national standards

Actions

- The analysis of the context data from questionnaires administered in NA 2014 is yet to be completed. This means that it is difficult to confidently attribute the improved performance to any single factor.
- However, the improvement could be attributed to the range of measures being implemented as part of the National Literacy and Numeracy Strategy, particularly in relation to teacher continual professional development and the emphasis that has been placed on target setting in literacy and numeracy in schools. It is to be noted that while the performance of sixth class pupils in NA 2014 was strong, they would not have had the full benefit of the National Literacy and Numeracy Strategy throughout their schooling. Greater improvements were seen at second class level possibly because pupils in these classes benefitted from the Literacy and Numeracy Strategy when they were in the junior classes unlike their counterparts in sixth class.
- The significant improvements in pupils' performance are of course welcome. Given that no significant improvement had been achieved in reading or maths over three decades, the targets for improvement in the National Literacy and Numeracy Strategy in 2011 were thought to be ambitious. However, given that these have now been achieved for the overall student population, there is scope to reconsider these overall targets and seek further improvement as part of an interim review of the National Literacy and Numeracy Strategy.
- More importantly, there is need to consider the setting of separate new national targets for literacy and numeracy for sub-groups of pupils. These targets may focus on particular school types (such as DEIS Band 1 schools where performance still lags behind national averages) or particular reading or mathematics processes.
- It will be necessary to support the teachers, parents and children in DEIS Band 1 schools and the teaching of mathematics generally even more intensively over the remainder of the National Strategy.

National Assessments of English Reading and Maths 2014

1. Background and Context

National assessments of English reading and mathematics at Second and Sixth classes were conducted in May 2014 in a representative sample of 150 primary schools.

A report on the performance of pupils in these assessments, (Volume 1: Performance Report) was published by the Educational Research Centre on behalf of the Department on 12 January 2015. This report focuses on the performance of pupils in National Assessments 2014 (NA 2014) relative to their performance to that of pupils who participated in National Assessments in 2009 (NA 2009).

A second report, which will examine factors relating to the teaching and learning of English reading and mathematics, will be published later in 2015. This second report will be based on an analysis of school-level, classroom-level, pupil-level and parent-level data that has been drawn from questionnaires administered in conjunction with NA 2014.

1.1 What are the National Assessments?

The National Assessments (NAs) are surveys of English reading and mathematics at primary school level. They are conducted on behalf of the Department by the Educational Research Centre. The NAs are an important source of information on national standards. The outcomes can contribute to policy initiatives that can make the educational system more effective.

The tests are based on the Primary School English and Mathematics Curricula. Achievement data are complemented by contextual data obtained from questionnaires completed by school principals, teachers, parents and pupils.

The NAs involve the administration of secure tests by class teachers, under the supervision of inspectors of the Department of Education and Skills, to pupils in a representative sample of schools nationally. They also involve the gathering of context information from pupils, school principals, teachers and parents, and the subsequent analysis of the data and reporting of the outcomes. The tests used are *secure* tests; i.e. they are not available to teachers and schools, unlike the standardised tests such as the Micra-T tests, Sigma-T tests, the Drumcondra Reading Tests and the Drumcondra Maths tests that are used by teachers in 2nd, 4th and 6th classes in primary schools.

Pupil performance in the NAs is described in terms of four proficiency levels. Proficiency levels represent clusters of skill-sets, and provide descriptions of the types of tasks which pupils at different levels of performance can consistently complete successfully. Pupils performing at Level 4 would be expected to complete the most complex tasks expected of their grade level, while those performing at Level 1 would be expected to be able to complete only the most basic tasks. Pupils who do not reach Level 1 are not consistently able to successfully display the skills assessed by the simplest items on the test.

1.2 How often are the National Assessments Conducted?

The 2014 National Assessments (NA 2014) are the eighth in a series which began in 1972. The NAs are administered at primary school level in Ireland at intervals of approximately five years.

Prior to 2009, national assessments were administered at a range of grade levels or in different years. For example, in 2004, an assessment of English reading was administered in First and Fifth classes, and an assessment of mathematics in Fourth class. Since 2009, national assessments have been administered in both reading literacy and mathematics to pupils in Second and Sixth classes. The NA 2014, therefore, represent an opportunity to compare performance with performance in 2009.

1.3 The 2014 National Assessments

The NA 2014 were administered in a sample of over 8,000 pupils in Second and Sixth classes in 150 primary schools.

Performance in reading was examined with reference to two main components, vocabulary knowledge and reading comprehension. Reading performance was also assessed in relation to reading processes such as pupils' ability to retrieve information, make inferences, and interpret and integrate text. In addition, sixth class pupils were assessed on their ability to examine and evaluate text.

Pupils' performance in mathematics was assessed in a number of content areas namely Number and Algebra, Shape and Space, Measures, and Data. Pupils were also assessed on mathematics processes, namely their ability to understand and recall, implement, reason, integrate and connect, and apply and problem solve.

1.4 Attainment Targets in the National Strategy for Literacy and Numeracy

The National Strategy to Improve Literacy and Numeracy among Children and Young People 2011-2020 set out specific national targets linked to the national assessments of English reading and mathematics to be achieved by 2020 namely:

- Increase the percentages of primary children performing at proficiency Level 3¹ or higher (i.e. at the highest levels) in the National Assessment of Mathematics and English Reading by at least 5 percentage points at both Second class and Sixth class by 2020
- Reduce the percentage of children performing at or below proficiency Level 1 (i.e. minimum level) in the National Assessment of Mathematics and English Reading by at least 5 percentage points at both Second class and Sixth class by 2020.

The 2014 National Assessments provide an opportunity to gauge progress on the achievement of those targets.

¹ In NA 2009, pupils were assigned to proficiency levels on the overall reading and mathematics scales in Second and Sixth classes, such that, for each domain at both class levels, 10% of pupils were assigned to level 4 (the highest level), 25% to level 3, 30% to level 2, 25% to level 1, and 10% to 'below level 1'.

1.5 Findings of National and International Assessments prior to 2014

National Assessments prior to 2014

With the exception of reading between 1972 and 1980, no national assessments prior to 2014 have shown an increase in the average performance in either English reading or mathematics.

Essentially, the findings of NAs in English reading have indicated that the literacy skills of students in Irish primary schools had not improved in over thirty years, despite considerable investments in the reduction of pupil-teacher ratios, the introduction of learning support and resource teachers, the provision of better teaching materials and considerable curricular reform.

Repeated assessments of mathematics at primary level have revealed weak performance in important areas of the mathematics curriculum such as problem solving and measures.

Studies in DEIS Schools prior to 2014

Studies in schools in the School Support Programme (SSP) under DEIS conducted in 2007, 2010 and 2013 point to small but significant improvements in performance in reading literacy and mathematics in both urban and rural schools. There have also been large reductions in the proportions of students performing at or below the 10th percentile. However, it has been unclear up to now whether those improvements have led to a reduction in the performance gap between DEIS and non-DEIS schools, or if they mirror general increases in performance across the educational system. The 2014 National Assessments provide an opportunity to compare performance between schools in the SSP under DEIS and schools outside the programme.

International Assessments prior to 2014

In 2011, Ireland participated in PIRLS (Progress in International Reading Literacy Study) and TIMSS (Trends in International Mathematics and Science Study)².

The outcomes of PIRLS 2011 reading literacy indicate that reading literacy standards among Fourth class pupils in Ireland are relatively high. Just five countries (including Northern Ireland) achieved significantly higher mean scores than Ireland. However, 15% of pupils in Ireland performed at or below the Low PIRLS reading benchmark, suggesting that these pupils may struggle with reading.

Performance on TIMSS 2011 mathematics, also administered to pupils in Fourth class, was not as strong as in reading, with Ireland ranking 17th of 48 countries. Irish pupils displayed relative strengths on number and their knowledge of facts, concepts and procedures, and relative weaknesses in relation to Geometric Shapes and Measures, and Data Display and Reasoning.

TIMSS 2011 also indicated that there has been no significant change in overall mathematics achievement among Irish Fourth class pupils since Ireland last participated in 1995.

² These are large, international comparative studies of achievement that assess, respectively, the reading, mathematics and science skills of primary school pupils. TIMSS also has a post-primary component. Combined, the two studies form the world's largest educational assessment at primary school level.

2. Key Findings of the 2014 National Assessments

The following are the key findings reported in the performance report:

2.1 Performance on Reading

- Overall performance on reading in Second and Sixth classes was significantly higher in NA 2014 than in NA 2009
- At Second class
 - 22% of pupils performed at or below proficiency level 1, on overall reading, compared with 35% in NA 2009
 - 46% performed at Levels 3 and 4, compared with 35% in NA 2009
- At Sixth class
 - 25% performed at or below level 1 compared with 35% in NA 2009
 - 44% performed at levels 3 and 4, compared with 35% in NA 2009

2.2 Performance on Mathematics

- Overall performance on mathematics in Second and Sixth classes was significantly higher in NA 2014 than in NA 2009
- At Second class:
 - Significant increases in performance were observed on three of the four content areas assessed (Number & Algebra, Shape & Space, and Measures) and on all five mathematics processes (Understand & Recall, Implement, Reason, Integrate & connect, and Apply & problem solve. The exception was the Data content area, where the increase was just 4 score points.
 - 26% performed at proficiency level 1 or below on overall mathematics, compared with 35% in NA 2009.
 - 47% performed at levels 3 and 4, compared with 35% in NA 2009
- At Sixth class:
 - There were significant increases on all content areas, and on four of the five processes. The exception was Apply and Problem Solve, where the increase was just 4 points
 - 27% performed at or below level 1 (35% in NA 2009)
 - 42% performed at level 3 or 4 (35% in NA 2009)

2.3 Gender Differences in Performance

- As in NA 2009, girls in Second class significantly outperformed boys on reading overall
- At Sixth class, girls in NA 2014 achieved a mean score on overall reading that was higher than that of boys but the difference was not statistically significant.
- Although boys in Second class had a higher mean score on overall mathematics than girls in NA 2014, the difference was not statistically significant. Boys significantly outperformed girls on Data, Measures and Apply & Problem Solve, and did not differ significantly from girls on any of the other content areas or maths processes.

At Sixth class level, boys in NA 2014 also had a higher mean score than girls, but the difference was not statistically significant. Boys had a significantly higher mean score than girls on Measures (by 7

points) and on Apply & Problem Solve (by 8 points), but there were no differences on the other content areas or mathematical processes.

2.4 Performance of Pupils in Schools in School Support Programme under DEIS

The report compares the performance of pupils in DEIS Band 1, DEIS Band 2, rural-DEIS, urban non-DEIS, and rural non-DEIS schools. ***It warns that the findings related to the performance of pupils in schools in the SSP under DEIS should be treated with caution, as they are based on small sample sizes, hence, precise estimates of performance and change cannot be computed.*** Nevertheless, it concludes that substantial progress was made in both DEIS Band 1 and DEIS Band 2 schools between NA 2009 and NA 2014.

- DEIS Band 1 schools:
 - Pupils in both Second class and Sixth class achieved a mean score in reading in NA 2014 that was higher than in NA 2009, but the difference was not statistically significant.
 - 44% percent of pupils in Second class and 47% in Sixth class in Band 1 schools performed at or below level 1 in reading in NA 2014.
 - In Second class mathematics, pupils NA 2014 had a mean score that was higher than in NA 2009 but the difference was not statistically significant.
 - The performance of Sixth class pupils in overall mathematics increased from NA 2009 to NA 2014 but the difference was not significant.
- DEIS Band 2 schools:
 - Pupils in Second class had a significantly higher mean score on overall reading, compared with NA 2009.
 - There was a significant increase in overall mathematics at Second class.
 - Pupils in Sixth class had a significantly higher mean score on overall reading, compared with NA 2009.
 - At Sixth class, pupils had a non-significant increase in overall mathematics from NA 2009 to NA 2014.
- DEIS Rural Schools
 - The overall reading outcomes for pupils in DEIS rural schools are mixed³, with no change at Second class and a large change at Sixth class.
 - There was no improvement in mathematics performance of pupils in Second class in DEIS rural schools although the pupils were coming from a much higher mean score in NA 2009.
 - Pupils in Sixth class in DEIS rural schools achieved a mean score in NA 2014 mathematics that was significantly higher than in NA 2009.

³ These outcomes may not be generalizable to all DEIS rural schools, as the numbers of rural schools in the NA 2009 and NA 2014 samples were small, and the numbers of pupils within such schools were also small.

3. Conclusions

The following conclusions are drawn from the outcomes:

3.1 Performance

- NA 2014 represents the first national assessment since 1980 in which there have been statistically significant increases in overall performance on English reading and mathematics. These improvements are welcomed particularly in light of the following:
 - Reductions in the proportions of lower-achieving students in Ireland in both reading literacy and mathematics in NA 2014 are encouraging, with just 5-6% of pupils performing below proficiency level 1, compared with 10% in NA 2009. It is significant that these proportions changed without an increase in either the numbers of exemptions from testing granted by schools, or in absenteeism on the days on which the tests were administered.
 - There are also indications of improved performance among higher-achieving pupils, though to a lesser extent for mathematics than for reading.
 - The stronger performance in Shape and Space is encouraging especially as this is an area where Irish students have struggled in PISA.
 - Gender differences in relation to English reading and mathematics in NA 2014 were relatively small although there was a significant difference in favour of girls on overall reading in Second class and boys had significantly higher mean scores on Apply and Problem Solve at both class levels.
 - Substantial progress was made in both DEIS Band 1 and DEIS Band 2 schools between NA 2009 and NA 2014.
 - All of the targets in the National Literacy and Numeracy Strategy relating to achievement have been reached well in advanced of the scheduled target date of 2020.
- It is especially noteworthy that these improvements were observed in the context of a national education system, rather than in a small-scale intervention study.
- While the results of NA 2014 are welcome, it is clear that there is much scope for improvement, especially in the case of mathematics in all schools, and English reading and mathematics in urban DEIS schools.
 - There is considerable scope for pupils in Second and Sixth classes to improve further on higher-level mathematical processes, including Apply and Problem Solve.
 - Based on NA 2014, pupils in primary schools in Ireland should improve their performance on both TIMSS 2015 and PIRLS 2016. However, it is likely that performance on reading literacy will continue to be stronger than performance in mathematics.

- While there have been improvements in reading in DEIS schools since NA 2009, there has been no real reduction in the gap between pupils in DEIS urban schools and in other school types, except at Second class in Band 2 schools. In particular, the large proportion of very low achievers in reading in DEIS urban schools is a concern.
- The data for mathematics in DEIS schools also indicate that there is still considerable scope for improvement. With the exception of DEIS Band 2 schools in Second class, performance is still well below national standards.
- As noted earlier, the results in relation to DEIS schools should be treated with caution given the small size of the sample of such schools that participated in NA 2014.