



Key insights from PIRLS 2016 Northern Ireland What the evidence shows

What is PIRLS¹?

PIRLS is the **Progress in International Reading Literacy Study** which looks at the reading skills of 9–10 year old pupils from over 50 countries across the world. The study collects information on reading attainment and a number of pupil and school background factors. Northern Ireland took part in PIRLS for the first time in 2011 and again in 2016. This paper summarises findings from new research using data from PIRLS 2016 and some other International large scale assessment studies (ILSAs) such as TIMMS and PISA.

Thematic analysis of PIRLS data

The PIRLS studies, and other international studies, are designed to provide evidence to inform policy decisions by providing a reliable, independent measure of the effectiveness of a country's education system in a global context. Data from these studies form a strong foundation to support evidence-based policies such as *Every School A Good School*, *Count, Read: Succeed and Getting Ready to Learn*; and to provide advice for parents/guardians on what they can do to support their child's learning at home and school.

Data collected during PIRLS 2016 has been used to explore the following three areas:

1. What can Northern Ireland learn from participation in international studies?
2. Differences between urban and rural schools
3. Parental engagement in their children's learning

Key findings from these three studies are summarised in the following pages.

What were the main findings from PIRLS² for Northern Ireland?



Only two countries scored significantly higher than Northern Ireland in PIRLS 2016 and a high percentage of pupils (22%) are working at the most advanced level internationally.



Girls' reading scores were significantly higher than those of boys in Northern Ireland and in almost every other participating country.



Principals in Northern Ireland are more highly qualified than most of their international peers and the majority of teachers report that they are satisfied with their jobs.



Primary schools in Northern Ireland are well resourced, have a strong focus on academic success and there are hardly any discipline problems.

1. For more information about PIRLS see: www.iea.nl/studies/iea/pirls

2. PIRLS 2016 in Northern Ireland Report: www.nfer.ac.uk/pirls-2016-in-northern-ireland-reading-achievement

What can Northern Ireland learn from participation in International studies (ILSAs)

Northern Ireland participates in three international studies*

Study	Subjects tested	Age group	Cycle	Most recent	No of countries involved
IEA³ TIMSS – The Trends in International Mathematics and Science Study	Maths and science	9-10 year olds ⁴	Every 4 years since 1995	2015	49
IEA PIRLS – The Progress in International Reading Literacy Study	Reading	9-10 year olds	Every 5 years since 2001	2016	50
OECD⁵ PISA – The Programme for International Student Assessment	Reading, science and maths	15 year olds	Every 3 years since 2000	2015 2018	72 79

*The aims of these studies are not identical. For example, PIRLS and TIMSS are based on the curriculum while PISA aims to measure the application of student learning and knowledge to real-life situations and is intentionally a more skills-based assessment. Nevertheless, all ILSAs give a useful overview of how Northern Ireland's pupils compare with others in a global context.



This study

In this study we examined:

1. Northern Ireland's results from the most recent international studies: primary and post-primary
2. Factors that affect pupil performance
3. Comparisons with England and the Republic of Ireland

The results of international studies since 2015 show that:

- At primary, Northern Ireland's pupils are among the world's top performers, with very few countries outperforming them in reading or maths.
- The high levels of achievement seen in primary are not reflected in post-primary where scores are closer to the OECD average.
- At post-primary, Northern Ireland's performance in reading and maths falls behind many other countries.
- For science, primary pupils scored significantly above the international average while in post-primary the score was closer to the international average. However, fewer countries outperform Northern Ireland at post-primary than at primary.
- The overall performance of pupils in Northern Ireland in all three subjects has not changed significantly in any of the most recent international studies when compared with previous cycles.
- Over time, the number of countries outperforming Northern Ireland in reading at post-primary has reduced and a higher proportion of pupils are working at the highest levels in primary maths. This evidence of gradual improvement suggests that the *Count, Read: Succeed* strategy has been successful in delivering and sustaining positive outcomes for learners.

3. International Association for the Evaluation of Educational Achievement
4. Tested Year 6 pupils in Northern Ireland. TIMSS also assesses 13-14 year olds but Northern Ireland did not participate in the post-primary TIMSS assessment.
5. Organisation for Economic Co-operation and Development.

Northern Ireland's results from recent international studies

	Primary PIRLS 2016 TIMSS 2015	Post-Primary PISA 2015	Post-Primary PISA 2018
OVERALL	Overall scores in reading, maths and science stable since the previous cycles (2011).	Overall scores in reading, maths and science stable over previous cycles (since 2006).	Overall scores in reading and maths stable over previous cycles (since 2006). Science scores were significantly lower than in 2012, 2009 and 2006.
READING	<p>2 countries out-performed NI internationally</p> <p>High scores – significantly higher than international average</p> <p>Girls score significantly higher than boys</p> <p>Primary – in 2016 there was a significant increase in the proportion of pupils working at the highest levels in reading.</p>	<p>12 countries out-performed NI internationally (in 2012 it was 19)</p> <p>Average scores – similar to the international (OECD) average</p> <p>Girls score significantly higher than boys</p> <p>Post primary – Compared with the OECD average NI had a smaller proportion of pupils working at the lowest levels. The scores of higher achievers had declined in 2015, but improved significantly in 2018.</p>	<p>10 countries out-performed NI internationally</p> <p>High scores – significantly higher than international (OECD) average for the first time</p> <p>Girls score significantly higher than boys</p>
MATHS	<p>5 countries out-performed NI internationally</p> <p>High scores – significantly higher than international average</p> <p>No significant gender differences</p> <p>Primary – in 2015 there was a significant increase in the proportion of pupils working at the highest levels in maths.</p>	<p>18 countries out-performed NI internationally</p> <p>Average scores – similar to the international (OECD) average</p> <p>No significant gender differences</p> <p>Post primary – in both 2015 and 2018, compared with the OECD average, Northern Ireland had a significantly smaller proportion of pupils working at the lowest levels for maths, but also had significantly smaller proportion working at the highest levels.</p>	<p>17 countries out-performed NI internationally</p> <p>Average scores – similar to the international (OECD) average</p> <p>No significant gender differences</p>
SCIENCE	<p>22 countries out-performed NI internationally</p> <p>High scores – significantly higher than international average</p> <p>No significant gender differences</p> <p>Primary – in 2015 the proportion of pupils working at the highest levels of proficiency in science remained unchanged.</p>	<p>17 countries out-performed NI internationally</p> <p>Average scores – similar to the international (OECD) average</p> <p>No significant gender differences</p> <p>In 2015, the science skills of highest-achieving pupils had declined significantly since 2006. In 2018, there were no changes in the performance of either high- or low- achieving pupils in science. The proportion of pupils at the bottom and top proficiency levels in science were in line with OECD averages.</p>	<p>16 countries out-performed NI internationally</p> <p>Average scores – similar to the international (OECD) average</p> <p>Girls scored significantly better than boys in 2018 and boys' scores had declined significantly since 2015.</p>

Factors that affect pupil performance

Pupil attitudes

- Higher levels of pupil confidence and enjoyment were associated with higher scores in both primary and post-primary schools.

Socioeconomic gap

- Socioeconomic disadvantage remains the single most influential factor that impacts on educational under-achievement.
- Pupils in schools with the highest concentration of disadvantaged pupils had significantly lower scores, on average, than those in schools with the lowest proportion of disadvantaged pupils.
- Foreign-born pupils in post-primary schools scored, on average, 23 score points less than native-born pupils.

Northern Ireland's policy focus on disadvantage and under-achievement had some impact in PISA 2015 as the proportions of pupils working at the lowest levels decreased. However, the proportions of high-attaining pupils also decreased. By PISA 2018 the proportions of high attaining pupils had increased, but so too had the proportions working at the lowest levels. These results highlight the difficulties faced by policy makers as they work to manage and sustain holistic education policy that fully meets the needs of all pupils, and pupil groups.

ILSA results may be used to support continuous monitoring, re-assignment of resources and refreshed implementation guidance to help ensure that the broadest range of pupils, and those who suffer from disadvantage in particular, can be best supported in their learning.



Performance over time

- PISA 2018 results showed that post-primary reading and maths results had not changed significantly since 2006, and that science results were significantly lower than they had been in 2006, 2009 and 2012.
- PISA 2018 also showed that the scores of high-performing pupils in reading had improved significantly since 2015.
- In both primary and post-primary schools, principals reported positively on aspects of the learning environment, but indicated concerns about the provision of science resources.

The 2018 cohort have been the first to experience the revised primary science curriculum, 'The World Around Us', for the whole of their primary schooling, and the 2015 cohort have had it for part of theirs. The results of TIMSS 2019 will shed some further light on science performance in primaries.

Detailed analyses of ILSA data over time provides independent evidence that can usefully inform both curriculum and policy reviews.

Comparisons with England and the Republic of Ireland

At primary (PIRLS 2016/TIMSS 2015), pupils in Northern Ireland scored significantly:

- ↑ higher than those in England in reading
- ↑ higher than both comparator countries for maths
- ↓ lower than both countries for science

At post-primary (PISA 2015)⁶, pupils in Northern Ireland scored significantly:

- ↓ lower than those of Republic of Ireland for reading and maths
- ↓ lower than England for science



Further comparisons

- The Republic of Ireland maintained its position among the high-achieving countries for reading and maths at post-primary.
- England maintained higher levels of performance in science in both primary and secondary.

The Republic of Ireland had the lowest proportions of pupils working at the lowest benchmarks/proficiency levels in all three subjects, and Northern Ireland had the lowest proportions working at the highest levels (although the Republic of Ireland had a similar proportion for science).

- High-attaining pupils, girls and higher socioeconomic status (SES) pupils in Northern Ireland did, on average, slightly better than those in England and the Republic of Ireland at primary, but did least well among the three countries at post-primary. High attaining pupils in Northern Ireland may benefit from focused support at post-primary.
- Low-attaining pupils, boys and lower SES pupils, did best in the Republic of Ireland both at primary and post-primary. In fact, in post-primary reading boys in the Republic of Ireland scored higher, on average, than girls in both Northern Ireland and England.

Progress in the Republic of Ireland was greater at the primary level because of a significant reduction in the proportion of pupils working at the lower benchmark levels.

The Republic of Ireland's *National Strategy: Literacy and Numeracy for Learning and Life 2011-2020* (2011) included the allocation of additional time for literacy and numeracy in primary schools. Significant improvements in their TIMSS and PIRLS results in 2015/16 would suggest that the strategy has had a positive impact.

In PISA 2018, the Republic of Ireland had the smallest attainment gaps in all three subjects.

6. PISA 2018 results show that the Republic of Ireland scores remained significantly higher than those in Northern Ireland and England for reading. England performed significantly better than Northern Ireland and the Republic of Ireland for science and better than Northern Ireland for maths.

Context and background

Providing a high quality, sustainable provision of schooling for children in all parts of the country is a key requirement of a successful education system in Northern Ireland. Over half of Northern Ireland’s primaries and a fifth of post-primaries are located in rural areas, and over recent years realising this vision has become increasingly difficult to achieve due to increasing pressure on school budgets and concerns over the sustainability of the schools estate. This led to the publication of the *Schools for the Future: A Policy for Sustainable Schools*, which sets the vision for an estate of educationally and financially viable schools planned on an area basis.

This study

A considerable amount of literature has been published on rural educational disadvantage which highlights the distinct challenges that rural schools can face compared with urban schools. This study considers evidence on the characteristics and performance of urban and rural primary schools to examine whether there are particular factors or configurations associated with schools in these areas that have an impact on pupil outcomes.

How does reading performance vary between urban and rural schools and what can explain this?

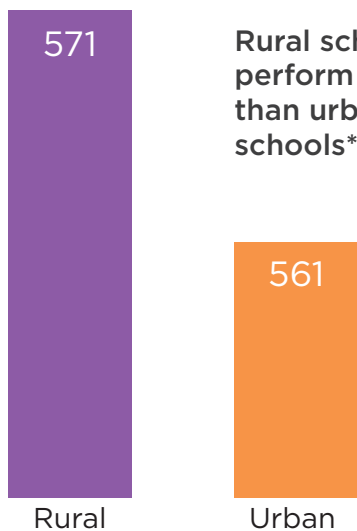


On average, pupils in rural schools performed significantly better than those in urban schools in PIRLS 2016.

This performance gap is partially explained by differences in rural and urban pupil populations, particularly levels of socioeconomic disadvantage and school contexts (such as incidence of composite classes and different types of educational or income deprivation) which, on balance, hinder urban schools.

Nevertheless, even when these factors are taken into account, rural schools still perform better.

Average reading performance (score points)



Rural schools perform better than urban schools*

*The difference in mean reading performance is significant at the 5% level

7. The definition of urban and rural follows the NISRA Urban - Rural Classification available at www.nisra.gov.uk/support/geography/urban-rural-classification

There are multiple reasons underlying this gap in performance between urban and rural schools, including differences in the characteristics of their pupils and wider contexts.

In the PIRLS sample:

- Pupils in **rural schools** were more likely to be taught in composite classes, which can negatively affect performance.
- Being in a composite class had less impact on pupil performance in urban schools than in rural schools.
- However, **urban schools** had a greater percentage of Special Educational Needs (SEN) pupils stages 1 to 4, pupils who were eligible for free school meals (FSM) or lived in one of the 30 per cent most deprived Super Output Areas (SOA) in terms of education, all of which also affect performance negatively and may explain part of the difference.
- Pupils eligible for FSM, those living in the most deprived SOA in terms of income, and girls, performed better in rural schools than their counterparts in urban schools.
- We found no evidence that pupil reports of eating breakfast on school days, arriving late to school, distance travelled to school or feeling tired or hungry related to pupil performance in reading.

Can attitudes and experiences help explain differences in reading performance?

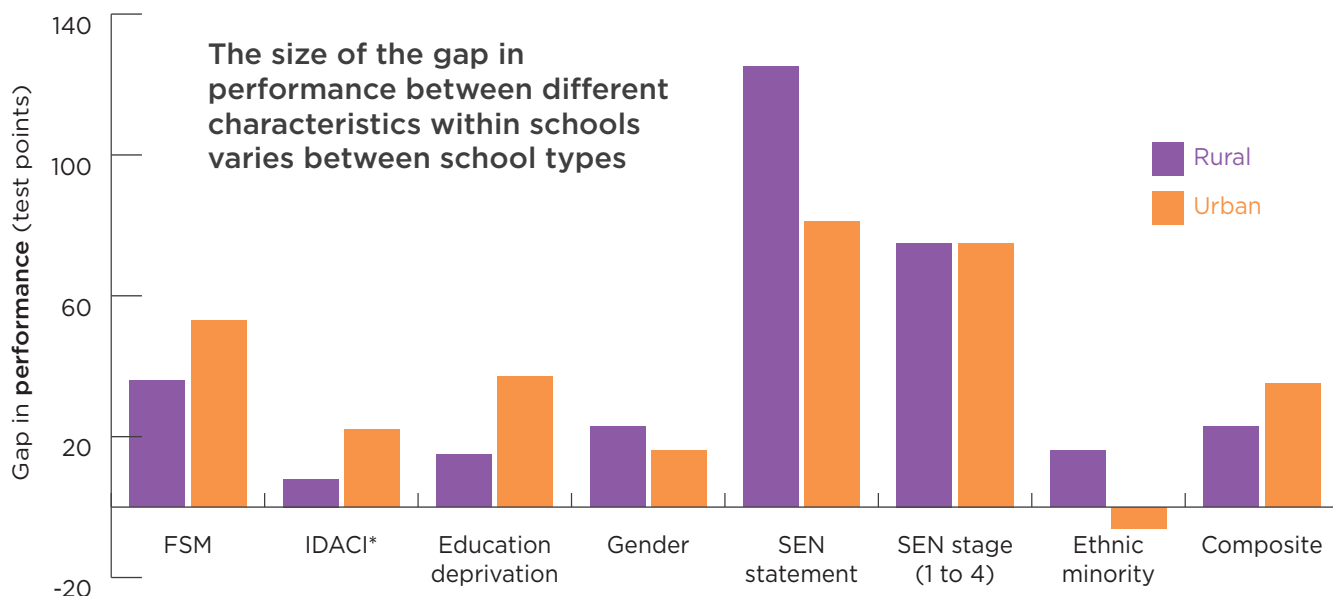
PIRLS provides a large amount of information on pupil attitudes and experiences, home background and school factors many of which are associated with pupil performance and vary between schools.

In the PIRLS sample:

- Pupils', teachers' and principals' attitudes and experiences varied little between urban and rural schools.
- Northern Ireland compared favourably overall to other countries on factors related to the school safety and climate.
- Rural schools in Northern Ireland gave significantly more positive ratings than urban schools on a number of these contextual factors, such as schools being safe and orderly and having an emphasis on academic success.
- Rural pupils travelled further to school than urban pupils, but from the PIRLS data there was no evidence that distance to school is correlated with reading performance.
- Pupils in rural schools reported slightly greater access to digital devices and spent more time using a computer or tablet for playing games, watching videos, chatting or surfing the internet each day.
- Whilst there were no significant differences between pupils' reported experiences of bullying in urban and rural schools, rural school principals reported slightly fewer problems with school discipline, disorderly and bullying behaviours.

Are there other school and/or home factors driving this result?

Inequality between pupils possessing certain characteristics varied between urban and rural schools. In particular, there was a larger gap in urban schools between pupils of different socioeconomic status.



*Income Deprivation Affecting Children Index

Are these findings unique to Northern Ireland, or is the situation similar in the Republic of Ireland and England?

- Rural schools perform better than urban schools in all three countries.
 - The differences between average performance of rural schools in each country was relatively small, whereas for urban schools the differences were greater.
 - There was a particularly large gap in performance between urban and rural schools in England.
- If we also consider the impact of disadvantage⁸ across countries, among urban/rural⁸ advantaged/disadvantaged schools we find that:
- Northern Ireland's disadvantaged schools achieved similar or higher average results than those in England and the Republic of Ireland (and Northern Ireland's high disadvantage rural schools did particularly well).
 - However, because of the greater prevalence of disadvantaged schools in Northern Ireland, and the fact that disadvantaged schools perform less well overall, the overall average scores decrease to be similar to England and the Republic of Ireland in rural settings.
 - In urban settings, there were particularly high numbers of disadvantaged schools in Northern Ireland, meaning this effect is even more pronounced and its urban schools achieved lower average scores than in the Republic of Ireland.
 - Whilst the Republic of Ireland had the smallest gap in performance between urban and rural schools, it had the largest differences between urban and rural schools (mostly favouring rural schools) on several context questionnaire scales relating to pupil, home and school, such as emphasis on academic success.



For our full report please visit: www.nfer.ac.uk/pirls-2016-urban-and-rural-schools-in-ni

8. For the purposes of consistent cross-country comparisons we use a different measures of disadvantage and rurality here based on reporting by school principals in PIRLS. A school is classified in PIRLS as disadvantaged if the principal reports that more than one quarter of his/her school's pupils are, in their opinion, disadvantaged. Similarly a school is classified as urban or rural based on the principal's response in PIRLS

Context and background

Parental engagement is a key policy interest in Northern Ireland. The Department of Education has funded a nationwide advertising campaign, **Give Your Child a Helping Hand** to encourage parents, carers and extended family members to become involved in and support their children's learning.

Children of more engaged parents tend to have greater success at school.



This study

NFER analysed responses gathered from parents⁹, pupils and principals in Northern Ireland as part of the Progress in International Reading Literacy Study (PIRLS) 2016 assessment. This summary provides insights on the levels of parental engagement in Northern Ireland, the association between parental engagement and pupil attitudes and performance, and comparisons between Northern Ireland and other countries

The PIRLS data enabled us to look at three aspects of parental engagement:

- parental engagement in literacy activities before children begin school
- aspects of children's home-life which may relate to literacy skills and readiness to learn
- parental engagement with their children's primary school.

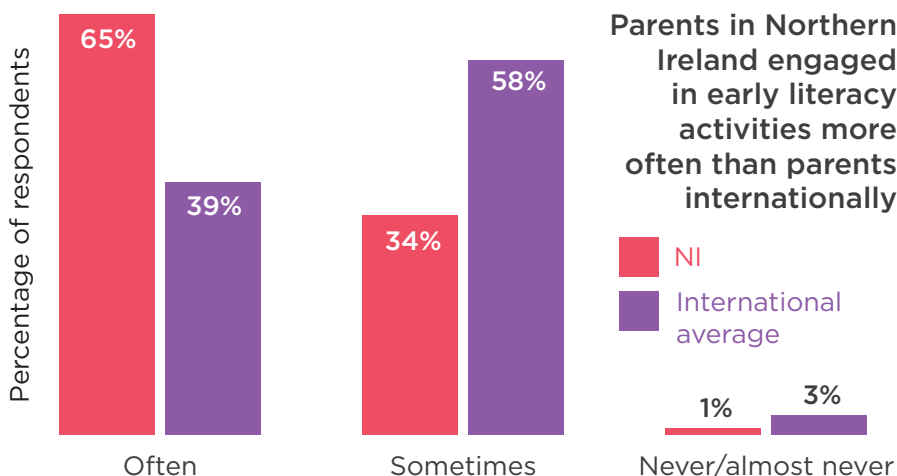
Early literacy activities were significantly correlated with later reading outcomes.

These include: visiting a library with your child, talking with them about what they have read, reading books together, reading aloud signs and labels, writing letters or words with them, telling them stories, playing word games, talking about what they have done, singing songs and playing alphabet.



What are the levels of engagement among parents in Northern Ireland?

Northern Ireland is in a good position: parents engage much more often in early literacy activities than their counterparts in other countries, and parents continue to support their children throughout primary school, particularly parents whose children are falling behind. In addition, parents were more engaged than in 2011.

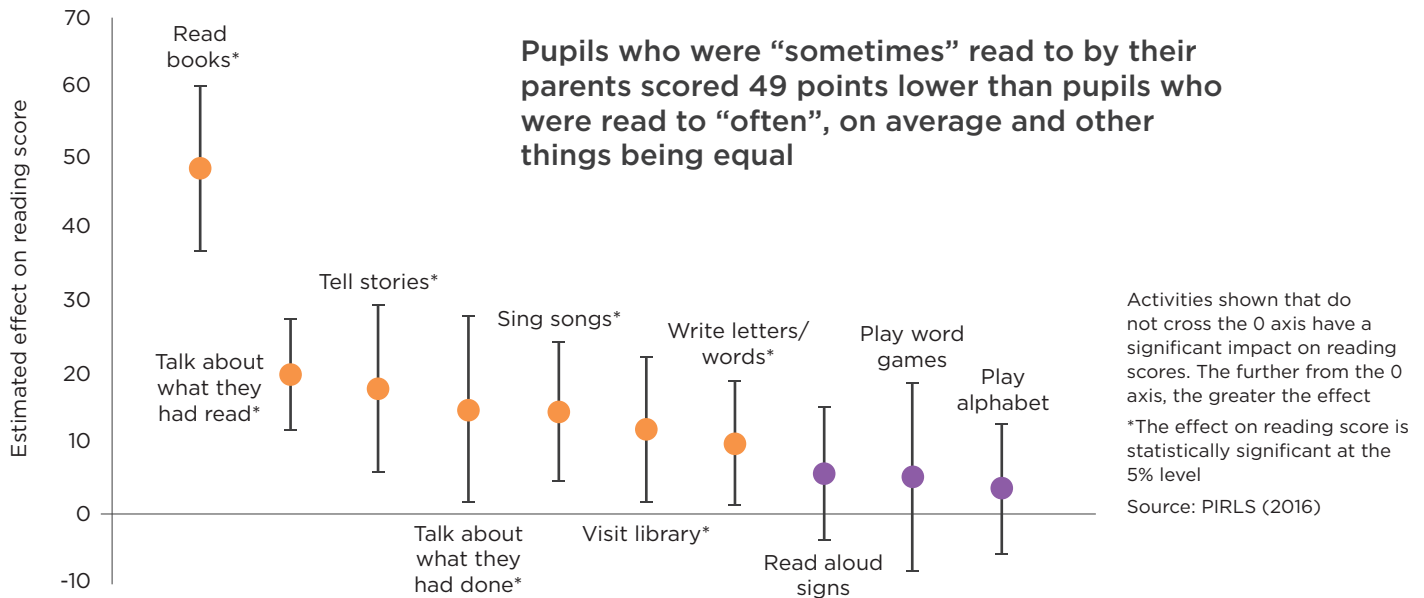


9. The pupils who participate in PIRLS are a nationally representative sample of pupils in primary 6. The findings relating to parents' responses are based on 39% of parents who responded. These respondents tended to be from more socioeconomically advantaged pupils who had higher literacy attainment. Although they may not be representative of all parents in Northern Ireland, the analysis does allow us to draw relevant conclusions and brings together information not available from other sources.

Is parental engagement associated with pupil attitudes and reading performance?

To what extent does parental engagement impact pupils' reading scores?

When other factors are taken into account (age, gender and socioeconomic status), early literacy activities have a significant correlation with later reading outcomes. The diagram below shows the relative effects of individual aspects of parental engagement on pupils' reading scores.



The types of early literacy activities which were most strongly related to later reading outcomes were those relating to talking, reading together and discussing, rather than those which replicate later academic activities, such as word games and alphabet games.

- Children who engaged more often in Early Literacy Activities were more likely to be more confident readers and enjoy reading in primary 6.
- Early literacy activities are associated with more potential gain in reading achievement than access to digital devices, parent's reading habits, perceptions of school or having high academic expectations.
- The largest differences in achievement were between children who were read to 'often' and those who were read to 'sometimes'.
- Parents were more often involved in checking or helping with homework than with reading activities.

Parents of children who performed the least well in PIRLS supported their children more at home with homework than those with the highest PIRLS scores. They were also more likely to listen to their child read and read aloud to their child.



Parents of pupils who had lower achievement in PIRLS were engaged in their learning at primary school; the challenge is therefore to find the most effective ways to channel this engagement to encourage their children to enjoy reading and become better readers.

Changes since PIRLS 2011

Pupils in 2016 had more home resources for learning and engaged in more early literacy activities before primary school. Parents in 2016 liked reading less, were more positive about school and had higher expectations of the highest qualification their child would attain.

Home environment

Home resources for learning were strongly associated with higher achievement in reading.

Home resources include the number of books in the home, the number of children's books in the home, whether there is an internet connection, whether children have their own room, highest level of parental education and parent occupation

42 per cent of children in Northern Ireland come from homes with many home resources for learning compared with 20 per cent internationally.

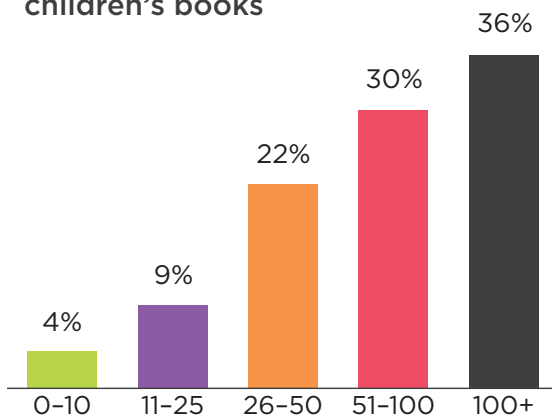
Parents in Northern Ireland have high aspirations for their children; 64 per cent of parents expected their children to complete a degree-level qualification or higher.

Pupils in Northern Ireland were absent from school less than the international average; 75 per cent of pupils reported that they were never or almost never absent compared with 68 per cent internationally.

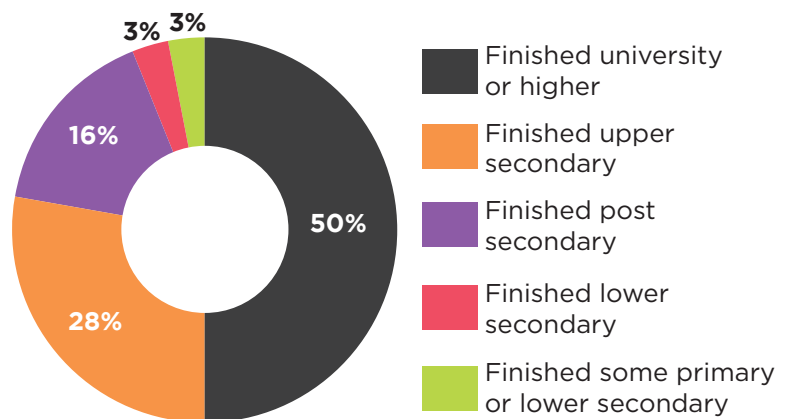
40 per cent of pupils in Northern Ireland felt tired every day or almost every day, compared with the international average of 32 per cent.



The vast majority of children in Northern Ireland grow up in a household with at least 26 children's books



Over half of households had at least one parent with a degree-level qualification



Socioeconomic differences

Amongst free school meal eligible (FSME) children, those who were read to often scored the highest in PIRLS. The biggest differences between scores for FSME and non-FSME children were for playing word games and visiting a library. But the differences for all the early literacy activities were large, and therefore policies which encourage greater engagement in any or all of these areas are likely to be beneficial.

Parents of FSME pupils engaged less often in pre-school early literacy activities with their children, particularly activities which relate to books, but were more likely to engage in home learning support activities whilst their child was at primary school.



FSME pupils are less likely to have breakfast every day

Children from more disadvantaged backgrounds had far fewer books at home. This means less variety of reading material, potentially making reading less exciting for the child and the parent, and more difficult to have different discussions about books. Libraries continuing to find ways to reach more disadvantaged families and encourage engagement in literacy activities with their children should provide a more varied experience of reading materials for such families.

More advantaged children tend to grow up in households with a greater emphasis on books, and have parents who spend more time reading books, visiting a library and talking with them about what they have read.

More advantaged children also tend to have more home resources for learning. Their parents are likely to have higher levels of education and have higher expectations for their children's future qualifications.

Northern Ireland's results in international studies

The evidence from this study indicates that:

- There is evidence of gradual improvement suggesting that the *Count, Read: Succeed* strategy has been successful in delivering and sustaining positive outcomes for learners.
- A focus on stretching high attainers at post-primary, across all subjects, whilst maintaining support and development of lower achieving pupils would be beneficial.
- As socioeconomic status is by far the most influential factor associated with pupil attainment, the focus on early intervention to address disadvantage and newcomer/foreign-born issues should be maintained and stepped up where possible.
- Ways of establishing and supporting pupil confidence, in all subjects, should be explored and promoted.
- It may be of value to explore how policies in the Republic of Ireland have been implemented and evaluated.
- Further research into pupil attitudes to understand more about pupils' underlying beliefs, motivations and behaviours should be considered.
- The programme to encourage parental involvement in their child's learning should be continued.

Tips for parents

- Ideally have a quiet place to study within the house.
- Talk/read to your child every day from birth onwards.
- Talk about what you have read and give your child time to respond.
- Visit the library with your child.

Urban and rural schools

This study has highlighted differences in the populations of pupils attending schools in urban and rural areas and the extent to which these explain the difference in their performances. It shows that:

- Composite classes are more prevalent in rural schools and, on average, these classes perform less well. This counteracts some of the other differences which favour rural schools and suggests fewer composite classes in rural schools could increase overall performance.
- School climate is important, in particular safe and orderly environments that put an emphasis on academic success, to ensure that, as stated in 'Schools for the Future: A Policy for Sustainable Schools', every learner achieves his or her full potential at each stage of development.
- Differences in the distribution of socioeconomic disadvantage between rural and urban settings masks a positive picture of the performance of schools in Northern Ireland when compared with England and the Republic of Ireland.

Parental engagement

The literature, more generally, and the evidence provided in this summary identifies pre-primary parental engagement as a key factor in children's later success in school. The most successful interventions provide direct support or skills training to parents and are clear in their desired outcomes.

- The engagement activities with the largest impact on attainment in PIRLS 2016 were those related to books: parents reading to children often and talking to children about the books they have read. Parents were much less likely to talk about the book they had read than to read to their child.
- Guidance for parents, for example relating to the types of questions they could ask, would help ensure their engagement is most effective.