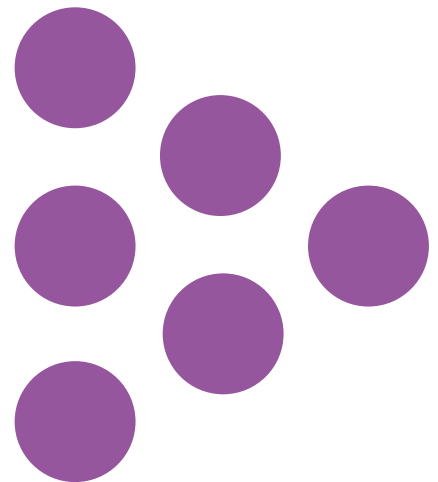

PIRLS 2016 further analysis

Urban and rural schools in Northern Ireland

National Foundation for Educational Research (NFER)



Urban and rural schools in Northern Ireland

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Contents

Executive Summary	i
1 Introduction	1
1.1 Context	1
1.2 Background	2
2 Approach	4
2.1 Data and method	4
3 How does reading performance vary between urban and rural schools?	7
3.1 Reading performance by school type	7
3.2 Regression analysis of performance by pupil and school characteristics	12
4 How are urban and rural schools different and how might this further explain differences in performance?	14
4.1 PIRLS 2016 context questionnaires	14
4.2 Pupils' attitudes and experiences of school	15
4.3 Home background	16
4.4 School climate	17
4.5 Classroom instruction	17
4.6 Teachers' and principals' experiences and characteristics	18
5 Are these findings unique to Northern Ireland, or is the situation similar in the Republic of Ireland and England?	19
5.1 Approach	19
5.2 Reading performance by school type	21
5.3 Pupils' attitudes and experiences	25
5.4 Home background	26
5.5 School climate	26
5.6 Classroom instruction	27
5.7 Teachers' and principals' experiences and characteristics	28
6 Conclusions	29
References	32
Appendix A	34
Appendix B	35
Appendix C	37



Executive Summary

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 (Perry and Love, 2013), 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 has led to calls for widespread reform of the school system and the publication of the Schools for the Future: A policy for Sustainable Schools (Department of Education, 2009), which sets the vision for an estate of educationally and financially viable schools planned on an area basis.

Study aim and methods

A considerable amount of literature has been published on rural educational disadvantage (Sullivan et al., 2018). These studies highlight the distinct challenges that rural schools can face compared with urban schools. To help inform the future development of policy in Northern Ireland, this study considers evidence on the characteristics and performance of urban and rural primary schools from the Progress in International Reading Literacy Study (PIRLS) 2016 dataset and the Northern Ireland School Census. The aim is 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 can be partially explained by differences in the population of pupils attending these schools and school contexts, which on balance, hinder urban schools.

In the PIRLS sample, pupils attending rural schools are more likely to be taught in composite classes and are marginally more likely to be boys, both of which negatively affect performance. Furthermore, where pupils in urban schools are taught in composite classes, the impact on their performance is lower than the impact composite classes have on pupils in rural schools. On the other hand, urban schools have a greater percentage of pupils who are eligible for free school meals (FSM), live in one of the 30 per cent most deprived Super Output Areas (SOA) in terms of education, and have SEN stages 1 to 4, all of which negatively affect performance too.

As well as facing different education challenges arising from differing pupil characteristics, the educational outcomes for pupils with a given characteristic also varies depending on whether they attend an urban or rural school. Pupils eligible for FSM, those living in the most deprived SOA in terms of income, and girls, perform better in rural schools than their counterparts in urban schools.

However, we find that even when these pupil characteristics are taken into account, rural schools still perform better. This provides evidence for the possibility of other school and/or home factors driving this result. We also find that inequality between pupils possessing certain characteristics

tends to be greater in urban schools and pupils facing certain barriers to learning generally perform better in rural schools.

How do attitudes and experiences differ between pupils, parents, teachers and principals in urban and rural schools and how might this further explain differences in reading performance?

PIRLS provides a large amount of information on pupil attitudes and experiences, home background, and school factors, such as the school climate and characteristics and experiences of the teachers and principals that are associated with performance and vary between schools. We found that pupils', teachers' and principals' attitudes and experiences vary little between urban and rural schools. Whilst Northern Ireland compares favourably overall to its international peers on factors related to the school climate and safety, rural schools perform significantly better than urban schools on a number of these factors, which offers further plausible explanations for their superior performance in PIRLS 2016. Although we find that rural pupils travel further to school than urban pupils, from the PIRLS data there is no evidence that distance to school is correlated with reading performance.

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 is relatively small, whereas for urban schools the differences are greater, resulting in a particularly large gap in performance between urban and rural schools in England.

If we also consider the impact of disadvantage¹ across countries, among each of the four groups of urban/rural advantaged/disadvantaged schools, Northern Ireland achieved similar or higher average results than England and the Republic of Ireland (and Northern Ireland's high disadvantage rural schools do particularly well). However, because of the greater prevalence of disadvantaged schools in Northern Ireland, this brings down its overall average scores to be similar to England and the Republic of Ireland in rural settings. In urban settings, there are particularly high numbers of disadvantaged schools in Northern Ireland, meaning its urban schools achieve lower average scores than in the Republic of Ireland.

Whilst the Republic of Ireland has the smallest gap in performance between urban and rural schools, it has the largest gap in scores on several context questionnaire scales relating to pupil, home and school, favouring rural schools.

Conclusions

Overall, these findings contribute in several ways to our understanding of educational disadvantage in urban and rural settings. Firstly, we highlight differences in the populations of

¹ For the purposes of consistent cross-country comparisons, we use a different measure of disadvantage 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.

pupils attending schools in urban and rural areas and the extent to which these explain the difference in their performances. Secondly, we show how composite classes are more prevalent in rural schools and, on average, these classes perform less well, which counteracts some of the other differences which favour rural schools and suggests fewer composite classes in rural schools could increase overall performance. Thirdly, our findings highlight the importance of the school climate, 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. Finally, we illustrate how differences in the distribution of socio-economic 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.

1 Introduction

1.1 Context

Over half of Northern Ireland's primaries and a fifth of post-primaries are located in rural areas (Perry and Love, 2013). In 2015 the Northern Ireland Audit Office (NIAO, 2015) reported that as a result of falling pupil numbers and the country's multiple school sectors, the school estate was at risk of becoming unsustainable. In response in 2006, the government announced a review of the country's education funding system and the planning and organisation of the schools estate with the aim of ensuring that the children of Northern Ireland receive an excellent education, whilst also being financially viable (Department of Education, 2006). Following this, the Department of Education (2009) published *Schools for the Future: A Policy for Sustainable Schools*, which set out the vision for an estate of educationally and financially sustainable schools planned on an area basis, with a focus on sharing and collaboration. The aim of the policy was to have strong viable schools, which provide children with a high quality education for their benefit and for the benefit of society as a whole. This later drove the publication of the Education Authority's first strategic area plan for education in Northern Ireland in 2017, which is accompanied by an annual action plan that identifies the key issues at a local level within each local government district area that will be addressed in that or subsequent years. The establishment of a network of such schools that maximises the impact of available resources in the best interest of children is particularly pertinent in the context of constrained budgets.

Since the NIAO report that highlighted falling pupil numbers enrolments to primary schools have increased by three per cent. However there still remains a significant number of unfilled places, in 2018/19 approximately 40,000 across the school estate².

In order to inform the ongoing implementation of the policy, this study considers evidence on the characteristics and performance of different types of school in Northern Ireland, and whether there are particular factors or configurations of schools that have an impact on pupil outcomes. More specifically, it uses the Progress in International Reading Literacy Study (PIRLS) 2016 dataset, along with data from the Northern Ireland School Census to answer the following research questions:

1. Are there systematic differences between the characteristics of rural and urban primary schools in Northern Ireland in terms of:
 - a. Pupils' attainment
 - b. Pupils' attitudes and experiences of school and their home environment
 - c. Teachers' and principals' characteristics and experiences
2. Do differences in pupil attitudes and experiences vary by gender and socioeconomic status (SES)?
3. What is the relationship between these effects, and can they be explained by any underlying factors?

² NI School Census 2018/19 available <https://www.education-ni.gov.uk/node/37331>

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

1.2 Background

Rural educational disadvantage exists in many countries. This gives rise to gaps in educational outcomes and opportunities, such as test scores and university attendance, as well as inequalities related to the conditions and experiences in schools in rural areas compared to those in urban areas.

The existing literature in this area highlights a number of challenges that can be faced by rural schools. One such issue is that rural schools tend to be smaller (Weir et al., 2015). Small schools are more likely to face challenges and difficulties with effective delivery of the curriculum (DE, 2009; Northern Ireland Assembly, 2016; The CoE Education Office, 2018). They are often more expensive to run than their larger counterparts, particularly when funding is on a per pupil basis (Perry and Love, 2013). This causes financial stress and consequently negatively affects the educational experiences of children attending these schools.

Rural schools are significantly more likely to experience enrolment stress, i.e. not being able to fill school enrolments to capacity, than urban schools, which exacerbates these problems (Perry and Love, 2013). In addition, because of their small size, rural schools are more likely to have composite classes, particularly those made up of more than two year groups (Perry, 2017). Research on the effect of composite classes on outcomes is not conclusive. However, it has been noted that there are greater demands on teachers in these classes, including preparing a programme for mixed age groups, ensuring adequate progression in learning and meeting all pupils' needs, especially in classes spanning more than two year groups (ETI, 2016). This raises concerns around the quality of the educational experience of children in these classes. Other evidence, though, points to some benefits in terms of achievement associated with small or rural schools, particularly for pupils from lower socioeconomic backgrounds (Weir et al., 2015). It should be noted that much of the literature is in the American context and what constitutes a small or rural school varies from study to study (Dublin City University, 2007).

There are a number of problematic factors surrounding staff in rural schools. Because of their location, some face challenges in attracting new teachers, particularly those that are newly qualified. Whilst this may mean the quality of their staff is high, having more experienced staff can have a big impact on budgets (The CoE Education Office, 2018; The Key, 2018). Teachers who are appointed may face difficulties in accessing professional development, and may experience professional isolation and reduced support through peer networks, especially those in more remote areas (Perry and Love, 2013). This makes the possibility of collaborative work and the sharing of best practice and experiences harder (Bain, 2006; Perry and Love, 2013), both of which are associated with improved teaching and learning (Armstrong, 2015; Weindling, 2015).

Others have highlighted the increased administrative burden on teachers and senior leadership teams in rural schools where they are often expected to carry out more than one

job (DE, 2009). A number of principals have a regular teaching commitment while others fulfil several 'unofficial' functions necessary to keep the school running efficiently. Overall, this leaves teachers with less time for planning lessons and raises concerns around the capacity of principals to manage their dual role (The Key, 2018). As a result, these schools can face challenges meeting the educational requirements of their children. Furthermore, increased workload and the combining of roles can act as a disincentive to apply for teaching and leadership positions. However, the benefits around the role of a teaching principal are also referenced in the literature, which suggests that in the most successful schools, the role of the school principal includes that of pedagogical leader, highly skilled in teaching and learning (National College for School Leadership, 2009).

As a result of the problems described so far, rural schools may experience financial issues and hence, issues with the condition of school buildings. This can cause facilities to be limited and can negatively affect pupils' educational experience. Rural schools can also face struggles with lower aspirations among parents (The Key, 2018) and greater travel and transportation issues for pupils (DE, 2009). However, as acknowledged in the Schools for the Future: A Policy for Sustainable Schools, schools are often at the heart of rural communities.

Internal analysis by the Department of Education has consistently shown that pupils from rural areas of Northern Ireland leave the school system with better qualifications than those from urban areas³. Research conducted elsewhere has shown an absence of urban-rural educational differences in some countries, while in others, varying degrees of disadvantage have been found between urban and rural locations. This suggests that other factors, such as national education policies and school practices may increase or decrease this effect (Sullivan et al., 2018).

³ NI School Leavers Survey 2015/16

2 Approach

2.1 Data and method

To answer our research questions, we conducted secondary analysis of International Association for the Evaluation of Educational Achievement (IEA) PIRLS 2016 data. The IEA has administered PIRLS every five years since 2001. Each cycle assesses 9-10 year olds in reading and provides a unique opportunity to link attainment data to a range of other characteristics that can be compared internationally.

Northern Ireland first took part in 2011 and the most recent publicly available dataset available is PIRLS 2016. In addition to pupil attainment data, this dataset provides a plethora of information on school climate and resources; classroom instruction; pupils' home environments for learning; and the characteristics, attitudes and experiences of principals, teachers, parents and pupils. About 319,000 students across 61 countries participated in PIRLS 2016. The IEA employ a strict sampling methodology and require very high response rates to ensure the sample of schools and students for each country is nationally representative. The data for Northern Ireland met the IEA's requirements and was accepted as a representative sample for the Northern Ireland population of primary schools and primary school children in year six⁴.

The Northern Ireland sample was matched to other relevant school and pupil level factors from the Northern Ireland School Census, which included a school type variable that identified participating schools as either urban or rural. Urban schools are defined as those in settlements with a population of 4,500 or more, whilst rural schools are those in settlements with a population of less than 4,500⁵. Whilst a more nuanced definition of school type may have added more value to the study, e.g. disaggregated by school size and location or settlement size, this was not possible because the number of schools in each sub-group was too small to draw any valid conclusions. The current study is therefore based on a binary comparison only.

The number of students and schools participating in PIRLS 2016, as well as the proportion of students in urban and rural schools is shown in Table 2.1, along with national figures.

⁴ Full details of the sampling methodology and sample information can be found in 'PIRLS 2016 in Northern Ireland: Reading Achievement' <https://www.education-ni.gov.uk/sites/default/files/publications/education/PIRLS%202016%20in%20Northern%20Ireland%20Full%20Report.pdf>

⁵ This definition of urban and rural follows the 'Report of the Inter-Departmental Urban-Rural Definition Group Statistical Classification and Delineation of Settlements February 2005' accessible at https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/ur_report.pdf

Table 2.1 The number and proportion of students and schools in rural and urban schools participating in PIRLS 2016 in Northern Ireland.

School type	Schools		Students	
	PIRLS sample	Nationally	PIRLS sample	Nationally
Rural	49 (37%)	467 (57%)	1005 (27%)	74,772 (36%)
Urban	85 (63%)	351 (43%)	2688 (73%)	133,340 (64%)
Total	134	818	3693	208,112

Source: Northern Ireland School Census 2015/16

The PIRLS dataset is designed to provide nationally representative samples in terms of student and school characteristics, although as demonstrated by Table 2.1, rural schools were under-represented. However, this will not bias our analysis exploring differences between urban and rural schools, providing that within each group the PIRLS schools are broadly representative. We found that the PIRLS rural sample was nationally representative of all rural schools in Northern Ireland by free school meals eligibility (percentage enrolment), school management type, school location (settlement bands) and the proportion of students living in one of the 30 per cent most deprived Super Output Areas (SOA). The PIRLS sample of urban schools was representative in most respects, but included an over-representation of ‘Catholic maintained’ schools.

PIRLS uses a two-stage sampling process in which schools are first sampled and then students are sampled within participating schools. This approach has the potential to increase the standard errors of population estimates. In this study, all statistics have been generated using the IEA’s IDB Analyzer via a jackknife repeated replication (JRR) method, which takes into account the sampling design information to generate unbiased standard errors. The IDB Analyzer uses t-tests to calculate whether differences between means are statistically significant. When undertaking statistical modelling in this study we use multi-level modelling, a method that is required when handling data that is clustered or grouped. In the case of this study, children are clustered in schools: the performance of two children in the same school will tend to be more similar than the performance of two children in two different schools because of unobserved ‘school effects’ that affect outcomes.

In summary, PIRLS is a highly rigorous study of education systems that allows for sophisticated analysis, and for the consideration of statistically significant findings that are unlikely to have arisen solely by chance. Unless stated otherwise, findings in this report are therefore only reported where they are statistically significant.

The remainder of this report describes our analysis and findings:

- In Chapter 3 we examine how reading performance varies between urban and rural schools and explore how these are related to differences in their student populations and circumstances.
- In Chapter 4 we analyse the context questionnaires provided in PIRLS to investigate differences between urban and rural schools in the experiences and attitudes of pupils, teachers, principals and parents.

- In Chapter 5 we compare urban-rural achievement gaps in Northern Ireland with the Republic of Ireland and England to deepen our understanding of the conditions in which inequality of outcomes in urban and rural settings prevails.
- In Chapter 6 we summarise our conclusions and discuss their implications.

3 How does reading performance vary between urban and rural schools?

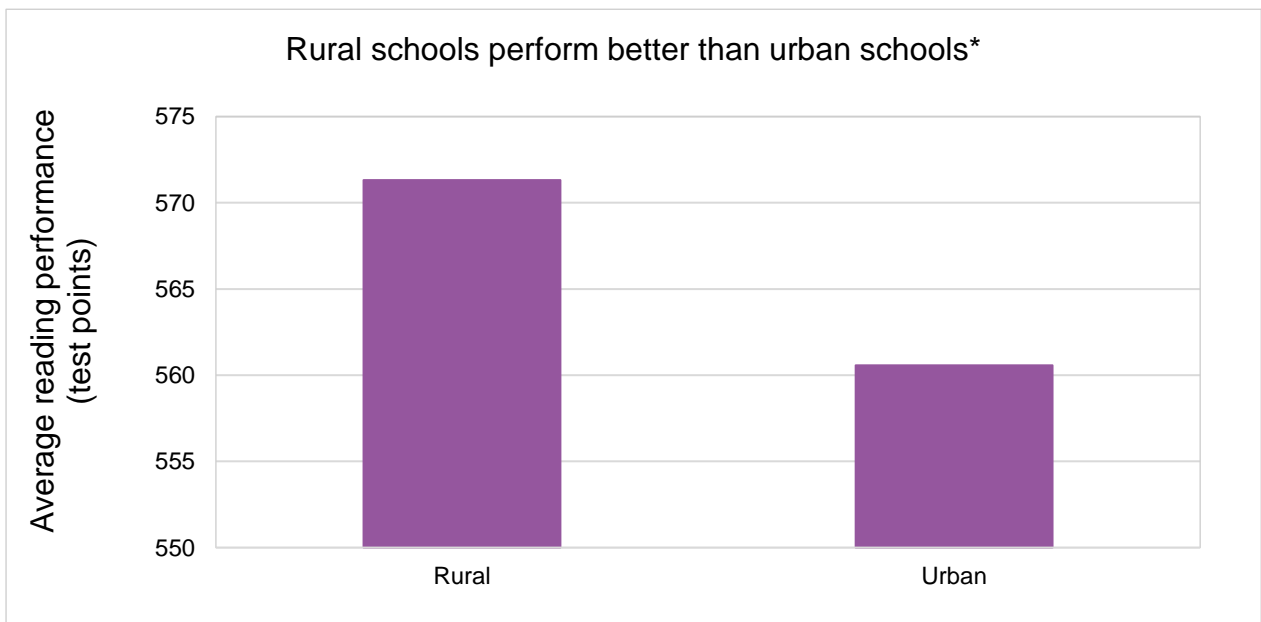
Key findings

- Rural schools performed better than urban schools in PIRLS 2016, on average.
- This performance gap is partially explained by differences in rural and urban pupil populations (particularly levels of socioeconomic disadvantage) and school contexts, which on balance, hinder urban schools
- Nevertheless, even when these factors are taken into account, rural schools still perform better

3.1 Reading performance by school type

Despite the various challenges faced by rural schools, their pupils achieved higher reading scores than pupils at urban schools in PIRLS 2016, on average.

Figure 3.1 Mean reading performance in PIRLS 2016 by school type in Northern Ireland



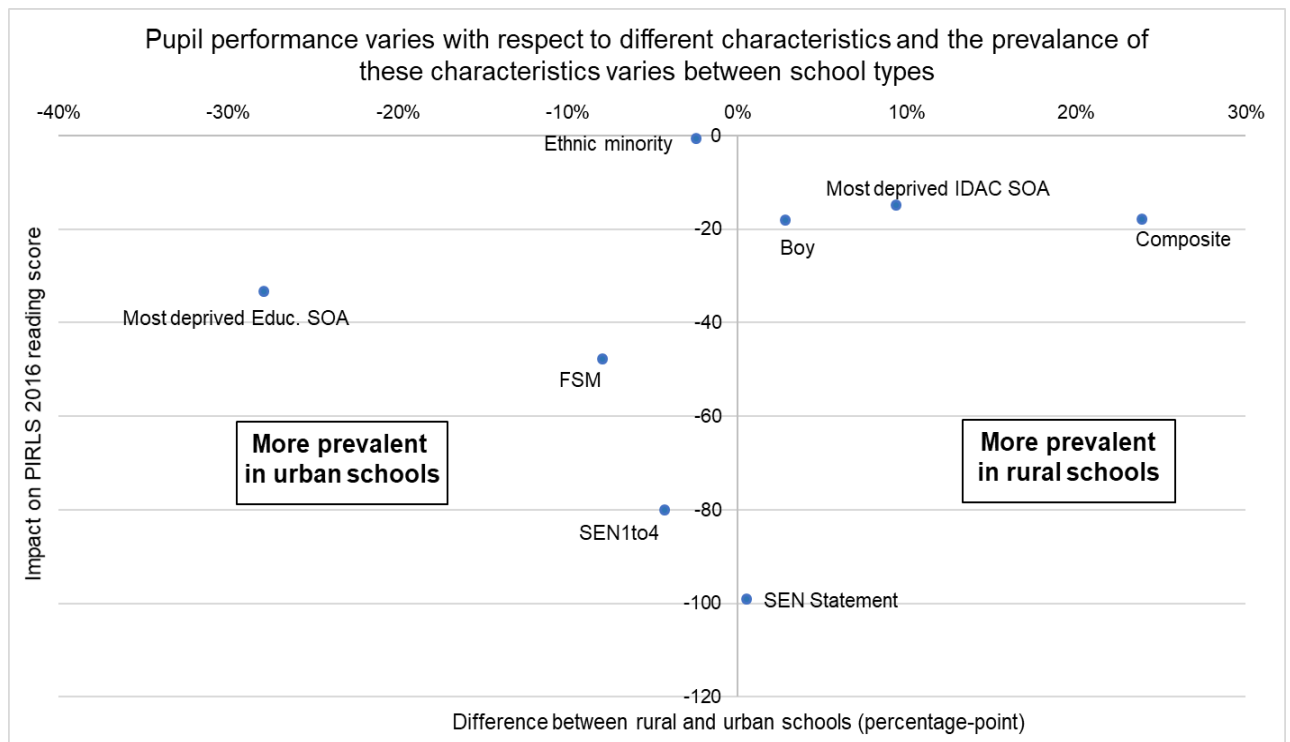
*The difference in mean reading performance is significant at the 5% level

There are likely to be multiple reasons underlying this gap in performance between urban and rural schools, including differences in the characteristics of their pupils and wider contexts. Our analysis here considers a range of these factors, including the effect of being taught in a composite class (which is more prominent in rural schools, given their smaller size).

Figure 3.2 illustrates how average reading performance in PIRLS 2016 varies according to these factors and how their prevalence varies between urban and rural schools. The fact that all of the

data points fall below the horizontal axis means that a pupil with each given characteristic performs worse than a pupil without that characteristic. A number of differences exist between school types with regard to these characteristics. Unless otherwise stated, any differences reported are statistically significant.

Figure 3.2 How reading performance in PIRLS 2016 varies with respect to different characteristics and how the prevalence of these characteristics varies between urban and rural schools



The largest gaps in performance exist between pupils with special educational needs and those without such needs. Rural schools have a slightly higher proportion of pupils with a special educational needs (SEN) statement (SEN stage 5) than urban schools, whereas urban schools have more pupils with SEN stage 1 to 4. However, only the latter difference is statistically significant.

The characteristic whose prevalence varies most between urban and rural schools is the presence of composite classes. Although composite classes only impact upon average performance by less than 20 points (similar in magnitude to the difference between boys' and girls' average scores), the fact that this type of class is much more frequently seen in rural settings is likely to have a substantial negative impact on overall average scores in rural schools.

Since free school meals (FSM) eligibility is typically related to parental income, it is often used as an indicator of socio-economic status (SES). SES is one of the strongest and most stable predictors of academic performance (DfE, 2017). Since urban schools have a higher percentage of FSM eligible pupils and FSM eligible pupils perform worse than non-FSM eligible pupils, on average, this is likely to partly explain the inferior performance of urban schools.

Urban schools typically have more pupils who live in the 30 per cent most deprived SOAs in terms of education, which comprises variables such as examination results and attendance, whilst rural schools typically have more pupils who live in the 30 per cent most deprived SOAs in terms of income domain affecting children (IDAC), which is the proportion of children living in households with an income less than 60 per cent of the Northern Ireland median. This latter difference is not statistically significant, and the difference in performance between the two groups is greater for educational disadvantage compared to income disadvantage, suggesting there will be a greater net-negative impact on urban schools

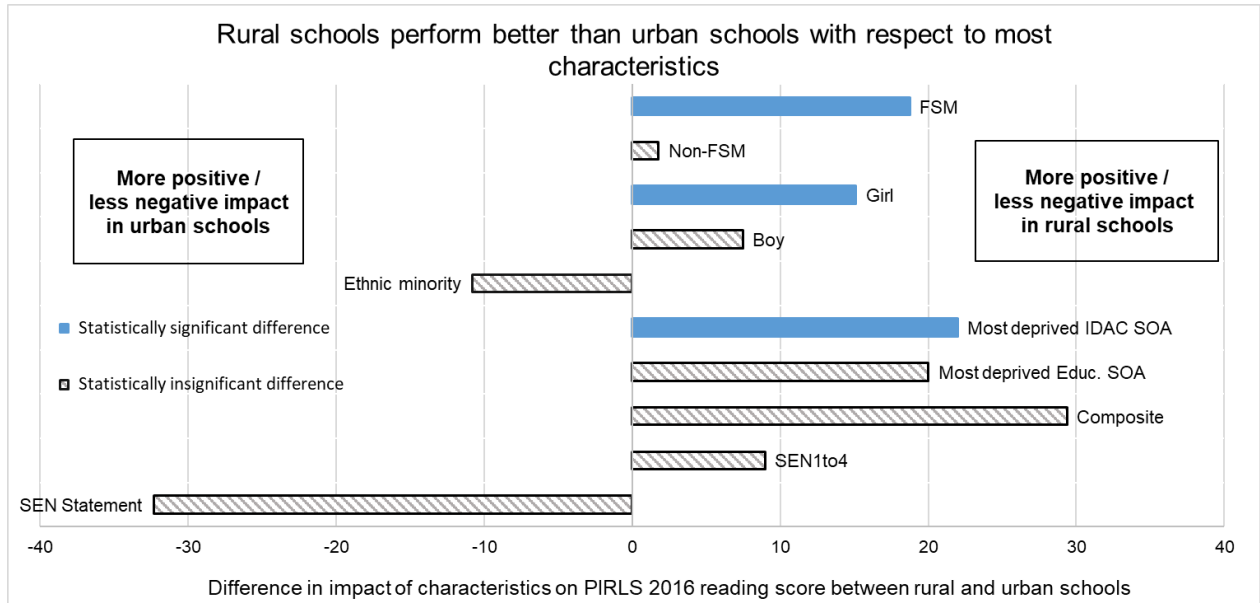
In Northern Ireland and many other countries, there are significant gender differences in attainment in reading, favouring girls. Within the PIRLS sample, rural schools have a marginally higher proportion of boys than urban schools. Since boys perform worse than girls, on average, this is likely to have a negative effect on rural schools' performance overall.

There is little difference in performance between 'White' and 'Ethnic minority' pupils overall but rural schools have slightly less pupils from ethnic minority backgrounds than urban schools. Ethnic minority pupils are defined as those from a black or other minority ethnic group, including Irish Travellers.

Taking these findings together, there is mixed picture of factors that could support or hinder the performance of rural schools. However, on balance, the most significant factors relate to SES and hinder urban schools, and therefore appear to go some way towards explaining the overall difference by school type.

As well as looking at the *average* effect of different factors on outcomes across all school types, we can also consider whether the effect of these factors *differs* depending on whether it is a rural or urban school. This can be seen in Figure 3.3.

Figure 1.3 How the average effect of different factors on performance in PIRLS 2016 varies between school types



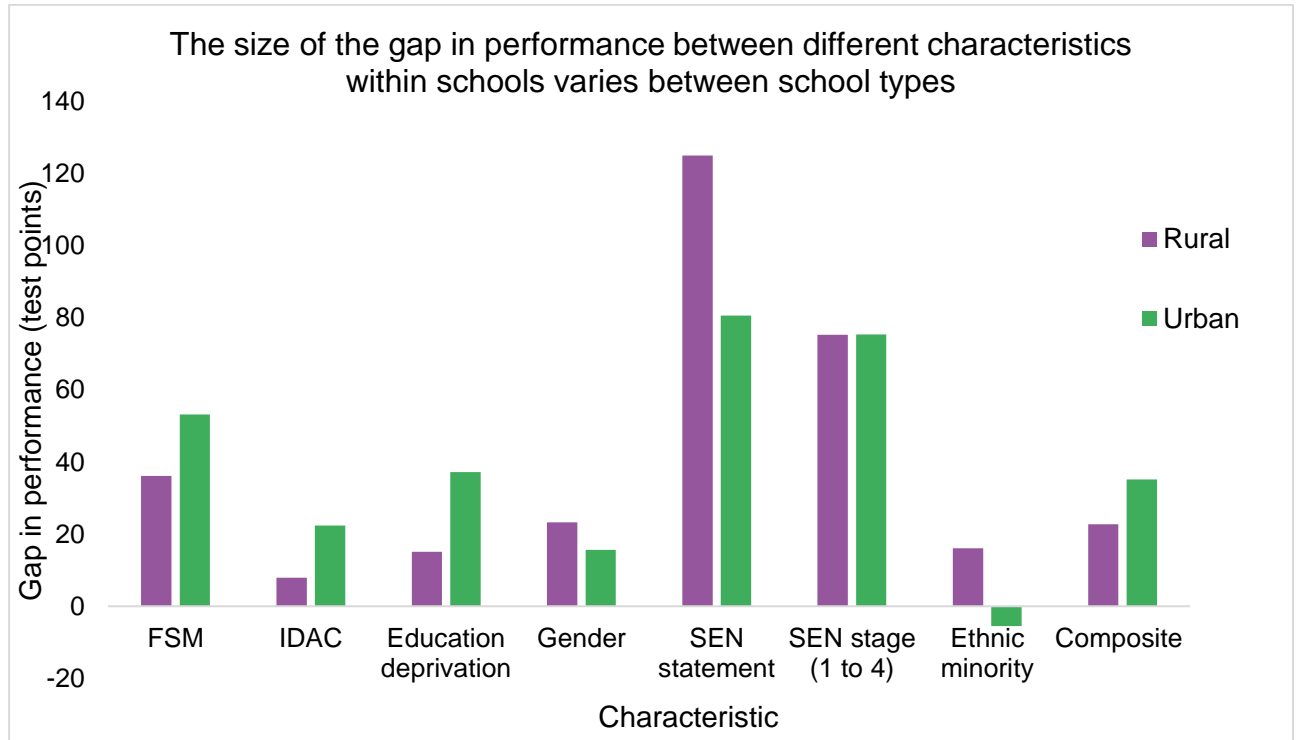
There is no significant difference between the performances of non-FSM eligible pupils between school types. Interestingly however, and consistent with Weir et al. (2013; 2015), FSM eligible pupils perform significantly better in rural schools than urban schools by an average of 19-points⁶. Rural schools also perform better with respect to the two other measures of disadvantage, albeit insignificantly, when considering the education deprivation measure. The gap between girls' performance in urban and rural schools is twice that of boys. Girls perform significantly better in rural schools, whereas the difference between the average performances of boys is not significantly different between school types. There is no statistically significant difference between how ethnic minorities, pupils in composite classes or pupils with SEN statements or SEN stage 1 to 4 perform between urban and rural schools (although pupils with SEN, ethnic minorities and those in composite classes attained less well in PIRLS than pupils without SEN, white pupils and pupils not taught in composite classes regardless of their locale).

These findings suggest that as well as facing different education challenges arising from differing pupil characteristics, the educational outcomes for pupils with a given characteristic (such as FSM eligibility) also varies depending on whether they attend an urban or rural school.

So far, we have examined how the prevalence of these different factors and their average effect on performance varies *between* school types. However, when we consider how pupils possessing such characteristics perform compared to their peers who do not *within* schools, further differences between urban and rural schools begin to emerge. This can be seen in Figure 3.4.

⁶ This is equivalent, for example, to roughly a quarter of the difference between the PIRLS Intermediate Benchmark score (475) and the High International Benchmark score (550).

Figure 3.4 How the size of gap in performance in PIRLS 2016 between different characteristics within schools varies between school types



There is a larger gap between FSM eligible and non-FSM eligible pupils in urban schools than rural schools. Consistent with this, the gap between pupils who reside in the 30 per cent most deprived SOAs in terms of IDAC and/or education and those who do not, is also larger in urban schools (and is not statistically significant in rural schools). The gender gap, i.e. the difference between girls' and boys' performance, is larger in rural schools. This is a combination of the above average performance of girls in rural schools and the below average performance of boys in urban schools. Rural schools also have larger gaps between their SEN pupils and non-SEN pupils than urban schools.

Although there appears to be a difference between urban and rural schools in terms of the impact of ethnicity this is not statistically significant, most likely because of the small number of ethnic minority children in the sample, and so should be treated with caution. Finally, where composite classes are present in urban schools, this appears to have a greater negative impact on reading scores than for composite classes in rural schools.

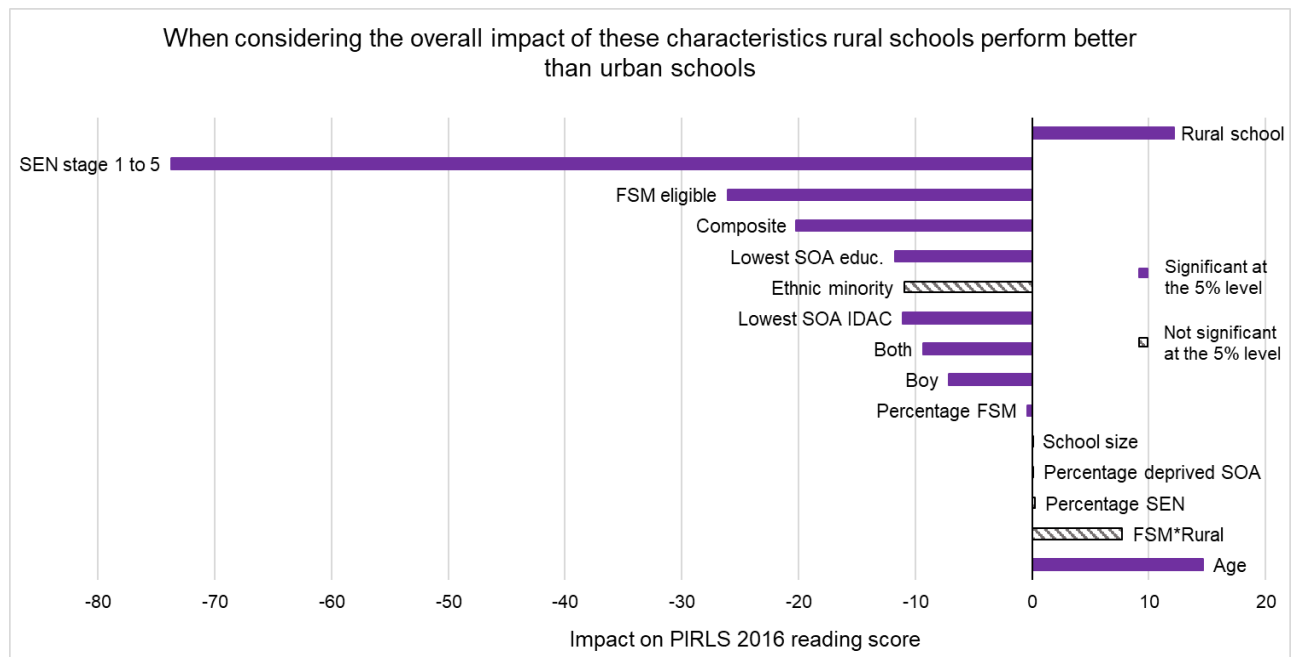
In general, therefore, it seems that inequality between pupils possessing certain characteristics is greater in urban schools. These results are likely to be related to the previous findings in that pupils facing certain barriers to learning generally perform better in rural schools, thus the gap in performance between them and their peers will presumably be smaller. More information on the prevalence of each of these characteristics, how this varies between urban and rural schools and how urban and rural schools perform differently with respect to these characteristics is included in Appendix A.

3.2 Regression analysis of performance by pupil and school characteristics

Next, we consider the *net* impact of these pupil-level and school-level characteristics on performance when considered together. This is in order to establish whether they explain the observed differences between urban and rural schools – or whether an underlying urban-rural difference remains. We do this using multiple regression analysis – a technique that enables the simultaneous impact of a range of factors on an outcome of interest to be estimated.

Figure 3.5 outlines the results of this analysis. The bars show the magnitude of the effect each characteristic has on performance, all else being equal. It provides evidence that even having controlled for pupil and school characteristics, rural schools continue to perform better than urban schools: on average, and all else being equal, pupils in rural schools score 12 points higher than pupils in urban schools.

Figure 3.5 Regression analysis of pupil background and school characteristics on PIRLS score for pupils in Northern Ireland (2016)



Other variables that significantly predict performance in PIRLS after accounting for everything else in the model include:

- whether a pupil has **SEN**, where a pupil having SEN (stage 1 to 5) is associated with a 74 point decrease in performance
- whether a pupil is eligible for **FSM**, with those pupils who are eligible scoring 26 points lower than their non-eligible peers, on average
- whether a pupil is in a **composite class**, with those in composite classes scoring 20 points lower than those who are not. For some pupils it was not possible to determine whether they were in a composite class or not, because their school had both composite and non-composite

Year 6 classes. The effect of these classes on performance is represented by the 'Both' variable, which is also negatively associated with performance.

- whether the pupil lives in the 30 per cent **most deprived SOAs** in terms of IDAC (which, as we have seen, particularly affects rural areas) or education (which is more prevalent in urban settings) with those who do scoring 11 and 12 points lower respectively.
- the percentage of school enrolment who are eligible for **FSM**, with a one percentage-point increase in those eligible for FSM causing an average 0.4 point decrease in pupils' performance
- **gender**, with boys expected to score 7 points less than girls, on average
- **age**, with a 12-month increase in age associated with a 15 point increase in reading performance in the sample.

However, there is no evidence that school level characteristics including school size, the percentage of enrolment living in the 30 per cent most deprived SOAs (primary education sub-domain), the percentage of school enrolment with SEN, or ethnicity are associated with PIRLS reading performance, at least within the sample we examined. In addition, there is no evidence for a relationship between pupil-level FSM eligibility and school type, i.e. outcomes for FSM eligible pupils in rural and urban schools are not significantly different, once all of the other factors here are taken into account. Further details on the additional controls and the regression output are provided in Appendix B.

There are several other factors that are associated with performance and vary between schools that need to be accounted for. These include pupil attitudes and experiences, home background factors, and other school factors such as the school climate and characteristics and experiences of the teachers and principals who work there. Many of these are provided in the contextual questionnaires that are collected as part of PIRLS, which we investigate next.

4 How are urban and rural schools different and how might this further explain differences in performance?

Key findings

- Pupils', teachers' and principals' attitudes and experiences vary little between urban and rural schools.
- Rural schools perform significantly better on a number of PIRLS context questionnaire scales, particularly those relating to the school climate and safety, which offer further plausible explanations for their superior performance in PIRLS 2016.
- 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.
- We found no evidence that distance to school is correlated with reading performance or how often pupils' report eating breakfast on school days, arriving late to school or feeling tired or hungry.
- Whilst there were no significant differences between urban and rural school pupils' reported experiences of bullying, rural school principals reported slightly fewer problems with school discipline, disorderly and bullying behaviours.

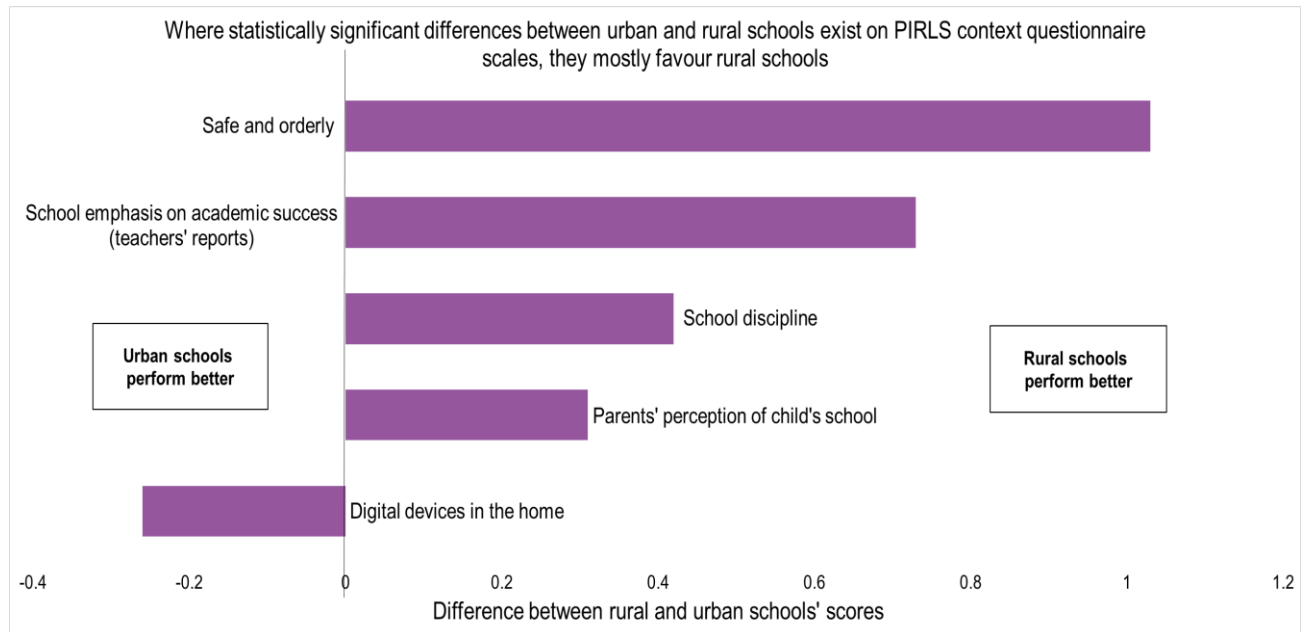
4.1 PIRLS 2016 context questionnaires

Our analysis so far has considered differences in reading scores for pupils in urban and rural schools, and whether these can be explained by characteristics of the pupil population and the circumstances and setting in which the school is situated. Next, we move on to consider differences between what actually takes place within urban and rural schools, who the teachers and principals are, and the experiences of staff, pupils and parents.

PIRLS context questionnaires are completed by students and their parents, teachers, and principals and provide insights into students' contexts for learning. To shed further light on the difference in reading performance between school types, we compared differences in pupils' attitudes and experiences of school, home backgrounds, school climate, classroom instruction and teachers' and principals' characteristics and experiences as provided by these questionnaires. We also examined how pupils' attitudes and experiences varied by gender and SES.

Many of the PIRLS 2016 context questionnaire items were developed to be combined into scales measuring a single underlying latent (i.e. unobserved) construct. For a range of different scales, we have compared the mean score in urban and rural schools. We also looked at individual questions that did not form part of one of the composite scales but were relevant to our analysis. Although 134 schools took part in PIRLS 2016 in Northern Ireland, the number of schools for which we have data for these scales differs because of omitted or invalid data from respondents.

Figure 4.1 Summary of all statistically significant differences between how urban and rural schools scored on various PIRLS 2016 context questionnaire scales



4.2 Pupils' attitudes and experiences of school

We compared pupils' attitudes and experiences of school using five scales derived from students' responses to a series of questions. These were "Student's Sense of Belonging", "Student Bullying", "Students Engaged in Reading Lessons", "Students Like Reading" and "Students Confident in Reading". All of these are positively related to average reading achievement, with the exception of "Student Bullying", where an increase in bullying relates to a decrease in average reading achievement (Mullis et al., 2017). There were small, insignificant differences between how urban and rural schools scored on these scales, on average, suggesting the attitudes and experiences of children attending urban and rural schools varies little.

There were significant differences between how girls and boys scored on these scales, with girls, on average, expressing more positive attitudes towards school and their experiences than boys. These differences were larger in rural schools, which stemmed mostly from boys in these schools expressing more negative views than those in urban schools. However, despite this, the difference between boys' attitudes in rural and urban schools was not significant, and similarly for girls. There were also significant differences between how FSM and non-FSM pupils scored on these scales, with non-FSM pupils expressing more positive attitudes towards school, on average, with the exception of engagement in reading. The size of these gaps varied between school types and in many cases, the gaps were not statistically significant, particularly in rural schools. Considering FSM and non-FSM pupils separately, within each of these groups there were no significant differences between urban and rural schools.

There were marginal, insignificant differences between how frequently pupils' reported arriving to school tired and hungry, as measured by individual question items, between school types.

Pupils attending rural schools travel over 50 per cent longer distances than those in urban schools, on average. This was measured by calculating the distance between the pupils' home postcode and school postcode. Whilst we do not have access to data on travel times, travel distances provide an important indication of a school's accessibility and its long-term viability (DE, 2009). However, from the PIRLS data there is no evidence that distance to school is correlated with reading performance or how often pupils' report eating breakfast on school days, arriving late to school or feeling tired or hungry.

4.3 Home background

Good readers have home environments that support literacy learning. Across countries participating in PIRLS 2016, higher reading achievement was related to - more resources in the home that support learning (books, study supports, and educated parents), more digital devices in the home, and parents who like to read (Mullis et al., 2017). These were measured by the "Home Resources for Learning", "Digital Devices in the Home" and "Parents Like Reading" scales, respectively.

There was no significant difference between how pupils scored on the "Home Resources for Learning" or "Parents Like Reading" scales between urban and rural schools. Pupils in both urban and rural schools were categorised as having 'Medium Access' to digital devices as measured by the "Digital Devices in the Home" scale, which categorises children into one of three bands: those with 'High Access', 'Medium Access' and 'Low Access', but pupils' in urban schools scored higher overall by 0.26 points. Across all schools in Northern Ireland, scores ranged between 8.88 and 14.32, and 60 per cent of rural schools scored below the urban mean score on this scale compared to 50 per cent of urban schools.

While reading achievement is positively associated with access to digital devices, pupils in urban schools reported spending more time using a computer or tablet for playing games, watching videos, chatting or surfing the internet each day. This finding was also reported by Weir et al. (2015) and might indicate that as a consequence, rural pupils spend more time engaging with their parents, which may be especially beneficial in home environments that support and value education. Therefore, whilst the number of digital devices in the home may be positively associated with reading, this could be an indication of wealth and a higher SES, which we know is positively associated with pupil performance.

There were small differences between parents' aspirations for their children, as measured by how far they expect their child to go in their education, between urban and rural schools. Sixty six per cent of parents in urban schools reported expecting their child to complete either a bachelors or postgraduate degree compared to 64 per cent in rural areas.

We examined how parents' attitudes towards their child's school varied between school types by analysing the "Parents' Perception of their Child's School" scale. Whilst both urban and rural schools have an average score translating into parents feeling 'Very Satisfied', rural schools score higher by 0.31 points. Across all schools in Northern Ireland, scores ranged between 7.75 and 12.26, and 67 per cent of urban schools scored below the rural mean score on this scale compared to 40 per cent of rural schools. Reading achievement is positively associated with parents'

perceptions about their child's school (Mullis et al., 2017). In addition, it is an important indication of a school's links with the local community, an important factor affecting a school's sustainability. If parents perceive their child's school in a negative way, this can adversely affect the value they and the local community place on education (DE, 2009).

4.4 School climate

Evidence from the USA suggests that safe and orderly learning environments are important in supporting student achievement and reducing teacher turnover (Kraft et al., 2016). The OECD's study, *Creating Effective Teaching and Learning Environments: First Results from TALIS (2009)*, involving over two million teachers across 23 countries, recognises classroom discipline as a challenging dimension of teachers work and the importance of a safe and productive learning environment for student achievement.

In PIRLS 2016, teachers were asked about their degree of agreement with eight statements relating to school safety. These were used to develop the "Safe and Orderly" scale. Both urban and rural schools' scores translate into "Very Safe and Orderly", the highest band on the scale. However, rural schools score higher by 1.03 points. Across all schools in Northern Ireland, scores ranged between 6.56 and 13.31, and 55 per cent of urban schools scored below the rural mean score compared to 20 per cent of rural schools.

Teachers were also asked a number of questions relating to school climate, which were used to develop the "School Emphasis on Academic Success" scale. Both urban and rural schools' score translates into "High Emphasis", the second highest band on the scale. However, rural schools have a higher mean score overall by 0.73 points. Across all schools in Northern Ireland, scores ranged between 7.93 and 17.11, and 67 per cent of urban schools scored below the rural mean score on this scale compared to 44 per cent of rural schools. Since there is a direct positive association between average reading achievement and these scales, these differences may partly explain why rural schools perform better on average.

The "School Emphasis on Academic Success" scale was also administered to principals. Both urban and rural schools still achieve a score in the "High Emphasis" band, but urban schools score higher, on average. However, this difference is not statistically significant. Principals were also asked about the degree to which they perceive a series of discipline, disorderly, and bullying behaviours to be a problem in their school, which were used to develop the "School Discipline" scale. Again, both urban and rural schools had average scores translating into the same band – "Hardly Any Problems", the highest band on the scale, but rural schools score higher by 0.42 points. Across all schools in Northern Ireland, scores ranged between 8.01 and 12.99, and 66 per cent of urban schools scored below the rural mean score on this scale compared to 49 per cent of rural schools. Since average reading achievement is positively associated with school discipline, this is also likely to be driving the higher reading performance in rural schools.

4.5 Classroom instruction

The PIRLS 2016 international average for the number of hours spent on reading and language instruction a year was 156 and 242 respectively. In Northern Ireland, teachers in rural schools

spent an average of 158 hours a year on reading instruction, Teachers in urban schools spent less time, averaging 126 hours a year, which is below the international average. Teachers in rural schools also spend more time on language instruction (283 hours) than urban schools (243 hours), on average. However, this difference was not statistically significant due to the relatively small sample (59 schools in total) and high degree of variation between schools of both types. Since there are a number of factors that influence the relationship between the amount of instructional time and student achievement, such as the quality of the teaching and the ability of students, it is unclear whether instructional time could be contributing to the urban-rural achievement gap in reading performance.

There is a direct relationship between average reading achievement and the degree to which teaching is limited by student attributes such as, disruptiveness, lacking skills and sleep deprivation (Mullis et al., 2017). Teachers' responses to a number of questions relating to this were used to construct the "Classroom Instruction Limited by Student Attributes" scale. There was no significant difference between how urban and rural schools scored, on average.

Principals were asked how much they agreed with statements concerning the extent to which instruction is affected by general school resources and resources for reading instruction. These were used to create two scales – "Instruction Affected by Reading Resource Shortages" and "Instruction Affected by Digital Resource Shortages". There was no significant difference between how urban and rural schools scored on these, on average.

4.6 Teachers' and principals' experiences and characteristics

Teacher job satisfaction plays an important role in motivating teachers to prepare their instruction and teach. Teachers who are satisfied in their profession are also more likely to remain in the classroom (Mullis et al., 2017). There was no significant difference between how teachers scored on the "Teacher Job Satisfaction" scale, on average, between school types.

There was no significant difference between teachers' average age, years of experience, highest level of education completed or number of hours spent on professional development related to reading in the past two years between urban and rural schools. The same was true for principals' average years of experience and highest level of education completed.

Details on what questions make up the scales discussed in this section can be found in Appendix C. The most notable differences between urban and rural schools are those concerning the school climate, which favour rural schools and offer a plausible explanation for their superior performance in PIRLS 2016.

Ideally, we would have included these factors in regression models but this was not possible because of the lack of variation between urban and rural schools based on the scales used, and the relatively small sample sizes, meaning they offer little explanatory power. However, they do still provide important context to the remaining variation between urban and rural schools that is not explained by our regression models.

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

Key findings

- Among each of the four groups of urban/rural advantaged/disadvantaged schools, Northern Ireland achieved similar or higher average results than England and the Republic of Ireland.
- However, because of the greater prevalence of disadvantaged schools in Northern Ireland, this brought down its overall average scores to be similar to England and the Republic of Ireland in rural settings.
- In urban settings, there are particularly high numbers of disadvantaged schools in Northern Ireland, meaning its urban schools achieve lower average scores than in the Republic of Ireland.
- There is less agreement between principals and teachers in Northern Ireland in terms of how they rate their schools' emphasis on academic success, compared with the other two countries. Principals in rural schools report a lower average score than teachers, whilst principals in urban schools report a higher average score than teachers.
- The Republic of Ireland has the smallest gap in performance between urban and rural schools but has the largest gap in scores on several context questionnaire scales favouring rural schools. This suggests some factor in the Republic of Ireland (for example the greater prevalence of small schools) is weakening the expected association between these scores and reading performance.

5.1 Approach

Finally, in order to consider whether similar issues arise for urban and rural schools in other countries we conducted secondary analysis of the PIRLS 2016 dataset for Northern Ireland, England and the Republic of Ireland. International comparisons are difficult because we can never fully account for all cultural or contextual differences. However, we specifically chose these countries based on their close proximity and similar cultural and linguistic backgrounds. In this sense, through use of descriptive statistics, we hope to deepen our understanding of geographical education disadvantage and the conditions and contexts that underlie it.

In order to investigate the extent of urban-rural educational disadvantage across these countries, we were limited to just using data from the context questionnaires because we did not have access to matched pupil and school census data for England and the Republic of Ireland. **This means our urban/rural definitions and school SES measures differ from those used in the previous sections** but it does mean that the comparisons between countries presented here can be undertaken on a consistent basis.

The PIRLS School Questionnaire, administered to principals, asks two questions pertaining to these variables. They were asked to describe the immediate area in which their school is located, from which they could choose:

1. Urban-Densely populated
2. Suburban-On fringe or outskirts of urban area
3. Medium size city or large town
4. Small town or village
5. Remote rural

For the purpose of our analysis, schools answering 1 – 3 were categorised as ‘Urban’ whilst those answering 4 or 5 were categorised as ‘Rural’. They were also asked to estimate the percentage of students in their school from economically disadvantaged backgrounds, from which they could choose: 0 to 10%; 11 to 25%; 26 to 50%; or More than 50%.

In order to test the reliability of these measures, we ran crosstabs between those variables used previously from the School Census for Northern Ireland in the earlier sections of this report and how principals in Northern Ireland responded to the above questions to check their level of agreement. For the urban/rural definitions, for 93 out of 103 schools the two approaches resulted in the same classification, whereas for 10 schools this differed. For the school SES measure there were a greater number of discrepancies (26). However, as previously discussed, the two variables are not necessarily measuring precisely the same thing, whilst both still provide a useful measure of SES among pupils in a school. Details of these checks can be found in Appendix F.

Since we were relying on two key measures from the School Questionnaire to answer our research question, we could only analyse schools who were not missing this data. Table 2 shows the number and proportion of students and schools participating in PIRLS 2016 in urban and rural areas in all three countries satisfying this requirement.

Table 5.1 The number and proportion of students in urban and rural schools participating in PIRLS 2016 without missing data on school type (urban/rural) and school-level disadvantage from the School Questionnaire in Northern Ireland, England and the Republic of Ireland.

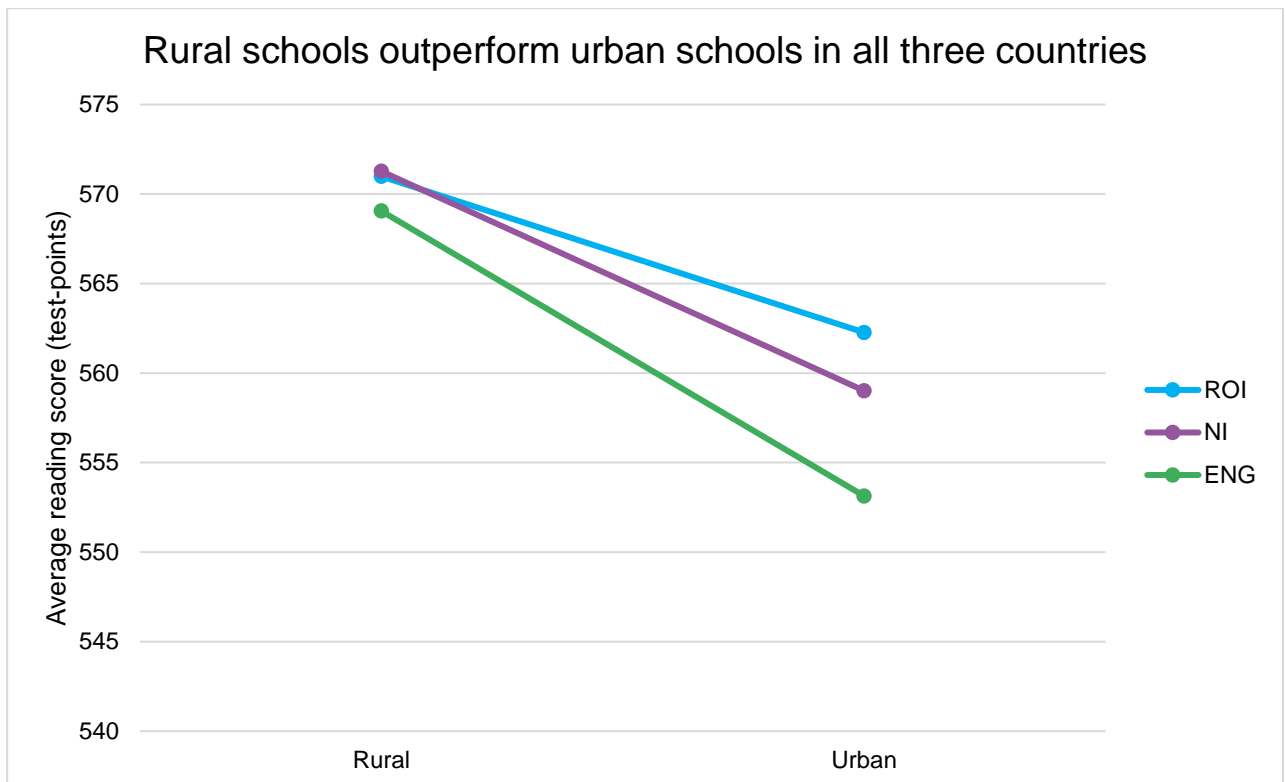
School type	Northern Ireland		England		Republic of Ireland	
	Schools	Students	Schools	Students	Schools	Students
Rural	45 (44%)	983 (37%)	58 (35%)	1646 (33%)	78 (53%)	1692 (37%)
Urban	58 (56%)	1685 (63%)	109 (65%)	3314 (67%)	68 (47%)	2865 (63%)
Total	103	2668	167	4960	146	4557

As seen in Table 5.1, the proportion of schools in rural areas is greater in the Republic of Ireland than both Northern Ireland and England, whilst the proportion of pupils in rural areas is roughly consistent across all three countries. This is indicative of the fact that the Republic of Ireland has many small rural schools.

5.2 Reading performance by school type

As seen in Figure 8, rural schools perform better than urban schools in all three countries, and the differences between rural schools' average performance in each country is relatively small. However, for urban schools the differences are greater, with a particularly large gap in performance between urban and rural schools in England (16 points), followed by Northern Ireland and then the Republic of Ireland (12 and 9 points, respectively).

Figure 5.1 Mean reading performance in PIRLS 2016 by school type in Northern Ireland, England and the Republic of Ireland



As we did not have access to data on the same pupil characteristics in England and the Republic of Ireland that we had for Northern Ireland alone, we could not conduct an in-depth comparison of the effect of these on performance equivalent to our analysis in Section 3. However, in order to better understand what is driving these results, we can nevertheless examine three ways in which urban and rural schools and their performance differs across each country:

- 1) The impact of gender in urban and rural schools.
- 2) The distribution of socioeconomic disadvantage across urban and rural schools.
- 3) The impact of socioeconomic disadvantage in urban and rural schools.

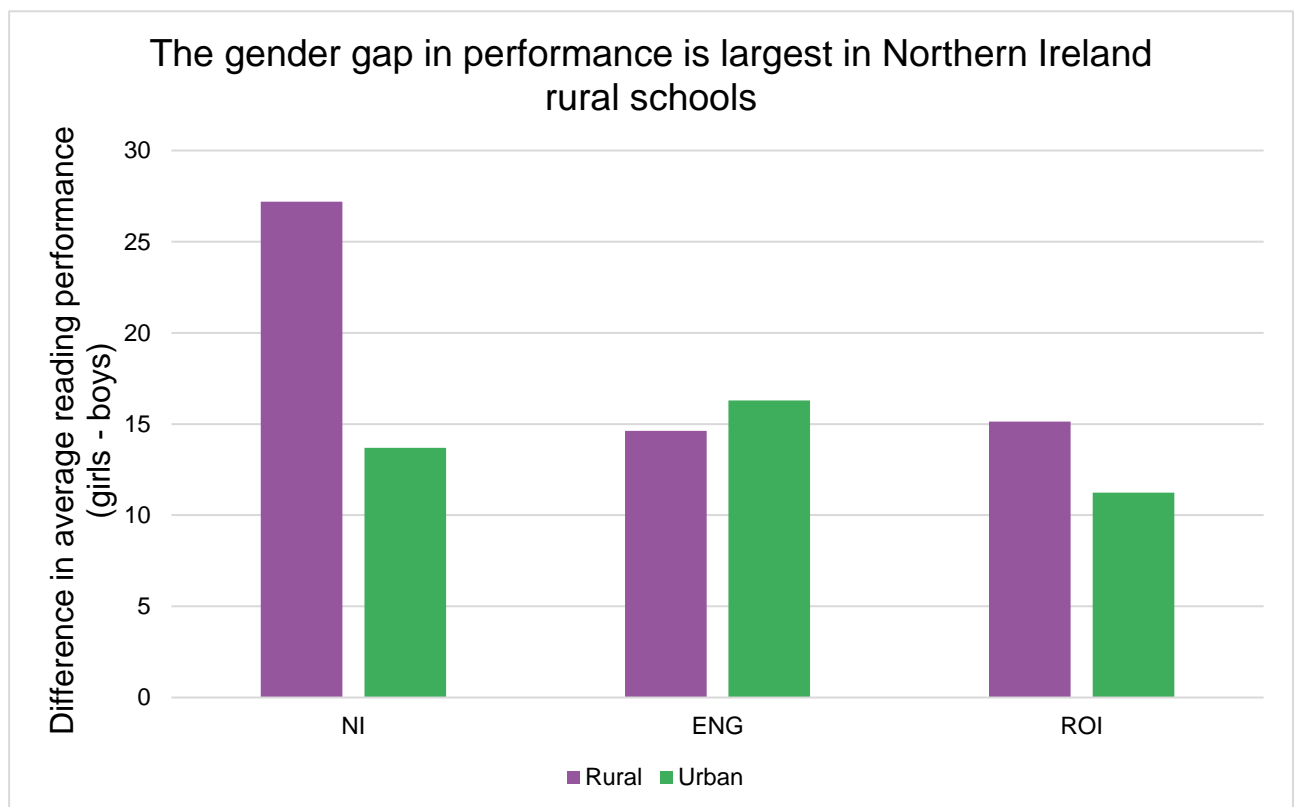
The remainder of this sub-section considers each of these factors in turn, before drawing some conclusions.

Firstly, we consider the impact of gender in rural and urban settings and consider whether this may be driving differences between the three countries. Figure 5.2 illustrates how Northern Ireland is

unusual in the much greater extent to which girls outperform boys in rural settings. When just looking at rural schools, Northern Ireland has the highest average score for girls and the lowest average score for boys, which is driving the particularly large gap shown in the graph. We saw similar results when restricting the analysis to mixed sex classes only.

High attainment among girls in rural schools therefore appears to be one possible factor contributing to the strong overall performance of rural schools in Northern Ireland.

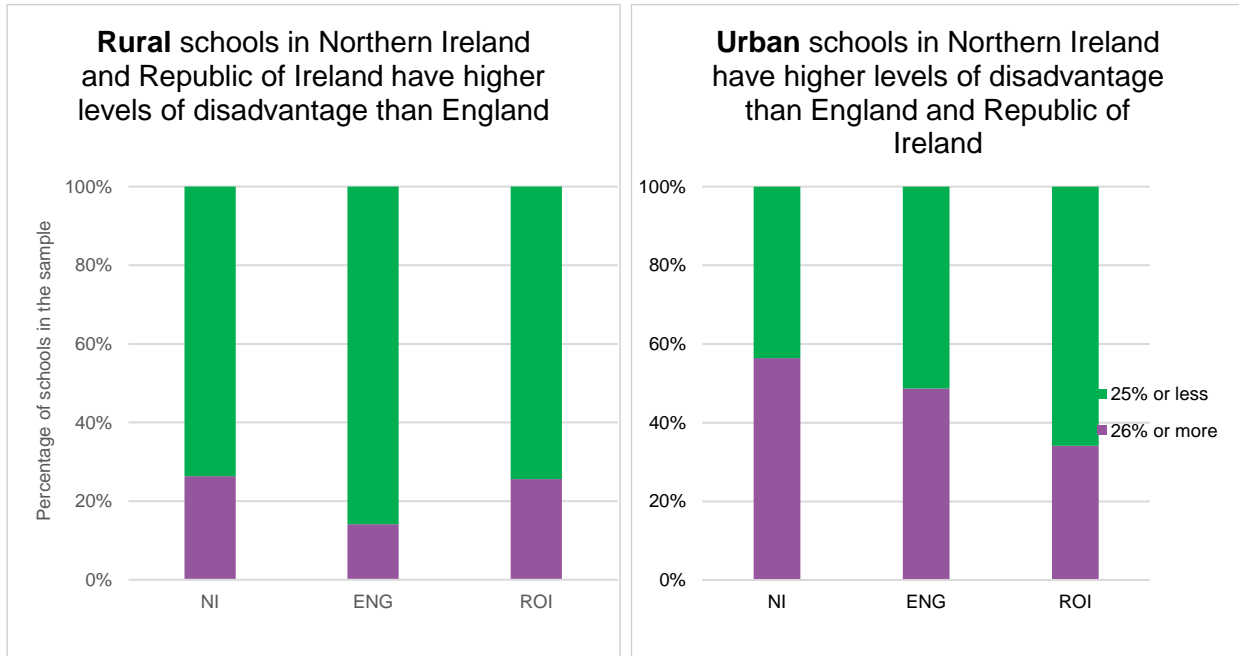
Figure 5.2 Gender gap in performance in PIRLS 2016 by school type in Northern Ireland, England and the Republic of Ireland



Secondly, we consider differences in the prevalence of socioeconomic disadvantage in urban and rural schools in each country as reported by school principals. We compared schools reported as having 25 per cent or less disadvantaged pupils (“low disadvantage schools”) to those with 26 per cent or more (“high disadvantage schools”).

As seen in Figure 5.3, principals in all three countries reported higher levels of disadvantage among their pupils in urban schools (right hand chart) than in rural schools (left hand chart). In rural settings, Northern Ireland is similar to the Republic of Ireland with around a quarter of its schools having high levels of disadvantage – somewhat more than in England. In urban settings, there are much greater differences between the countries, with Northern Ireland having particularly high levels of disadvantage (56 per cent, as compared to only 34 per cent in the Republic of Ireland). The Republic of Ireland is therefore unusual in seeing little difference in the prevalence of disadvantage between urban and rural schools, whereas in England these differences are even more pronounced than in Northern Ireland.

Figure 5.3 The percentage of urban and rural schools in the PIRLS 2016 dataset with “25% or less” pupils coming from disadvantaged backgrounds and “26% or more” in Northern Ireland, England and the Republic of Ireland.

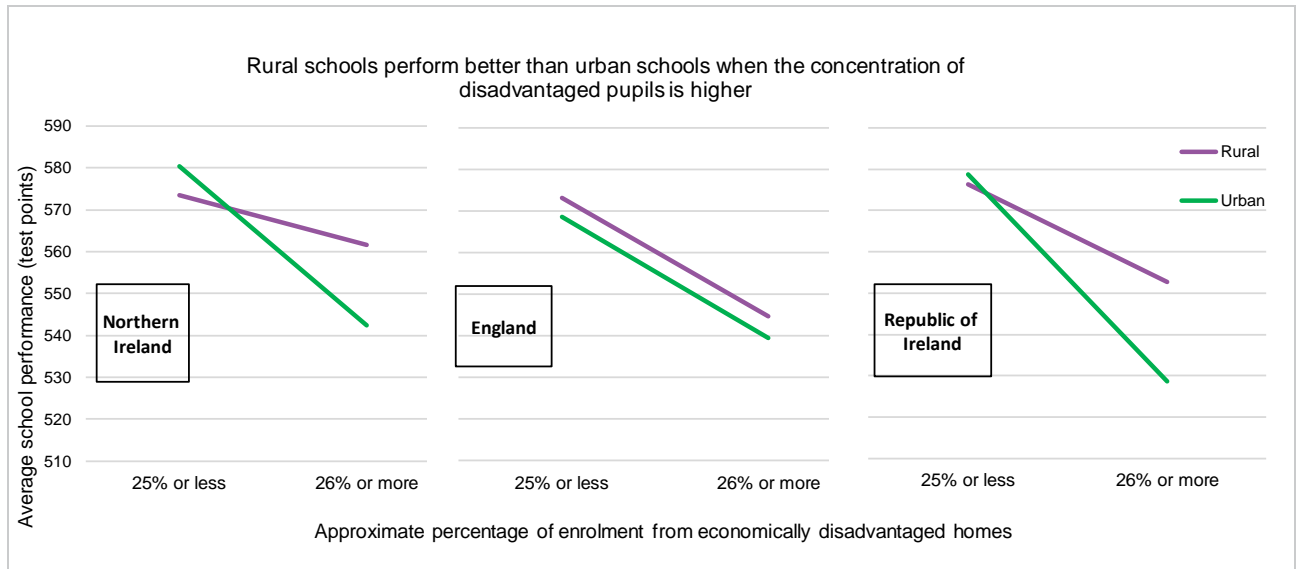


Differences between economic disadvantage are only relevant to this study to the extent to which this disadvantage has an impact on reading outcomes. This is, therefore, the third and final factor we consider. Figure 5.4 illustrates a consistent negative relationship between reading performance and the prevalence of disadvantaged pupils. However, we also see variations in this pattern across school type and countries.

In all three countries, the differences between the performance of “low disadvantage” urban and rural schools are small, whereas the differences between the performance of “high disadvantage” urban and rural schools are more notable. England is the exception to this, where there is also little difference between the performance of their “high disadvantage” urban and rural schools. However, when compared with Northern Ireland and the Republic of Ireland this appears to be because its “high disadvantage” rural schools perform particularly poorly, rather than its urban schools performing particularly well. This results in a difference between the performance of high disadvantage urban and rural schools in the Republic of Ireland of 24 points, in Northern Ireland 19 points and in England a statistically insignificant 5 points.

There are a number of key observations to make regarding schools in Northern Ireland. We see that “low disadvantage” urban schools do particularly well – higher than in England and the Republic of Ireland, and with a greater (though not statistically significant) performance gap than the other countries when compared with their “low disadvantage” rural counterparts. We also see that Northern Ireland’s “high disadvantage” urban schools also do well (again, better than in England and the Republic of Ireland where they perform particularly badly). Northern Ireland’s “low disadvantage” rural schools perform similarly to England, although not quite as well as in Republic of Ireland, and Northern Ireland’s “high disadvantage” rural schools do particularly well.

Figure 5.4 The relationship between reading performance in PIRLS 2016 and the concentration of disadvantage among pupils in urban and rural schools in Northern Ireland, England and the Republic of Ireland.



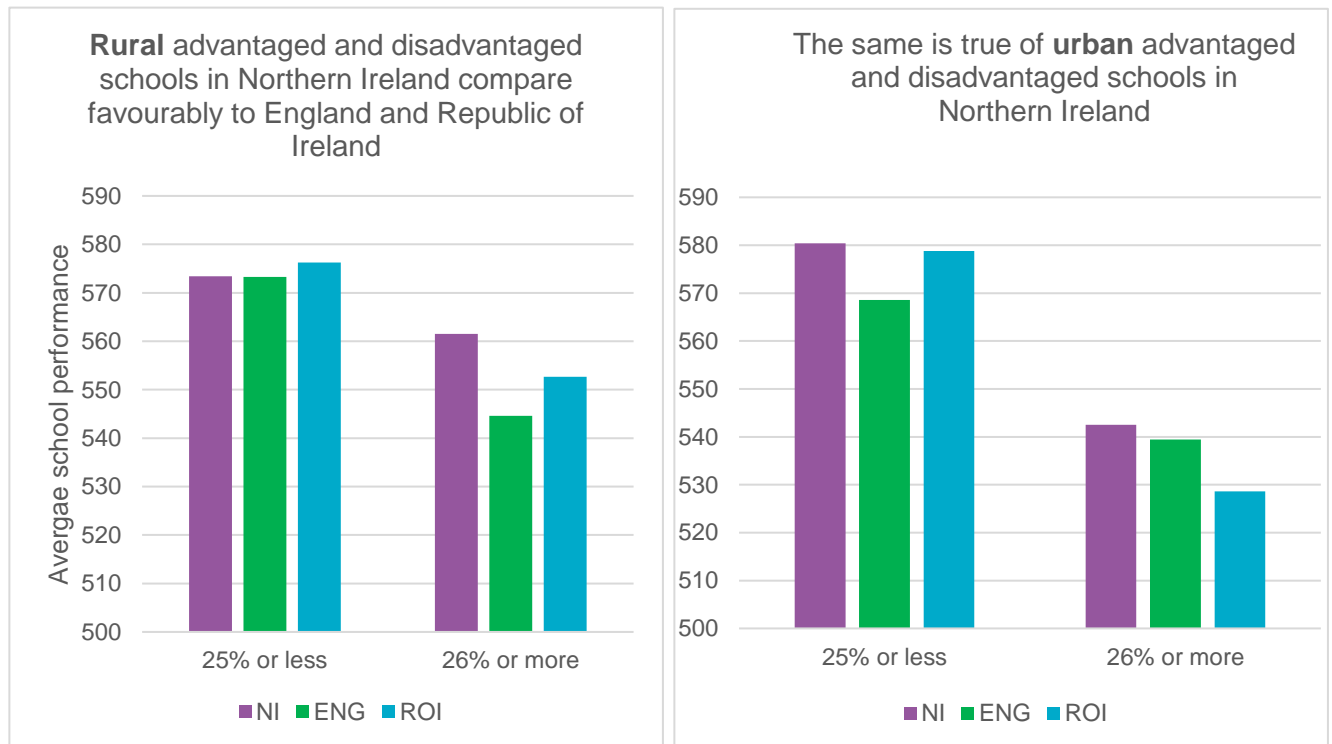
These findings can be illustrated further by making direct comparisons between countries for each of the four categories of high/low advantage urban/rural schools, as in Figure 5.5 below. We see that in each case, schools in Northern Ireland achieve a similar or better level of performance on average compared to schools in the same category in England and Republic of Ireland.

How then can we reconcile these findings, and the contribution of the three factors of gender, spread of disadvantage, and impact of disadvantage, to the overall differences in performance of urban and rural schools for each country? We can summarise the situation in each country as follows:

- In England, although “high disadvantage” rural schools perform least well (resulting, unusually, in little gap between “high disadvantage” urban and rural schools), there are very few of them, so this has relatively little impact on the overall pattern of urban/rural school results. Poor overall performance among urban schools is the cumulative effect of two moderately sized effects: somewhat lower performance among “low disadvantage” urban schools, and “low disadvantage” schools making up a moderately high proportion of all urban schools.
- In the Republic of Ireland, “high disadvantage” urban schools perform least well but there are not many of them. High overall average performance among urban schools is driven by the relatively low proportion of more disadvantaged schools in urban setting compared with the other two countries.
- In Northern Ireland, all school types do well, particularly when comparing “high disadvantage” schools in Northern Ireland to “high disadvantage” schools in England and the Republic of Ireland (in both urban and rural settings). However, because “high disadvantage” schools perform less well overall (in all countries and settings), and because there are a higher proportion of more disadvantaged schools in Northern Ireland, and because this effect is particularly pronounced in urban settings, then we nevertheless observe the overall average

effects described. Results here are also impacted upon by particularly high performance among girls in rural schools.

Figure 5.5 The relationship between reading performance in PIRLS 2016 and the concentration of disadvantage among pupils in urban and rural schools in Northern Ireland, England and the Republic of Ireland.



5.3 Pupils' attitudes and experiences

Pupils' attitudes and experiences of school were measured by comparing the same five scales as before: "Students Sense of School Belonging", "Student Bullying", "Students Engaged in Reading Lessons", "Students Like Reading" and "Students Confident in Reading". There were small insignificant differences between how urban and rural schools scored, on average, across all three countries on four out of the five scales. On the "Student Bullying" scale, there was a significant difference between how urban and rural schools scored in the Republic of Ireland, with urban schools scoring 0.33 higher (a higher score on this scale relates to a lower frequency of bullying reports).

Internationally, students' reports about being bullied were directly related to their average reading achievement, with each successive category of increased bullying relating to a decrease in average reading achievement. Given this, the fact that the Republic of Ireland has the largest and only statistically significant urban/rural gap on this scale favouring rural schools but the smallest urban/rural gap in performance is somewhat contradictory. However, both urban and rural schools' scores fell into the highest band ("Almost Never") on this scale in the Republic of Ireland and are

higher than urban and rural schools' scores, respectively, in Northern Ireland and England, thus providing some explanation for this.

5.4 Home background

Home questionnaires were not administered in England, so when making comparison between variables from the home questionnaire across countries, we only do so for Northern Ireland and the Republic of Ireland.

In both countries, there was no significant difference between how pupils scored on the "Home Resources for Learning" or "Parents Like Reading" scales between urban and rural schools. Pupils in both urban and rural schools were categorised as having "Medium Access" to digital devices as measured by the "Digital Devices in the Home" scale. The difference between school types in Northern Ireland is no longer statistically significant given the new definition we have used to classify schools. In the Republic of Ireland, pupils in urban schools scored higher overall by 0.35. On the pupil questionnaire (administered in all three countries), pupils in urban schools reported spending more time using a computer or tablet for playing games, watching videos, chatting or surfing the internet each day in all three countries, the highest being in Northern Ireland, followed by England and then the Republic of Ireland.

Since the number of digital devices in the home is positively associated with reading performance, the urban/rural gap favouring urban schools on this scale in the Republic of Ireland could offer a partial explanation for their smaller urban/rural gap in performance compared to Northern Ireland. When looking at the two school types' scores separately though, urban and rural schools in Northern Ireland score higher than those in the Republic of Ireland. The second finding that pupils in both urban and rural schools in Northern Ireland spend more time using a computer or tablet for the above leisure and social activities offers a plausible explanation for why their higher average score on the Digital Devices in the Home scale does not translate into a higher average score in performance overall.

For both Northern Ireland and the Republic of Ireland there was no statistically significant difference between how parents perceived their child's school in urban and rural areas, as measured by the "Parents' Perception of their Child's School" scale.

5.5 School climate

In all three countries, both urban and rural schools' scores translate into "Very Safe and Orderly", the highest band on the "Safe and Orderly" scale. The gap in scores between school types favours rural schools and is highest in the Republic of Ireland (0.96), followed by Northern Ireland (0.73) and England (0.72). Considering school types separately, rural schools in Northern Ireland score the highest, followed by the Republic of Ireland and England. In urban schools, Northern Ireland still scores higher on average, followed by England and then the Republic of Ireland. Taken together, these findings are somewhat conflicting, given that reading achievement is positively associated with more safe and orderly schools. However, it is possible that a less safe and orderly

climate has a weaker association with performance in smaller schools, which are more common in the Republic of Ireland.

The “School Emphasis on Academic Success” scale was administered to both teachers and principals. For the teachers’ version, both urban and rural schools achieved a score in the “High Emphasis” band, the second highest band on the scale. In all three countries, rural schools scored higher on average, but for Northern Ireland, the gap in scores between school types is smallest. This seems to be because urban schools have a particularly high emphasis on academic success compared to those in England and the Republic of Ireland. The gap is only statistically significant and is highest in the Republic of Ireland. Rural schools in Northern Ireland score the highest, followed by the Republic of Ireland and England. The same is true for urban schools.

For the principals’ version, both urban and rural schools still achieved a score in the “High Emphasis” band. The gap in scores between school types is now largest and favours urban schools in Northern Ireland, whereas it still favours rural schools in England and the Republic of Ireland. However, it is not significant in the Republic of Ireland. Northern Ireland is unusual insofar as teachers and principals are in far less agreement with each other on this scale than those in England and the Republic of Ireland. Principals in rural schools report a lower average score than teachers, whilst principals in urban schools report a higher average score than teachers causing a reversal in the direction of the gap. In England and the Republic of Ireland, principals in both urban and rural schools score higher than teachers.

On the “School Discipline” scale, both urban and rural schools’ scores translate into “Hardly Any Problems”, the highest band on the scale, in all three countries. The gap in scores between school types favours rural schools and is lowest in Northern Ireland, although it is not statistically significant. The gap is only statistically significant and highest in England. This seems to be because their rural schools score higher compared to Northern Ireland and the Republic of Ireland while their urban schools score lower compared to Northern Ireland.

5.6 Classroom instruction

Northern Ireland is more similar to the Republic of Ireland than England when it comes to time spent on reading instruction. Teachers in rural schools in Northern Ireland and the Republic of Ireland spend more time on reading instruction, on average, than those in urban schools. Rural schoolteachers in Northern Ireland spend an average of 152 hours a year, whilst urban schoolteachers spend an average of 126 hours. Those in the Republic of Ireland spend more time, averaging 158 hours a year, whilst those in urban areas spend an average of 141 hours. The opposite is true for England, where teachers in rural schools spend an average of 120 hours a year on reading instruction, whilst those in urban schools average higher at 129 hours. Differences in average hours between school types within countries are not significant.

Similarly, teachers in rural areas spend more time on language instruction than those in urban areas, on average, in Northern Ireland and the Republic of Ireland, whilst the opposite is true of England. In Northern Ireland, teachers in rural schools spend the most time averaging 283 hours per year, whilst those in urban schools spend 46 hours less, on average (237 hours). In the Republic of Ireland, teachers in rural and urban schools spend an average of 211 hours and 200

hours a year, respectively. This difference is not statistically significant. On average, teachers in rural areas in England reported spending 243 hours a year on language instruction, whilst those in urban hours reported spending 48 hours more (291 hours).

Interestingly, whilst not all of these differences are statistically significant, there is a clear pattern of rural schools spending more time on reading and language instruction than urban schools in Northern Ireland and the Republic of Ireland, whilst the opposite is true of England. Further research of the Trends in International Mathematics and Science Study (TIMSS) data might reveal a potential explanation for these differences, i.e. urban/rural schools focusing more/less time on maths and science compared to reading and language instruction.

The “Classroom Instruction Limited by Student Attributes” scale is split into three bands: “Very Little”, “Some” and “A Lot”. Only rural schools in England and the Republic of Ireland fell into the highest band, albeit marginally. All others scored an average, falling into the middle category. In all countries, rural schools scored highest. The gap between urban and rural schools was smallest but statistically insignificant in Northern Ireland. It was highest in England, followed by the Republic of Ireland. This seems to be because urban schools in England in particular are negatively affected by student attributes and may go some way towards explaining their lower average performance out of the three countries.

The gap in scores between school types within countries are insignificant for both the “Instruction Affected by Reading Resource Shortages” and “Instruction Affected by Digital Resource Shortages” scales.

5.7 Teachers’ and principals’ experiences and characteristics

The gap in scores between school types within countries are insignificant for the “Teacher Job Satisfaction” scale.

There was no significant difference between teachers’ average age, years of experience, highest level of education completed or number of hours spent on professional development related to reading in the past two years between urban and rural schools in all three countries. The same was true for principals’ average years of experience and highest level of education completed.

6 Conclusions

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. Many of Northern Ireland's schools are situated in rural areas, which, according to existing research, face particular challenges that are different to those faced in urban settings. This is a topic that has received policy attention in recent years, with the Sustainable Schools Policy (2009) focusing on the longer-term viability of the schools estate.

To inform the ongoing implementation of the policy and accompany the annual reports on area planning, this study set out to investigate how the characteristics and performance of different types of school affect pupil performance to better understand the nature of educational disadvantage in urban and rural schools.

Through analysis of the PIRLS 2016 dataset and matched pupil and School Census data, we found that pupils at rural school achieve higher reading scores than pupils at urban schools, and this difference remains even when taking into account differences in pupil characteristics.

Schools in urban and rural settings face distinct challenges in achieving a quality education for all pupils. On the one hand, we found that pupils attending rural schools are more likely to be taught in composite classes, which negatively affects performance. On the other hand, we found that urban schools have a greater percentage of pupils who are eligible for FSM, live in one of the 30 per cent most deprived SOAs in terms of education, and have SEN stages 1 to 4, all of which hinder performance too. When considering the net impact of the differences between pupil and school characteristics in urban and rural schools, our analysis shows that pupils in rural schools are expected to score an average 12 points higher than those in urban schools.

In addition, principals and teachers in urban areas express less positive attitudes towards their school climate and safety, and parents report less positive perceptions about their child's school, which is likely to be a direct result of this. Taken together, these findings indicate that there will be a greater net-negative impact on urban schools, and so it may be this that is driving the difference in performance observed between school types.

This study found further differences between urban and rural schools when examining within-school differences between pupils. Larger gaps in performance exist in urban schools between pupils possessing any of the three measures of disadvantage considered in our analysis (eligibility for FSM, living in the 30 per cent most deprived SOAs in terms of IDAC and/or education) and those who do not, whereas a larger gender gap in performance exists in rural schools. These results suggest that inequality between pupils facing certain barriers to learning and their peers who do not is greater in urban schools.

Furthermore, cross-country analysis revealed that, compared with Northern Ireland, urban disadvantage is lower in the Republic of Ireland but higher in England. Despite this, large gaps were found between how urban and rural schools scored on a number of scales in the Republic of Ireland that favoured rural schools, compared to Northern Ireland and England. Since we were limited to using the PIRLS 2016 data in this part of the study, the reasons behind this are not clear. However, it is possible that the association between reading achievement and factors relating to the school

climate and safety is weaker in smaller schools, which are more common in the Republic of Ireland than in Northern Ireland and England.

This research has provided deeper insights into educational disadvantage in urban and rural areas. The findings from this study makes several contributions to the current literature. First, they add to a mixed evidence base on the effect of composite classes on pupil performance. Our analysis shows that pupils in composite classes perform worse than those who are not and these classes are more common in rural schools. Second, we have provided evidence on how the population of pupils attending urban and rural schools differs across a broad range of characteristics. Third, as discussed in the Sustainable Schools Policy (2009), we found evidence that pupils attending rural schools experience greater travel distances but this did not affect attainment in PIRLS. Finally, through insights uncovered via large-scale international data, we have offered further plausible explanations for what may be driving the difference in performance between urban and rural schools in relation to school climate.

Unlike the findings discussed in The Key's (2018) report on the challenges of leading a rural school, we found no evidence to suggest that teachers in rural schools are older or more experienced; nor that they have any more difficulties accessing professional development, or experience less job satisfaction than those in urban schools. In addition, no evidence was found that rural schools experience more problems with schools buildings and resource shortages.

The findings of this study have a number of practical implications. The negative effect of composite classes on pupil performance raises concerns around the quality of the educational experience of children in these classes. Evidence suggests that this effect is compounded as the number of year groups in a single class increases. Providing all children with a quality education is at the heart of the Sustainable Schools Policy (2009). The presence of composite classes, particularly those spanning more than two year groups could bring a school's long-term viability into question.

This study has provided no evidence that reading performance is negatively related to pupils' travel distance to school. Nevertheless, to ensure acceptable accessibility and continued sustainability, travel times for pupils need to be reasonable and be based on suitable transport links. Where this is not the case, there are other factors to consider in relation to a school's sustainability, such as the distance to and capacity in another suitable primary school and cooperative arrangements with other schools.

Finally, our findings emphasise the importance of schools providing safe and orderly environments, with an emphasis on academic success, that promote pupil well-being and academic achievement to ensure a quality educational experience for all. This would strengthen links with the local community by encouraging parent, pupil and community collaboration, which is important for a school's long-term viability.

Some of the issues highlighted in this study would warrant further investigation using other datasets or new primary research. A constraint for this study is that the sample size was not large enough to enable us to take a more nuanced approach to the analysis. With a larger sample, we would have liked to make comparisons based on school size and location to uncover further disparities in performance and to employ more in-depth statistical analysis. However, gathering data of this nature on a larger scale than for PIRLS would be challenging, and so we would recommend using other

existing data (such as GCSE attainment) as a further source of insight. In addition, the scope of the cross-country comparison was limited in terms of the data that was readily available to us. Finally, the study was limited to performance data from the PIRLS 2016 dataset, which focuses only on reading achievement. More broadly, research is also needed to determine whether similar results are found when considering other performance outcomes, such as those in maths or science. A natural progression of this work would be to conduct similar analysis using the Trends in International Mathematics and Science Study (TIMSS).

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Appendix A

Table A1 How the prevalence of different characteristics vary between urban and rural schools in Northern Ireland (2016/17)

Characteristic		n		% pupils		Avg. reading achievement		Gap in % (Rural - Urban)
		Urban	Rural	Urban	Rural	Urban	Rural	
Gender	Boy	1330	526	48.7	51.6	552.5	560.0	%Boy(r) - %Boy(u)
	Girl	1358	479	51.3	48.4	568.2	583.3	
Socioeconomic status	FSM Eligible	819	235	33.6	25.7	525.7	544.5	%FSM(r) - %FSM(u)
	FSM Non-eligible	1798	758	66.4	74.3	578.9	580.7	
SEN Statement	Pupils with SEN statement	57	28	2.2	2.8	482.2	449.9	%State(r) - %State(u)
	Pupils with no statement of SEN	2560	965	97.8	97.2	562.8	574.9	
SEN Stage	Pupils with SEN stage 1 to 4	566	172	22.3	18.1	504.6	513.6	%SEN(r) - %SEN(u)
	Pupils with no SEN stage	1994	793	75.5	79.1	580.0	588.9	
Ethnicity	Black and minority ethnic	106	19	3.8	1.5	566.3	555.5	%Minor(r) - Minor(u)
	White	2511	974	96.2	98.5	560.8	571.6	
(IDAC)	Pupil resides in 30% most deprived SOA	612	332	25.8	35.2	544.4	566.4	%IDACI(r) - %IDACI(u)
	Pupil doesn't reside in 30% most deprived SOA	1997	660	74.2	64.8	566.8	574.3	
Education deprivation	Pupil resides in 30% most deprived SOA	907	91	37.8	10.0	537.9	557.9	%Educ(r) - %Educ(u)
	Pupil doesn't reside in 30% most deprived SOA	1702	901	62.2	90.0	575.1	573.0	
Composite	Composite class	127	223	6.0	29.9	528.0	557.4	%Comp(r) - %Comp(u)
	Non-composite class	2399	642	87.9	59.1	563.2	580.2	

Table A2 How urban and rural schools perform differently with respect to these characteristics in PIRLS 2016

Characteristic		Gap in achievement btw. Characteristics (2nd-1st)		Gap in achievement btw. school types (Rural - Urban)
		Urban	Rural	
Gender	Boy	15.7	23.3	7.5
	Girl			15.1
Socioeconomic status	FSM Eligible	53.2	36.2	18.8
	FSM Non-eligible			1.8
SEN Statement	Pupils with SEN statement	80.6	125.0	-32.3
	Pupils with no statement of SEN			12.1
SEN Stage	Pupils with SEN stage 1 to 4	75.4	75.3	9.0
	Pupils with no SEN stage			8.9
Ethnicity	Black and minority ethnic	-5.5	16.1	-10.8
	White			10.8
(IDAC)	Pupil resides in 30% most deprived SOA	22.4	7.9	22.0
	Pupil doesn't reside in 30% most deprived SOA			7.5
Education deprivation	Pupil resides in 30% most deprived SOA	37.2	15.1	20.0
	Pupil doesn't reside in 30% most deprived SOA			-2.1
Composite	Composite class	35.1	22.8	29.4
	Non-composite class			17.0

Appendix B

Table B1 Descriptive statistics of variables included in regression analysis

	N	Mean	Std. Dev	Minimum	Maximum
Rural school*	3194	0.22	0.42	0.00	1.00
Percentage FSM*	3194	30.52	16.90	2.40	85.35
Percentage SEN*	3194	18.33	6.85	7.40	51.13
School Size*	3194	444.42	198.10	69.00	860.00
Percentage Deprived SOA*	3194	26.89	23.22	0.00	92.13
Composite*	3194	0.09	0.29	0.00	1.00
Both*	3194	0.07	0.26	0.00	1.00
FSM eligible	3194	0.30	0.46	0.00	1.00
SEN1to5	3194	0.23	0.42	0.00	1.00
Ethnic minority	3194	1.04	0.19	1.00	2.00
Boy	3194	0.50	0.50	0.00	1.00
Lowest IDAC SOA	3194	0.25	0.43	0.00	1.00
Lowest Education SOA	3194	0.31	0.46	0.00	1.00
Age	3194	10.40	0.30	9.83	11.75
FSM*Rural	3194	0.05	0.22	0.00	1.00

*School level variables are shown here as averages across all pupils

Table B2 Regression analysis of pupil and school characteristics on PIRLS score for pupils Northern Ireland (2016)

	Coefficient	Standard error	P-value
Constant	456.2	60.53	0.00
Rural	12.2	6.17	0.05
Percentage FSM	-0.4	0.17	0.02
Percentage SEN	0.2	0.33	0.47
School Size	0.0	0.01	0.18
Percentage Deprived SOA	0.1	0.17	0.40
Composite	-20.2	7.27	0.01
Both	-9.3	3.08	0.01
FSM eligible	-26.0	4.80	0.00
SEN1to5	-73.8	6.71	0.00
Ethnic minority	-10.1	12.65	0.43
Boy	-7.1	3.57	0.05
Lowest IDAC SOA	-11.0	5.21	0.04
Lowest Education SOA	-10.9	5.41	0.05
Age	14.7	6.10	0.02
FSM*Rural	7.7	7.77	0.33
Between-school variance	629		
Between-pupil variance	4409		
ICC	12.5%		

Appendix C

Table C1 Items comprising the “Student’s Sense of Belonging” scale (2016)

What do you think about your school? Tell how much you agree with these statements.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) I like being in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) I feel safe when I am at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) I feel like I belong at this school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Teachers at my school are fair to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) I am proud to go to this school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Table C2 Items comprising the “Student Bullying” scale (2016)

During this school year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?

	Never	A few times a year	Once or twice a month	At least once a week
1) Made fun of me or called me names	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Left me out of their games or activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Spread lies about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Stole something from me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Hit or hurt me (e.g., shoving, hitting, kicking)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Made me do things I didn't want to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Shared embarrassing information about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Threatened me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Table C3 Items comprising the “Student’s Confident in Reading Lessons” scale (2016)

How well do you read? Tell how much you agree with each of these statements.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) I usually do well in reading	○	○	○	○
2) Reading is easy for me	○	○	○	○
3) I have trouble reading stories with difficult words*	○	○	○	○
4) Reading is harder for me than for many of my classmates*	○	○	○	○
5) Reading is harder for me than any other subject*	○	○	○	○
6) I am just not good at reading*	○	○	○	○

* Reverse coded

Table C4 Items comprising the “Students Engaged in Reading Lessons” scale (2016)

How much do you agree with these statements about your reading lessons?

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) I like what I read about in school	○	○	○	○
2) My teacher gives me interesting things to read	○	○	○	○
3) I know what my teacher expects me to do	○	○	○	○
4) My teacher is easy to understand	○	○	○	○
5) I am interested in what my teacher says	○	○	○	○
6) My teacher encourages me to say what I think about what I have read	○	○	○	○
7) My teacher lets me show what I have learned	○	○	○	○
8) My teacher does a variety of things to help us learn	○	○	○	○
9) My teacher tells me how to do better when I make a mistake	○	○	○	○

Table C5 Items comprising the “Students Like Reading” scale (2016)

What do you think about reading? Tell how much you agree with each of these statements.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
	↓	↓	↓	↓
1) I like talking about what I read with other people	○	○	○	○
2) I would be happy if someone gave me a book as a present	○	○	○	○
3) I think reading is boring*	○	○	○	○
4) I would like to have more time for reading	○	○	○	○
5) I enjoy reading	○	○	○	○
6) I learn a lot from reading	○	○	○	○
7) I like to read things that make me think	○	○	○	○
8) I like it when a book helps me imagine other worlds	○	○	○	○

* Reverse coded

How often do you do these things outside of school?

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
	↓	↓	↓	↓
1) I read for fun	○	○	○	○
2) I read to find out about things I want to learn	○	○	○	○

Table C6 Items comprising the “Home Resources for Learning” scale (2016)

<p>Number of books in the home (students):</p> <p>1) 0-10</p> <p>2) 11-25</p> <p>3) 26-100</p> <p>4) 101-200</p> <p>5) More than 200</p>	<p>Number of children’s books in the home (parents):</p> <p>1) 0-10</p> <p>2) 11-25</p> <p>3) 26-50</p> <p>4) 51-100</p> <p>5) More than 100</p>
<p>Number of home study supports (students):</p> <p>1) None</p> <p>2) Internet connection or own room</p> <p>3) Both</p>	<p>Highest level of education of either parent (parents):</p> <p>1) Finished some primary or lower secondary or did not go to school</p> <p>2) Finished lower secondary</p> <p>3) Finished upper secondary</p> <p>4) Finished post-secondary education</p> <p>5) Finished university or higher</p>
<p>Highest level of occupation of either parent (parents):</p> <p>1) Has never worked outside home for pay, general laborer, or semi-professional (skilled agricultural or fishery worker, craft or trade worker, plant or machine operator)</p> <p>2) Clerical (clerk or service or sales worker)</p> <p>3) Small business owner</p> <p>4) Professional (corporate manager or senior official, professional, or technician or associate professional)</p>	

Table C7 Items comprising the “Digital Devices in the Home” scale (2016)

How much is your school’s capacity to provide instruction affected by a shortage or inadequacy of the following?	Not at all	A little	Some	A lot
A. General School Resources				
1) Technologically competent staff	○	○	○	○
2) Audio-visual resources for delivery of instruction (e.g., interactive white boards, digital projectors)	○	○	○	○
3) Computer technology for teaching and learning (e.g., computers or tablets for student use)	○	○	○	○
B. Resources for Reading Instruction				
1) Computer software/applications for reading instruction	○	○	○	○

Table C8 Items comprising the “Parents Like Reading” scale (2016)

Please indicate how much you agree with the following statements about reading.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) I read only if I have to* -----	○	○	○	○
2) I like talking about what I read with other people -----	○	○	○	○
3) I like to spend my spare time reading -----	○	○	○	○
4) I read only if I need information* -----	○	○	○	○
5) Reading is an important activity in my home -----	○	○	○	○
6) I would like to have more time for reading -----	○	○	○	○
7) I enjoy reading -----	○	○	○	○
8) Reading is one of my favorite hobbies -----	○	○	○	○

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
When you are at home, how often do you read for your enjoyment? -----	○	○	○	○

Table C9 Items comprising the “Parents’ Perception of their Child’s School” scale (2016)

What do you think of your child’s school?

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) My child’s school does a good job including me in my child’s education -----	○	○	○	○
2) My child’s school provides a safe environment -----	○	○	○	○
3) My child’s school cares about my child’s progress in school -----	○	○	○	○
4) My child’s school does a good job informing me of his/her progress -----	○	○	○	○
5) My child’s school promotes high academic standards -----	○	○	○	○
6) My child’s school does a good job in helping him/her become better in reading -----	○	○	○	○

Table C10 Items comprising the “Safe and Orderly” scale (2016)

Thinking about your current school, indicate the extent to which you agree or disagree with each of the following statements.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
1) This school is located in a safe neighborhood -----	○	○	○	○
2) I feel safe at this school -----	○	○	○	○
3) This school's security policies and practices are sufficient -----	○	○	○	○
4) The students behave in an orderly manner -----	○	○	○	○
5) The students are respectful of the teachers -----	○	○	○	○
6) The students respect school property -----	○	○	○	○
7) This school has clear rules about student conduct -----	○	○	○	○
8) This school's rules are enforced in a fair and consistent manner -----	○	○	○	○

Table C11 Items comprising the “School Discipline” scale (2016)

To what degree is each of the following a problem among fourth grade students in your school?

	Not a problem	Minor problem	Moderate problem	Serious problem
1) Arriving late at school -----	○	○	○	○
2) Absenteeism (i.e., unjustified absences) -----	○	○	○	○
3) Classroom disturbance -----	○	○	○	○
4) Cheating -----	○	○	○	○
5) Profanity -----	○	○	○	○
6) Vandalism -----	○	○	○	○
7) Theft -----	○	○	○	○
8) Intimidation or verbal abuse among students (including texting, emailing, etc.) -----	○	○	○	○
9) Physical fights among students -----	○	○	○	○
10) Intimidation or verbal abuse of teachers or staff (including texting, emailing, etc.) -----	○	○	○	○

Table C12 Items comprising the “School Emphasis on Academic Success” scale (2016)

How would you characterize each of the following within your school?

	Very high	High	Medium	Low	Very low
1) Teachers' understanding of the school's curricular goals-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Teachers' degree of success in implementing the school's curriculum -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Teachers' expectations for student achievement -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Teachers' ability to inspire students-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Collaboration between school leadership (including master teachers) and teachers to plan instruction-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Parental involvement in school activities -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Parental commitment to ensure that students are ready to learn-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Parental expectations for student achievement -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Parental support for student achievement -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Students' desire to do well in school -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Students' ability to reach school's academic goals -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Students' respect for classmates who excel academically-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Table C13 Items comprising the “Classroom Instruction Limited by Student Attributes” scale (2016)

In your view, to what extent do the following limit how you teach this class?

	Not at all	Some	A lot
1) Students lacking prerequisite knowledge or skills-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Students suffering from lack of basic nutrition -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Students suffering from not enough sleep -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Students absent from class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Disruptive students -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Uninterested students -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Students with mental, emotional, or psychological impairment -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Table C14 Items comprising the “Instruction Affected by Digital Resource Shortages” scale (2016)

How much is your school’s capacity to provide instruction affected by a shortage or inadequacy of the following?

Not at all A little Some A lot

A. General School Resources

1) Technologically competent staff -----○-----○-----○-----○

2) Audio-visual resources for delivery of instruction
(e.g., interactive white boards, digital projectors) -----○-----○-----○-----○

3) Computer technology for teaching and learning
(e.g., computers or tablets for student use) -----○-----○-----○-----○

B. Resources for Reading Instruction

1) Computer software/applications for
reading instruction -----○-----○-----○-----○

Table C15 Items comprising the “Instruction Affected by Reading Resource Shortages” scale (2016)

How much is your school’s capacity to provide instruction affected by a shortage or inadequacy of the following?

Not at all A little Some A lot

A. General School Resources

1) Instructional materials (e.g., textbooks) -----○-----○-----○-----○

2) Supplies (e.g., papers, pencils, materials) -----○-----○-----○-----○

3) School buildings and grounds -----○-----○-----○-----○

4) Heating/cooling and lighting systems -----○-----○-----○-----○

5) Instructional space (e.g., classrooms) -----○-----○-----○-----○

6) Technologically competent staff -----○-----○-----○-----○

7) Audio-visual resources for delivery of instruction
(e.g., interactive white boards, digital projectors) -----○-----○-----○-----○

8) Computer technology for teaching and learning
(e.g., computers or tablets for student use) -----○-----○-----○-----○

B. Resources for Reading Instruction

1) Teachers with a specialization in reading -----○-----○-----○-----○

2) Computer software/applications for
reading instruction -----○-----○-----○-----○

3) Library resources (books, ebooks,
magazines, etc.) -----○-----○-----○-----○

4) Instructional materials for reading
(e.g., reading series, textbooks) -----○-----○-----○-----○

Table C16 Items comprising the “Teacher Job Satisfaction” scale (2016)

How often do you feel the following way about being a teacher?

	Very often	Often	Sometimes	Never or almost never
1) I am content with my profession as a teacher -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) I find my work full of meaning and purpose -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) I am enthusiastic about my job -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) My work inspires me-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) I am proud of the work I do -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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