# THE ACHIEVEMENTS AND CHARACTERISTICS OF PUPILS ATTENDING RURAL SCHOOLS PARTICIPATING IN DEIS

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## OVERVIEW

This report is in two parts. The first contains a description of an evaluation of the School Support Programme (SSP) under the DEIS (Delivering Equality of Opportunity in Schools) programme in participating rural schools. In 2007, the Department of Education and Science now renamed the Department of Education and Skills (DES), commissioned the Educational Research Centre (ERC) to undertake an evaluation of the SSP in both its urban and rural dimensions. The evaluation aims to monitor the implementation of the programme and assess its impact on students, families, schools and communities at primary and post-primary levels. Since it began in 2007, the evaluation has employed a wide range of methodologies including surveys of participants through questionnaires and interviews. A major aspect of the evaluation of the programme was the assessment of pupils' reading and mathematics achievement at the beginning of the scheme (2007) and three years later in 2010. Part 1 of this report describes baseline and follow-up achievement data in some detail. It is an elaboration of a brief section of a previous report (Weir & Archer, 2011). It is considered important to provide this more detailed account now because, unlike with the urban component of the evaluation of the SSP, it has not been possible to carry out a third round of testing in rural schools in 2013.[1] It may also be worth noting that some significant aspects of the SSP in rural schools have not been in place since 2011.

The second part of this report involves a follow up on issues raised in a report on disadvantage in rural areas by Weir, Archer, and Millar (2009) that used data from rural schools participating in the SSP. At the time the evaluation of DEIS was commissioned, the DES announced that 'a special study will be carried out on literacy and numeracy in rural primary schools with high concentrations of disadvantage' (DES, 2005, p. 79). The study was prompted by the belief that educational disadvantage is qualitatively different in urban and rural areas, and by the fact that the issue had hitherto received fairly scant attention. However, the evaluation of a scheme designed to address disadvantage that was a predecessor to DEIS – Breaking the Cycle – had

[1] Data from urban schools in the SSP are, at the time of writing, being analysed and a report will be produced as soon as possible.

revealed substantial differences between the achievements of participating urban and rural pupils. The achievements of rural pupils in the scheme did not differ significantly from those of the norm group (Weir, Milis & Ryan, 2002a), while the achievements of urban pupils were well below those of the norm group (Weir, Milis & Ryan, 2002b).

In their report, Weir et al. (2009) described how pupils in the rural dimension of the SSP performed significantly better at baseline than pupils in urban SSP schools. The data also revealed that poverty was less concentrated in the rural than in the urban sample, but no evidence could be found to implicate this in the explanation of the superior performance of rural pupils over their urban counterparts. There was, however, support for the idea that the relationship between socioeconomic characteristics and pupil achievement differs both quantitatively and qualitatively in rural and urban areas. The report concluded by suggesting that further work, in particular focusing on the differential home experiences of pupils in rural and urban areas, should be carried out. In Part 2, some attempts are made to further investigate this issue using data gathered from parents, pupils, and teachers in 2007 and, to a limited extent, 2010.

## PART 1: THE READING AND MATHEMATICS ACHIEVEMENTS OF PUPILS IN RURAL SCHOOLS PARTICIPATING IN DEIS IN 2007 AND 2010

DEIS is the most recent in a series of programmes provided by the DES aimed at addressing the educational needs of pupils from disadvantaged communities (DES, 2005). It was introduced in 2006/2007, when approximately 340 urban and 340 rural primary schools and 200 second level schools – assessed as having the highest levels of disadvantage – were invited to participate. The SSP component of DEIS (the element of DEIS aimed at the most disadvantaged schools) aimed to bring together, and build upon, existing interventions for schools and school clusters/ communities with a concentrated level of educational disadvantage (DES, 2005). Among other things, participating schools were entitled to an additional capitation grant based on level of disadvantage, and access to a co-ordinator[2] serving a cluster of schools. When clustering was not an option (e.g., due to lack of proximity to other schools), schools were provided with additional financial supports to underpin the development of home, school and community linkages, the implementation of literacy and numeracy measures, and

[2] Co-ordinators were appointed to rural schools in the SSP from the start of the scheme until they were withdrawn from the 331 participating schools under the National Recovery Plan 2011-2014 (effective 31st August 2011). For details of the resources initially made available to schools under the programme, see DES (2005). For current provisions under the programme, see the Social Inclusion section of www.education.ie.

school planning. The latter was a key feature of the DEIS programme that applied to both urban and rural schools. As programme participants, schools were required to engage in a planning process, which involved target setting, monitoring progress towards targets and measuring outcomes. Planning templates were provided by the SDPS[3] in priority areas (e.g., literacy and numeracy), and schools were given on-site assistance with the development of their plans. By 2008, virtually all urban (99%) and rural (100%) schools that responded to a questionnaire about planning for DEIS (response rates of 70% and 80%, respectively), indicated that they had a plan in place.

In 2007, 276 rural schools participating in the SSP were invited to participate in a longitudinal study of achievement in reading and mathematics as part of the evaluation of DEIS. Pupils in 3rd and 6th class were given standardised tests of reading and mathematics in May 2007 and again, in May 2010. This study design enabled two kinds of comparisons to be made: a cross-sectional one, involving a comparison between average standard scores of pupils in 3rd class in 2007 and 2010 and pupils in 6th class in 2007 and 2010, and a longitudinal one, involving a comparison between the standard scores of pupils in 3rd class in 2007 and their performance in 6th class in 2010.

*Schools in the rural samples in 2007 and 2010*

As mentioned earlier, for the first three years, rural schools in the SSP had access to a shared co-ordinator serving clusters of schools. Schools which were located outside a cluster, or which did not succeed in appointing a shared co-ordinator, received a compensatory financial grant. It was considered appropriate to take these various categories of school into account when selecting the initial sample in 2007[4]. All schools that were located in a cluster and had succeeded in appointing a shared co-ordinator were invited to participate in the testing programme. There were 221 such schools, representing 67 clusters. In all of these schools, the cluster co-ordinators were asked to administer, or to oversee the administration of, the testing in each of their schools.

Approximately half of the schools that were in clusters but had not succeeded in appointing a co-ordinator were randomly selected for participation in the testing. This resulted in the selection of 36 schools representing 12 clusters. Finally, approximately two-thirds of the 31

[3]The SDPS (School Development Planning Service) was the organisation responsible for supporting schools at that time. It subsequently became the PPDS (Primary Professional Development Service) and more recently was renamed the PDST (Professional Development Service for Teachers)

[4] A more detailed account of the sampling procedure is given in Weir and Archer (2011, p. 72).

schools that were not in a cluster were randomly sampled to provide a sample of 19 unclusterable schools. In the case of the latter two groups of schools, specially trained fieldworkers were recruited and sent to the schools to administer the tests.

Four schools identified as part of the sample did not participate in 2007. Three of these schools indicated that they had no pupils in 3rd or 6th class and one school indicated that it was due to close within the next two years and so could not take part in a longitudinal follow-up. Testing of 3rd and 6th class pupils in 2007 took place in 272 schools, which included 218 schools assigned to clusters and with co-ordinators, 35 schools assigned to clusters but without co-ordinators and 19 unclusterable schools.

Between 2007 and 2010, changes in the status of a number of schools meant that it was not possible to conduct follow-up testing in these schools in 2010. Two schools amalgamated and the composition of a number of rural clusters changed, leaving several schools without a co-ordinator. In addition, a number of schools did not have pupils in 3rd or 6th class in 2010. In all, it was not possible to test in 16 of the original 272 schools in 2010. The final sample, therefore, consisted of 256 schools tested in both 2007 and 2010. A number of schools were, however, missing some test data. Seven schools were missing data at one grade level in 2007, six schools were missing data at one grade level in 2010 and five schools were missing data at one grade level in both 2007 and 2010. As many of the schools in the sample were small schools, in a given year, some may not have any pupils at all at a particular grade level (or the one or two pupils at a particular grade level were absent from school on the day of testing). This explains why a handful of schools are missing data in one or other of the years in question.

To maximise comparability of data collected in 2007 and 2010, it was decided to exclude schools with missing data at any grade level in either year from the cross-sectional analyses. The analyses described below refer, therefore, to 238 rural schools, which had data for 3rd and 6th classes in 2007 and 2010[5]. Very similar numbers of students were involved in the testing in both 2007 and 2010 (Table 1). Of the 6th class pupils tested in 2010, 90% had been tested as 3rd class pupils in 2007. There are several reasons why pupils might not have been retested in 2010, including having moved school, being retained in a grade, and most commonly, absence from school on the day of testing. The absenteeism rate was slightly lower in 2010 (approximately 6.4%) than in 2007 (approximately 7%) but this difference was not statistically significant.

[5] For this reason, the averages differ slightly from those already published in summary form (Weir & Archer, 2011). However, the differences are very small.

**Table 1. Total number of pupils at 3rd and 6th class levels in 2007 and 2010 (*N*=238 schools).**

| Grade level | 2007 | 2010 |
|---|---|---|
| 3rd class | 2,236 | 2,204 |
| 6th class | 2,123 | 2,250 |
| All | 4,359 | 4,454 |

*Instruments*

The Drumcondra Sentence Reading Test (DSRT) and a shortened version of the Drumcondra Primary Mathematics Test-Revised (DPMT-R) were used to assess English reading and mathematics[6]. The DSRT is a secure test, developed by the ERC for research purposes, which means that it is unfamiliar to pupils and teachers. The reading and mathematics tests are standardised and pupils' scores can be compared to a grade-based normative sample (with a mean standard score of 100 and standard deviation of 15).

The Drumcondra Sentence Reading Test

The DSRT is a multiple-choice silent reading test. Pupils are asked to read 40 sentences, each of which has a word missing, and identify which one of four alternative words best completes the sentence. Pupils record their answers on a separate machine-scorable answer sheet. There are six levels of the test, one for each class level from 1st to 6th. Form A of the test was used to assess reading at 3rd and 6th class levels. The test takes approximately 35 minutes to administer, including time for distributing materials and completing examples. It has good reliability, with reliability coefficient estimates at 3rd and 6th class level of .92 and .89, respectively.

The Drumcondra Primary Mathematics Test-Revised

The DPMT-R assesses the content and process skills of the primary school mathematics curriculum at six levels, from 1st to 6th class. A shortened version of Form A of the test was used to assess the mathematics achievement of 3rd and 6th class pupils. This shortened version takes approximately 50 minutes to complete. Twenty-five of the original 75 items were used in the test for 3rd and 6th class pupils. The choice of items attempted to achieve a balanced

[6] For a more detailed account of these tests, see Eivers, Shiel and Shortt (2004) and Educational Research Centre (2006).

coverage of the mathematics curriculum. The reliabilities of the shortened test forms are estimated at .87 and .89 at 3rd and 6th class levels respectively. Levels 3 and 6 of the shortened mathematics test may be administered together to groups of pupils as they use the same examples, and are both silent tests with the same time limits. Pupils in 6th class were given calculators, which were required for the completion of certain items. Schools were given the option of using an Irish language version of the test.

*Cross-sectional analyses*

The cross-sectional analysis involved a comparison of the average reading and mathematics test scores achieved by students in 2007 and 2010. Specifically, the average scores of 3rd class pupils in 2007 were compared with the average scores of 3rd class pupils in 2010. A similar comparison was made for 6th class pupils.

Reading achievement

Table 2 presents the reading achievements of 3rd and 6th class pupils in 2007 and 2010. It is clear from the table that average reading scores increased at both grade levels (i.e., 3rd and 6th class) between 2007 and 2010. The increases were statistically significant at both grade levels. The 3rd class average reading score increased from 25.7 to 26.7 ($t$=3.7; $df$=4,149; $p$<.001), while the 6th class increase was slightly greater, rising from 21.0 in 2007 to 22.4 in 2010 7 ($t$=5.7; $df$=4,074; $p$<.001). These changes represent small effect sizes of .09 and .17 of a standard deviation, respectively. An examination of standard scores reveals that the average scores for each level in both years remain slightly below the national norm (of 100). Statistically significant decreases were observed between 2007 and 2010 in the percentages of pupils with very low scores (those at or below the 10th percentile) at both grade levels. For 3rd class the percentage of pupils with scores at or below the 10th percentile dropped from 16% in 2007 to 12.2% in 2010, a decrease of 3.8% ($\chi$=12.1; $df$=1; $p$<.001). The percentage decrease was slightly greater in 6th class with 4.6% fewer pupils with very low scores in 2010 than was the case in 2007 ($\chi$=17.5; $df$=1; $p$<.001). These reductions were accompanied by a statistically significant increase in the percentage of pupils in 6th class scoring very highly (at or above the 90th percentile) from 4.3% in 2007 to 6.3% in 2010 ($\chi$=7.7; $df$=1; $p$<.001). There was a slight drop in the percentage of pupils in 3rd class scoring at or above the 90th percentile but this was not statistically significant (see Appendix 1 for results of individual comparisons using $t$-tests and Chi-Square tests.)

**Table 2. The reading achievements (average raw score, average standard score and percentages scoring at or below the 10th percentile and at or above the 90th percentile) of rural pupils in 2007 and 2010, by grade level.**

| | 3rd class | | 6th class | |
|---|---|---|---|---|
| | 2007 | 2010 | 2007 | 2010 |
| | (*N*=2,077) | (*N*=2,074) | (*N*=1,975) | (*N*=2,101) |
| Raw score mean (SD) | 25.7 (9) | 26.7 (8.4) | 21.0 (7.9) | 22.4 (7.7) |
| Standard score mean (SD) | 96.3 (14.4) | 97.7 (13.3) | 95.5 (13.7) | 98.1 (13.3) |
| At or below 10th percentile | 16% | 12.2% | 16.4% | 11.8% |
| At or above 90th percentile | 4.3% | 3.3% | 4.3% | 6.3% |

Note. The DSRT contains 40 items at both levels of the test. The average standard score of the norm group (the sample of pupils on whom the test was standardised) is set at 100. At Level 3, the norm group average raw score is 29, and at Level 6 it is 24. By definition, 10% of the norm group's scores lie at or below the 10th percentile and a further 10% lie at or above the 90th percentile.

Mathematics achievement

Analysis of mathematics data also revealed a significant increase in average test scores at both grade levels (Table 3). As was observed for reading, the increase at 6th class level was slightly greater, increasing from an average raw score of 13.9 in 2007 to 15.1 in 2010 ($t$=6.1; $df$=4,075; $p$<.001) (effect size of .21). The average mathematics score for 3rd class pupils increased from 14.2 in 2007 to 14.8 in 2010 ($t$=3.3; $df$=4,127; $p$<.001) (effect size of .09). An examination of the standard scores reveals that the average mathematics scores of both 3rd and 6th class pupils in 2010 were approaching the national norm (of 100). Decreases in the percentage of pupils with very low mathematics scores (those at or below the 10th percentile) were seen at both grade levels. The most pronounced decrease was observed at 6th class level where 4.6% fewer pupils had scores at or below the 10th percentile ($\chi$=17.8; $df$=1; $p$<.001). For 3rd class the percentage of pupils with very low mathematics scores decreased from 12.5% to 10% ($\chi$=6.2; $df$=1; $p$<.05). Increases were also observed in the percentage of pupils at or above the 90th percentile at both grade levels. Once again, the greatest change was at 6th class level. In 2007, 8.7% of 6th class pupils in the sample achieved test scores above the 90th percentile in mathematics ($\chi$=18.9; $df$=1; $p$<.001). By 2010 the percentage of such high-scoring pupils had increased to 13%. An increase was seen in the percentage of 3rd class pupils scoring above the 90th percentile also, but the difference between the percentages in 2007 and 2010 was not statistically significant (see Appendix 1 for results of individual comparisons using *t*-tests and Chi-Square tests.)

**Table 3. The mathematics achievements (average raw score, average standard score and percentages scoring at or below the 10th percentile and at or above the 90th percentile) of rural pupils in 2007 and 2010, by grade level.**

| | 3rd class | | 6th class | |
|---|---|---|---|---|
| | 2007 | 2010 | 2007 | 2010 |
| | (*N*=2,081) | (*N*=2,048) | (*N*=1,975) | (*N*=2,102) |
| Raw score mean (SD) | 14.2 (6) | 14.8 (5.8) | 13.9 (6.3) | 15.1 (6.3) |
| Standard score mean (SD) | 98.0 (15.8) | 99.4 (15.4) | 96.8 (14.7) | 99.9 (14.9) |
| At or below 10th percentile | 12.5% | 10.0% | 16.1% | 11.5% |
| At or above 90th percentile | 11.8% | 12.8% | 8.7% | 13.0% |

Note. The mathematics test contains 25 items at each of levels 3 and 6. The average standard score of the norm group (the sample of pupils on whom the test was standardised) is set at 100. At Levels 3 and 6, the norm group average raw score is 15.5. By definition, 10% of the norm group's scores lie at or below the 10th percentile and a further 10% lie at or above the 90th percentile.

Changes in achievement by medical card status

The above comparisons between achievement in 2007 and 2010 were re-estimated separately for pupils with and without medical cards to examine whether there were any differences in the gains displayed by the two groups. (Analyses were restricted to pupils in 3rd class due to an absence of data on medical card status for pupils in 6th class). The analyses indicated that both medical card holders and non-medical card holders showed statistically significant increases in average standard scores for reading from 2007 to 2010. Specifically, standard scores for medical card holders increased from a mean of 94.3 (13.9) in 2007 to 96 (13.8) in 2010 ($t = 2.32$, $df = 1533$, $p < .05$) and standard scores for non-medical card holders increased from a mean of 99.05 (13.7) in 2007 to 100.5 (12.3) in 2010 ($t = 2.27$, $df = 1836$, $p < .05$). The results for maths were less consistent, with non-medical card holders showing a statistically significant increase from a mean of 101.1 (14.8) in 2007 to 103 (14.6) in 2010 ($t = 2.74$, $df = 1824$, $p < .01$) and medical card holders showing an increase of 1.2 points (from 95.8 in 2007 to 97 in 2010), which was not statistically significant ($t = 1.52$, $df = 1520$, $p > .05$). These findings suggest that, to the extent that the gains in achievement between 2007 and 2010 are attributable to participation in the SSP, these gains were not greater for medical card holders (in a programme designed to address disadvantage the latter could reasonably be thought of as the main target group) and indeed, in relation to maths, there is some evidence that non-medical card holders may have derived greater benefit from participation in the programme.

*School level changes in reading and mathematics achievement*

The analyses presented so far are at individual pupil level. However, pupil data were aggregated to school level to facilitate an examination of changes in school level achievement between 2007 and 2010. Had there been no overall change in school level achievement between 2007 and 2010, it might be anticipated that average achievement in half of the sampled rural schools would increase and half would decrease. However, analysis of the aggregated data reveals that this is not the case.

School-level changes in reading achievement.

Of the 238 rural schools that took part in the testing at 6th class level, 63% showed an increase in their average raw score for reading since testing in 2007 (Table 4). At 3rd class level the average raw score of 60.8% of schools increased between 2007 and 2010. Of course, these increases do not take into account the magnitude of the change. An attempt was made, therefore, to identify non-arbitrary benchmarks that could be considered to represent a meaningful change in reading raw score averages. For this, the standard deviations associated with observed reading averages were examined. The standard deviation was approximately 8 at both class levels. Therefore, for reading (see Table 4), it is reasonable to decide on a cut-off point of plus or minus 6 average raw score points, as it represents a change of approximately three-quarters of a standard deviation for both 3rd and 6th class. An analysis of these large changes (i.e., plus or minus 6 average raw score points) for 6th class reading reveals considerable improvement between 2007 and 2010. Over 16% of schools had an increase of 6 or more raw score points on their 2007 average, while less than 5% of schools had a comparably sized decrease in points. A similar percentage of schools (17.6%) showed an increase of that magnitude at 3rd class level (i.e., three-quarters of a standard deviation). However, at 3rd class level, a comparably sized decrease was seen in 12.6% of schools, which is more than twice as many schools than at 6th class level (4.6%).

**Table 4. Percentages of schools showing increases and decreases of varying magnitudes in average reading raw scores between 2007 and 2010.**

| | Class level | |
|---|---|---|
| | **3rd (*N*=238)** | **6th (*N*=238)** |
| Increase > 6 points | 17.6% | 16.4% |
| Increase between 3 and 6 points | 21.8% | 21.4% |
| Increase between 0 and 3 points | 21.4% | 25.2% |
| **Total % showing increase in average raw score** | **60.8%** | **63%** |
| ***% showing no change*** | ***0.4%*** | ***0.8%*** |
| Decrease between 0 and 3 points | 17.2% | 22.7% |
| Decrease between 3 and 6 points | 8.8% | 8.8% |
| Decrease > 6 points | 12.6% | 4.6% |
| **Total % showing average decrease in average raw score** | **38.6%** | **36.1%** |

School-level changes in mathematics achievement.

In mathematics (as was the case with reading), the most marked differences occurred at 6th class level. At 6th class, 65.1% of schools showed an increase in average scores, while 57.1% showed an increase at 3rd class level. The standard deviation for mathematics, at both levels, was approximately 6. In this instance, a change in any direction of 4 raw score points represents about two-thirds of a standard deviation. Just over one quarter of schools showed an increase of 4 or more average raw score points at 6th class level, with just under 8% of schools showing comparably sized decreases. At 3rd class level, slightly more schools (15.1%) showed this large increase (4 points) than had shown comparably sized decreases (13.4% of schools).

**Table 5. Percentages of schools showing increases and decreases of varying magnitudes in average mathematics raw scores between 2007 and 2010.**

| | Class level | |
|---|---|---|
| | 3rd (*N*=238) | 6th (*N*=238) |
| Increase > 4 points | 15.1% | 25.2% |
| Increase between 2 and 4 points | 22.3% | 19.3% |
| Increase between 0 and 2 points | 19.7% | 20.6% |
| **Total % showing increase in average raw score** | **57.1%** | **65.1%** |
| ***% showing no change*** | ***0%*** | ***0.4%*** |
| Decrease between 0 and 2 points | 18.9% | 14.3% |
| Decrease between 2 and 4 points | 10.5% | 12.6% |
| Decrease > 4 points | 13.4% | 7.6% |
| **Total % showing decrease in average raw score** | **42.8%** | **34.5%** |

*Longitudinal analysis at pupil level*

The longitudinal analysis involved a comparison of the average standard scores achieved by pupils in 3rd class in 2007 with the standard scores achieved by the same pupils when they had reached 6th class in 2010. Paired sample *t*-tests were used to examine whether there were any significant differences between the reading and mathematics scores achieved by the pupils in 3rd and 6th class (see Appendix 2 for detailed results of *t*-tests).

Sample

Table 6 shows the total number of pupils tested in 3rd class in 2007 and the number of pupils involved in the longitudinal comparison group (i.e., tested again when in 6th class in 2010). As the table shows, over four-fifths (83%) of the original starting group in 2007 participated in the follow-up study three years later. Some degree of attrition is to be expected in longitudinal studies of this kind. Student absences from school on the days of testing in either 2007 or 2010, grade retention, and students leaving the school in the interim, are some of the reasons for failure to recapture students.

**Table 6. Numbers of 3rd class pupils in the complete cohort in 2007 and in the subgroup of pupils with reading and mathematics test scores in both 2007 and 2010[7].**

| Cohort | Reading | Mathematics |
|---|---|---|
| All pupils | 2,206 | 2,211 |
| Longitudinal sub-group | 1,834 (83.1%) | 1,835 (83.0%) |

Table 7 presents the average reading and mathematics standard scores of pupils in the entire cohort and of pupils in the longitudinal subsample. It is important to compare the test scores of the entire cohort of 2007 with those of pupils not re-tested in 2010 because factors relating to scholastic achievement (e.g., grade retention, absence from school) may have contributed to the attrition observed between 2007 and 2010. Significant differences in the achievement of both groups in 2007 may complicate the interpretation of the longitudinal data.

**Table 7. Average reading and mathematics standard scores of 3rd class pupils in the complete cohort in 2007 and of the subgroup in 2007 of pupils with test scores in both 2007 and 2010.**

| Cohort | Reading Mean (*SD*) | Mathematics Mean (*SD*) |
|---|---|---|
| All pupils | 96.3 (14.3) | 98.2 (15.8) |
| Longitudinal group | 97.1 (14.0) | 99.0 (15.4) |

A one-sample *t*-test was used to examine whether there was a statistically significant difference between the average scores of the complete 2007 cohort and the subgroup that took part in the longitudinal study. The mean scores of the complete cohort were used as comparison values. For reading, a comparison value of 96.3 was used and for maths, a comparison value of 98.2 was used. The *t*-tests revealed that there were significant differences between the complete cohort and the subgroup in both reading and mathematics (see Appendix 2 for detailed *t*-test results).

[7] The figures referring to the longitudinal group in tables 6 and 7 include a number of pupils who were missing either a reading or a mathematics score in 2010. 1,826 pupils had reading scores for 2007 and 2010 and 1,828 pupils had mathematics scores for 2007 and 2010. The subgroup for the reading comparison comprises link pupils (i.e., the 1,826 pupils with reading scores in 2007 and 2010) and pupils with a reading score in 2007, a mathematics score in 2010 but no reading score in 2010 ($n$=8). The subgroup for the mathematics comparison comprises link pupils (i.e., the 1,828 pupils with mathematics scores in 2007 and 2010) and pupils with a mathematics score in 2007, a reading score in 2010 but no mathematics score in 2010 ($n$=7). Given the small number of such pupils, it was decided to include them in the longitudinal subgroup for the comparison between the whole group and the subgroup as they were still in the system in 2010 (having one score) and so, were deemed to be valid members of the subgroup.

It would appear that the subgroup of pupils who had test scores in both years 2007 and 2010 had slightly higher levels of academic achievement in reading and maths than the entire cohort (which included pupils who had no scores in 2010). However, although these differences are statistically significant, they are quite small and therefore, may be of little substantive importance (i.e., given a standard deviation of 15 on both tests, and the differences of about 0.8 between the groups, the subgroup mean scores are about one-twentieth of a standard deviation higher than the mean scores of the whole group).

Comparison of pupils' standard scores in 2007 and 2010

Table 8 presents the average reading and mathematics scores of pupils who were in 3rd class in 2007 and in 6th class in 2010. Paired samples *t*-tests revealed statistically significant improvements in pupils' reading and mathematics scores between 2007 and 2010 (see Appendix 2 for results of *t*-tests). It would seem, therefore, that pupils who were in 3rd class in 2007 improved their standardised scores in reading and mathematics over the following three years. These improvements were of small effect size, however, being .08 of a standard deviation (*SD*=15) for reading and .1 of a standard deviation for mathematics. It should also be noted that achievements were assessed using different levels of the test and that all such measurement involves an element of error.

**Table 8. Average reading and mathematics scale scores of pupils in the longitudinal study in 3rd class in 2007 and in 6th class in 2010.**

| **Reading Mean (*SD*)** (*N*=1,826) | | **Mathematics Mean (*SD*)** (*N*=1,828) | |
|---|---|---|---|
| **2007** | **2010** | **2007** | **2010** |
| 97.2 (14.0) | 98.4 (13.2) | 99.0 (15.5) | 100.5 (14.8) |

Pupils' achievement by decile in 2007 and 2010

The data were also examined for change between 2007 and 2010 in the percentage of very high and low scoring pupils (Table 9). To facilitate this, percentile ranks were categorised as follows: less than or equal to the 10th percentile; 11th to 25th; 26th to 50th; 51st-75th; 76th to 89th; and 90th or above. Chi-square tests were used to investigate whether or not there were overall differences in the percentages of pupils occupying the various categories. The results indicated statistically significant differences in both reading and mathematics (see Appendix 2 for results of chi-square tests).

**Table 9. Percentages of pupils in 3rd class in 2007 and 6th class in 2010 scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile.**

| | Reading | | Mathematics | |
|---|---|---|---|---|
| | 2007 | 2010 | 2007 | 2010 |
| At or below 10th | 13.9% | 11.3% | 11.0% | 10.4% |
| 11th to 25th | 18.2% | 16.0% | 20.2% | 13.4% |
| 26th to 50th | 26.0% | 31.5% | 20.7% | 22.8% |
| 51st to 75th | 26.9% | 24.8% | 24.4% | 26.7% |
| 76th to 89th | 10.4% | 10.1% | 10.8% | 13.1% |
| At or above 90th | 4.6% | 6.4% | 12.9% | 13.5% |

An examination of the data in Table 9 shows that the percentage of pupils with scores at or below the 10th percentile decreased for both reading and mathematics. Improvements are also identified at the upper end of the achievement spectrum, with an increase in the percentage of pupils with scores at or above the 90th percentile, for both reading and mathematics.

Table 10 shows a cross-tabulation of numbers of pupils in 2007 and 2010 with reading scores in various percentile categories. The shaded diagonal line indicates the numbers of pupils who scored within the same percentile category in 2007 and 2010. 43% of the 1,826 pupils scored within the same category in 2007 and 2010, 31% of pupils moved up a category and 26% of pupils moved down a category. For those who moved categories between 2007 and 2010, the direction was most often upward for those in lower categories in 2007 and downward for those in higher categories in 2007, a finding that is suggestive of a degree of regression towards the mean. For example, of the 333 pupils who achieved a score within the 11th to 25th percentile rank range in 2007, 67 moved down a category while 164 moved up a category in 2010. In contrast, of the 190 pupils who achieved a score within the 76th to 89th range in 2007, 44 moved up a category while 85 moved down.

**Table 10. Cross-tabulation of numbers in the cohort of pupils in 3rd class in 2007, and again when they were in 6th class in 2010, scoring at various ranges of percentiles in reading, including at or above the 90th percentile and at or below the 10th percentile.**

| | | Percentile rank category 2010 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | at or below 10th | 11th to 25th | 26th to 50th | 51st to 75th | 76th to 89th | at or above 90th | Total |
| Percentile rank category 2007 | at or below 10th | 119 | 79 | 37 | 16 | 0 | 0 | 251 |
| | 11th to 25th | 67 | 102 | 133 | 26 | 3 | 2 | 333 |
| | 26th to 50th | 18 | 84 | 235 | 110 | 28 | 1 | 476 |
| | 51st to 75th | 2 | 24 | 149 | 224 | 69 | 24 | 492 |
| | 76th to 89th | 0 | 1 | 17 | 67 | 61 | 44 | 190 |
| | at or above 90th | 0 | 0 | 4 | 11 | 23 | 46 | 84 |
| Total | | 206 | 290 | 575 | 454 | 184 | 117 | 1826 |

Table 11 is the equivalent cross-tabulation for mathematics. The overall situation in mathematics is similar to that in reading although slightly more pupils moved up a category. Almost 40% of the 1,828 pupils scored within the same category in 2007 and 2010, 36% moved up a category and 25% moved down a category. Once again, for those who moved categories, the direction was most often upward for those in lower categories in 2007 and downward for those in higher categories in 2007. For example, of the 371 pupils who achieved a score within the 11th to 25th category in 2007, 71 moved down a category while 192 moved to a higher category. In contrast, of the 198 pupils who achieved a score within the 76th to 89th percentile rank range, 60 moved up a category while 87 moved down.

**Table 11. Cross-tabulation of numbers in the cohort of pupils in 3rd class in 2007, and again when they were in 6th class in 2010, scoring at various ranges of percentiles in mathematics, including at or above the 90th percentile and at or below the 10th percentile.**

| | | Percentile rank category 2010 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | at or below 10th | 11th to 25th | 26th to 50th | 51st to 75th | 76th to 89th | at or above 90th | Total |
| Percentile rank category 2007 | at or below 10th | 100 | 63 | 30 | 6 | 1 | 1 | 201 |
| | 11th to 25th | 71 | 108 | 133 | 47 | 7 | 5 | 371 |
| | 26th to 50th | 15 | 54 | 138 | 123 | 35 | 13 | 378 |
| | 51st to 75th | 5 | 17 | 94 | 191 | 86 | 51 | 444 |
| | 76th to 89th | 0 | 3 | 13 | 71 | 51 | 60 | 198 |
| | at or above 90th | 0 | 1 | 7 | 50 | 60 | 118 | 236 |
| Total | | 191 | 246 | 415 | 488 | 240 | 248 | 1828 |

*Summary and conclusion*

The purpose of the current report was to describe the reading and mathematics achievements of pupils in rural schools participating in the SSP under DEIS. Both the cross-sectional and longitudinal analyses revealed statistically significant increases in achievement levels in reading and mathematics between 2007 and 2010. In relation to reading, the cross-sectional analyses revealed significant increases in average scores in both 3rd and 6th classes, with increases in the average scores of 6th class pupils (2.6 standard score points) being of slightly greater magnitude than those of 3rd class pupils (1.4 standard score points). A very similar pattern of results was obtained in relation to mathematics, with small but statistically significant increases being noted for both 3rd and 6th class, and the magnitude of increase being slightly greater for 6th (3.1 standard score points) than for 3rd class (1.4 standard score points). At school level, the majority of schools (around 60%) showed increases in average reading and mathematics raw scores for 3rd and 6th class. The longitudinal analyses revealed similar statistically significant increases in pupils' standard scores for reading and mathematics (of 1.2 and 1.5 standard score points respectively) between 2007 and 2010. An examination of students' performance in terms of percentile rank categories revealed that where students moved category between 2007 and 2010, more students moved up than moved down a category. This was the case for both reading and mathematics.

Taken together, these findings point to a general improvement in the reading and mathematics achievements of pupils in rural schools participating in the SSP between the years of 2007 and 2010, although the magnitude of the increase is small in absolute terms. The significant increases in achievement identified in this study bring rural pupils' scores even closer to the national norm, with average 2010 scores for reading being 97.7 for 3rd class and 98.1 for 6th class, and for mathematics being 99.4 for 3rd class and 99.9 for 6th class. The areas of literacy and numeracy were prioritised under the SSP in terms of the school planning process, which involved target-setting, monitoring of progress, assessment of outcomes, and advice from the PDST. The observed improvements in achievement in reading and mathematics may be directly attributable to these efforts in improving literacy and numeracy. This conclusion is encouraged by the similar increases in achievement observed for urban schools participating in the SSP (Weir & Archer, 2011). The improvements might also reflect some other aspects of the SSP (e.g., clustering and the support of a co-ordinator), or these other aspects might have interacted with the emphasis on planning. Finally, it should be acknowledged that the

improvements could be reflecting a general nationwide increase in achievement levels. This latter explanation is, however, unlikely given the general lack of improvement in reading and mathematics standards of primary school students identified in national assessments since the 1980s (Eivers, Shiel, Perkins, & Cosgrove, 2005; Eivers et al., 2010). Unfortunately, the absence of a control group means that this explanation cannot be completely ruled out. It is not clear whether the achievements of rural pupils will continue to be monitored as part of the evaluation of DEIS. If not, it may be possible to do so as part of the national assessments that are carried out periodically at primary level. However, due to the small size of the schools in the rural dimension of the SSP under DEIS, the subsample would need to be large to represent adequately the achievements of participating pupils. Indeed, for this reason, the approach may well prove impractical.

Weir et al. (2009) compared the reading and mathematics achievements of the 2007 sample of rural pupils with the performance of pupils in urban schools participating in DEIS. They found the performance of rural pupils to be significantly better than that of their urban counterparts in terms of both reading and mathematics. Furthermore, they found that while the average reading score of rural pupils was significantly below the national norm (of 100), their average mathematics score was not significantly different from the norm. In attempting to explain the lesser effect of socioeconomic disadvantage on the achievement of rural pupils, Weir et al. (2009) pointed to differences in the relationship between socioeconomic characteristics and pupil achievement in rural and urban areas, an issue that is further explored in Part 2.

## PART 2: AN EXPLORATION OF THE DIFFERENCES IN THE NATURE OF DISADVANTAGE IN URBAN AND RURAL AREAS.

This part of the report is concerned with the special study of disadvantage in rural areas mentioned earlier. In this section, data gathered as part of the evaluation are used to investigate differences in the nature of rural and urban disadvantage. We know from the evaluation of DEIS and other studies (Weir & Archer, 2011; Weir et al., 2009; Weir et al., 2002a; Weir et al., 2002b) that pupils from disadvantaged backgrounds in urban areas display significantly lower levels of achievement in reading and mathematics than children from disadvantaged backgrounds in rural areas. In order to examine possible reasons for this discrepancy, some of the attitudes, characteristics and habits of parents, children and teachers living and working in urban and rural areas are compared.

*Background*

In their 2009 report, Weir et al. attempted to answer a set of questions arising from the literature about the achievements of rural pupils. The first question addressed was whether or not pupils in rural SSP schools performed better in reading and mathematics than pupils in urban SSP schools (and how both groups compared with the national norms). The answer to this question, which confirmed the superior performance of rural pupils over their urban counterparts, led to a series of other questions relating to

(a) the possibility that socioeconomic disadvantage is less concentrated in rural than in urban schools

(b) the possibility that the achievement of rural pupils is less affected by poverty than that of their urban counterparts, or that the social context effect may operate differently in urban and rural areas

(c) the fact that many rural SSP pupils are in small schools

(d) the fact that so many rural SSP schools are located in the west of Ireland

(e) whether the patterns of differences between urban and rural pupils are similar for mathematics and reading.

As is often the case in educational research, clear cut answers to all of these questions did not emerge from the data. However, it was possible to draw the following main conclusions. First, no evidence was found for the suggestion that the superior performance of pupils in the rural

sample could be explained by the apparently lower concentration of poverty in rural schools. This is because the achievement differences were almost identical when the comparisons were restricted to schools that could be precisely matched on the basis of the percentages of pupils deemed eligible for free books[8]. In other words, where the concentration of poverty in a sample of urban and rural schools was equal, an achievement advantage of a sizeable magnitude in favour of rural pupils remained.

Second, there was, however, support for the idea that the relationship between socioeconomic characteristics and pupil achievement is quantitatively and qualitatively different in rural and urban areas. Quantitative differences were evident in the findings that, while there are significant differences between the average scores of children from families that have and have not medical cards in both samples, the size of these differences is greater in the urban sample. Also, the fact that, in sharp contrast with the urban sample, and in line with previous work (Weir, 1999), the correlation between school level of poverty and average achievement in the rural sample was close to zero, pointing to qualitative differences. The idea that poverty has less of an effect in rural areas was also supported by finding evidence of a 'social context' effect in the urban but not in the rural sample. Such effects have been observed in the Irish and in the international literature, and describe a situation in which achievement is negatively affected by increasing densities of students from disadvantaged backgrounds (see for example Sofroniou, Archer & Weir, 2004). The social context effect means that the socioeconomic mix in a school has an impact on an individual's achievement over and above their own socioeconomic background.

Third, no evidence of small school size mitigating the effects of poverty on educational outcomes was found. Fourth, the presence of relatively large numbers of pupils from some counties in the west of Ireland in the rural sample appeared to be implicated in some, but not all, of the urban/rural achievement gap. Finally, the fact that about 18% of the rural sample were attending schools in the Gaeltacht may help to explain the smaller urban/rural gap in English reading than in mathematics, although it is recognised that only some of these pupils are in Irish-speaking homes, and not all of them are being taught through the medium of Irish (Harris, Forde, Archer, Nic Fheararaile & O'Gorman, 2006).

[8] The book grant scheme operated in both urban and rural schools and was targeted at pupils from families dependent mainly on social welfare payments; on low incomes from employment; or experiencing financial hardship because of particular circumstances in the home (DES, 2007). The percentage used in the analysis reported related to 2005, the year in which schools were identified for the SSP under DEIS.

In their report, Weir et al. adverted to the fact that important questions regarding the nature of disadvantage in rural areas could not be fully investigated using SSP evaluation data alone. They argued that 'The collection of achievement data from rural schools that do not have high concentrations of pupils from poor backgrounds would appear to be essential at some point' (Weir et al., 2009, p. 26). Such a data collection exercise was conducted the following year during the test administration phase of the evaluation of DEIS. The exercise involved identifying a small comparison group of 40 rural schools, matched in terms of size and gender to rural SSP schools, but characterised by low levels of poverty. (Levels of poverty were assessed using the rank order developed by the ERC in 2005 for the identification of schools for DEIS). Thirty-two of these schools agreed to participate in a testing programme involving pupils in 3rd and 6th class and using the same reading and mathematics tests used in SSP schools. The results revealed that the average reading and mathematics scores of pupils in these schools were above the national norm in all cases, although only significantly above the norm in the case of 3rd class mathematics (see Appendix 3 for exact test scores). The fact that the achievements of pupils in rural SSP schools were below those of their more advantaged rural counterparts confirms (along with comparisons of rural medical card holders and non-medical card holders) that poverty has an impact on achievement in small rural schools. The fact that the discrepancy between the two groups was small, however, suggests that poverty in rural areas is mediated by other factors.

As already noted, Weir et al. suggested that a better understanding of disadvantage in rural areas might emerge from examining the differential experiences of pupils in rural and urban areas. The sections that follow document some limited attempts to further investigate this issue using data collected from 3rd class pupils, their parents, and their teachers, in 2007.

The achievement outcomes in 2007 and 2010 described in Section 1 of this report confirm what had been found by Weir et al. (2009) and in previous studies of rural disadvantage. That is, despite their poor socioeconomic backgrounds, rural pupils perform better in achievement tests than their urban counterparts. This was the case for the 2007 data (prior to any potential effects of the intervention) and even more so for the 2010 data. School factors, such as school size and the extent to which poverty is concentrated in the school, appear not to explain the difference (Weir et al., 2009). Therefore, this section will explore the extent to which home factors are implicated in the explanation. Data from pupils' parents, pupils themselves, and to a much more limited extent, pupils' teachers, will be used to investigate what distinguishes pupils from poor

backgrounds in rural and urban areas. As the critical issue here is social background, the comparisons will largely involve pupils identified as being from families with medical cards.

*Sources of data for the current study*

As well as assessing pupils' reading and mathematics abilities, the evaluation of DEIS involved the collection of attitudinal data from pupils themselves (pupil questionnaire), background and home process data from parents (parent questionnaire), and a small number of ratings of pupils by their teachers (Pupil Rating Form). Each instrument is described in more detail below.

The same instruments were used in the collection of baseline data in 2007 and in the collection of follow-up data in 2010. It should be noted, however, that the exploratory analyses reported here are based on the 3rd class cohorts in 2007. This is because data from those cohorts were used in the preliminary analyses reported by Weir et al. (2009), and the analyses reported here are regarded as a continuation of that study. An examination of the 2010 data showed that there were very few differences between the data gathered in 2007 from pupils, parents and teachers. Indeed, regression and factor analyses confirmed that there were very similar relationships between variables and between predictor variables and achievement outcomes.

Pupil questionnaire

Pupils in 3rd and 6th class completed a questionnaire designed to elicit information on their attitudes to school, their scholastic self-evaluations, their leisure and reading activities, and their educational aspirations and expectations. The questionnaire was presented in the same booklet as the reading and mathematics test, and was normally administered immediately after the achievement tests. To assist pupils with reading difficulties, the test administrator read aloud each questionnaire item and the range of possible responses, explaining how to complete each item in turn. Apart from two sample items, there were 27 items, all but one of which required pupils to read a statement or question and to indicate their response by ticking a box or by ticking the most appropriate response from 3 or 4 response options.

Parent questionnaire

In 2007, a parent questionnaire was provided for each child in 3rd and 6th class that took the reading and mathematics tests. In 2010, only parents of 3rd class pupils were asked to complete a questionnaire. This was to avoid the possibility of giving parents of 6th class pupils the same questionnaire that they had completed three years earlier. The parent completing the questionnaire was asked to answer some background questions about his/her child. Issues

included the extent to which the child was read to before attending primary school, how the child's primary school was chosen, the amount of time the child spends on homework, his/her number of siblings, whether the family has a medical card, and questions about the parents' education and occupation.

Pupil Rating Form

Teachers of pupils in classes tested were asked to provide some class-level and individual pupil-level information. At class level, teachers were asked for information on pupils they had exempted from testing and to provide a reason for the exemption[9]. On the pupil rating form, the teachers were asked to provide details of each child's attendance during the second quarter of the 2007 school year (January to March) and to rate his/her behaviour, home support and academic ability.

Data from these three instruments will now be used to address three questions.

1. *How do pupils from poor socioeconomic backgrounds in urban and rural areas differ in their attitudes to school, their reading habits, and how they spend their leisure time?*

In an attempt to categorise pupils from poor backgrounds in rural and urban locations, family possession of a medical card (derived from parents' responses to the parent questionnaire) was used to group pupils. Whether or not a pupil's family has a medical card is the only available pupil-level variable that relates to poverty levels. There was a relatively high rate of non-response for parent questionnaires, with just over a quarter of urban parents and 16% of rural parents failing to return the questionnaire (Table 12). Of those that did, almost half (49%) of urban families had a medical card, as did 40% of rural families. It should be noted that the analyses in this section refer only to those pupils for whom we have information on medical card status.

[9] Pupils could be exempted from testing if they 1) were diagnosed with a moderate to severe general learning disability, 2) had a physical disability that would prevent them from participating, or 3) were from a non-national family and their proficiency in English was at such a level that in the opinion of the teacher(s) they were unable to attempt the test.

**Table 12. Numbers and percentages of 3rd class pupils in 2007 whose parents do and do not have a medical card.**

| | Urban (*N*=4,056) | Rural (*N*=2,077) |
|---|---|---|
| Medical card | 1,486 (49.3%) | 702 (40.3%) |
| No medical card | 1,528 (50.7%) | 1,039 (59.7%) |
| Total | 3,014 | 1,741 |
| Missing | 1,042 | 336 |
| Overall % of pupils for whom Medical card status is known | 74.3% | 83.8% |

***Student Attitudes and Behaviour***

One of the most striking features of the responses of pupils in both locations[10] whose families held medical cards is the similarities between the two groups[11]. In general, children in both locations were quite similar in terms of their enjoyment of their school work and school outings, the pride they placed in their work, how much progress they felt they were making and their academic ambitions. Interestingly, slightly more children in urban areas (71%) than in rural areas (57.6%) reported that they liked school ($\chi^2_1$= 37.56, $p < .001$, $\varphi = .13$)[12]. Virtually equal percentages (77.6% of urban pupils and 77.4% of rural pupils) indicated that they liked reading, with 63.1% of urban pupils and 61.4% of rural pupils indicating that they read books for fun once or twice a week or more often. A slightly higher number of pupils in urban areas (63.4%) than rural areas (54%) reported that they enjoyed working out maths problems ($\chi^2_1$= 17.05, $p < .001$, $\varphi = .09$). Almost all (93.6% of urban pupils and 96.7% of rural pupils)

[10] The pupils in the rural sample were, on average, 9.4 years old while their urban counterparts were marginally younger at an average of 9.3 years old.

[11] Frequencies of all of the responses given by rural and urban pupils to the Pupil Questionnaire are provided in Appendix 4.

[12] A note on Chi-Square and 'Phi'**.** The Chi-square test is a statistical test used to investigate whether distributions of categorical variables differ from each other. Here it was used to examine whether the pattern of responses given by pupils with medical cards (or their parents or teachers) to each questionnaire item varied according to their Location (i.e., Urban or Rural). Specifically, for each rating on each questionnaire item, the Chi-square statistic ($\chi^2$) indicated whether the responses given by medical card holders in urban areas differed significantly from those of medical card holders in rural areas. A *p*-value of < .05 indicates a statistically significant difference ('ns' indicates that the difference is not significant). The Phi coefficient ($\varphi$) is used as a measure of the strength of the relationship (i.e., effect size) between Location and each questionnaire item rating. Where the Chi-square test indicates a statistically significant difference, Phi can be used as a guide to the size of the difference between the two groups. A Phi of .1 indicates a small difference, .3 a medium and .5, a large difference. For example, in Table 13, we see that a statistically significantly greater proportion of pupils with medical cards in urban areas (73.3%) than in rural areas (43.8%) indicated that they 'hang out' with their friends 'every day or nearly every day' ($\chi^2_1 = 176.66$, $p < .001$). Furthermore, the Phi coefficient indicates that this difference is of medium effect size ($\varphi = .29$).

indicated that they enjoyed going on school trips. Most pupils in each location (87.7% of urban pupils and 84.4% of rural pupils) reported feeling proud of their school work and 86.1% of urban pupils and 88.5% of rural pupils felt they were doing well in school. Almost half of pupils in each group (48.8% of urban pupils and 49.9% of rural pupils) expressed an ambition to go to college or university and slightly more urban (45.6%) than rural pupils (40.7%) felt they would achieve this goal ($\chi^2_1 = 4.41$, $p < .05$, $\varphi = .05$).

Some differences were found, however, in how pupils living in urban and rural areas spend their time after school. These differences relate to unstructured free-time activities, and indicate that children in urban areas spend more time hanging out with their friends and browsing on the computer than their rural counterparts (Tables 13 to 16). For example, 73.3% of urban pupils indicated that they 'hang out' with their friends outside of school hours 'every day or nearly every day' while only 43.8% of rural pupils did so ($\chi^2_1 = 176.66$, $p < .001$, $\varphi = .29$).

**Table 13. Percentages of rural and urban pupils in 3rd class in 2007 indicating the frequency with which they 'hang out' with their friends, outside of school hours, according to medical card status.**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 73.3% | 13.5% | 4.8% | 7.7% |
| | No card | 68.7% | 16% | 7.6% | 7.1% |
| Rural | Medical Card | 43.8% | 29.5% | 14.2% | 11.8% |
| | No card | 28.5% | 38.6% | 20.7% | 11.4% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 176.66 $p < .001$ | $\chi^2$ (1) = 78.63 $p < .001$ | $\chi^2$ (1) = 56.56 $p < .001$ | $\chi^2$ (1) = 9.18 $p < .01$ |
| Phi | | $\varphi = .29$ | $\varphi = .19$ | $\varphi = .16$ | $\varphi = .07$ |

Large differences were found between the groups in terms of membership of online communities (Table 14), with 42% of urban pupils and 15.8% of rural pupils indicating that they were members of such a community ($\chi^2_1 = 144.15$, $p < .001$, $\varphi = .26$). Urban medical card holders were also more likely to be members of homework clubs than their rural counterparts, but less likely than the latter to participate in sports clubs.

**Table 14. Percentages of rural and urban pupils in 3rd class in 2007 indicating that they were members of certain types of groups, according to medical card status.**

| | | Sports Club | Homework Club | Online Community (e.g. Bebo, MySpace) |
|---|---|---|---|---|
| Urban | Medical Card | 54.6% | 23.8% | 42% |
| | No card | 61.9% | 9.6% | 35.4% |
| Rural | Medical Card | 63.4% | 13.4% | 15.8% |
| | No card | 71.3% | 7% | 13.9% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 14.6 $p < .001$ | $\chi^2$ (1) = 30.75 $p < .001$ | $\chi^2$ (1) = 144.15 $p < .001$ |
| Phi | | $\varphi = .08$ | $\varphi = .12$ | $\varphi = .26$ |

Another substantial difference related to frequency of online activity, with 28.9% of urban pupils and 10.5% of rural pupils reported reading internet web pages daily or nearly every day ($\chi^2_1$= 89.27, $p < .001$, $\varphi = .2$) (Table 15). Minorities of pupils in both locations spent substantial amounts of time daily (more than 4 hours) playing computer games (Table 16), although this level of activity was much more common among urban than rural among pupils (22.8% vs 12.1%). In keeping with the different amounts of time spent by urban and rural pupils engaged in unstructured leisure activities, there was a slight difference in the amount of time that urban and rural pupils spent doing their homework. Slightly more urban pupils (70.5%) than rural pupils (63.9%) reported spending 0 – 1 hours on their homework ($\chi^2_1$= 9.21, $p < .01$, $\varphi = .07$) while slightly more rural pupils (26.3%) than urban pupils (19.7%) reported spending 1 – 2 hours on their homework ($\chi^2_1$= 11.67, $p < .001$, $\varphi = .07$).

**Table 15. Percentages of rural and urban pupils in 3rd class in 2007 indicating the frequency with which they read web pages on the internet, outside of school hours, according to medical card status.**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 28.9% | 20.7% | 13.4% | 36.2% |
| | No card | 25.9% | 24.7% | 19.2% | 29.8% |
| Rural | Medical Card | 10.5% | 17.5% | 18.5% | 52.6% |
| | No card | 9.9% | 19% | 24% | 46.2% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 89.27 $p < .001$ | $\chi^2$ (1) = 2.86 NS | $\chi^2$ (1) = 9.22 $p < .01$ | $\chi^2$ (1) = 51.64 $p < .001$ |
| Phi | | $\varphi = .2$ | $\varphi = .04$ | $\varphi = .07$ | $\varphi = .15$ |

**Table 16. Percentages of rural and urban pupils in 3rd class in 2007 indicating the amount of time spent playing computer games on school days, according to medical card status.**

| | | More than 4 hours daily | 2-4 hours daily | 1-2 hours daily | 0-1 hours daily |
|---|---|---|---|---|---|
| Urban | Medical Card | 22.8% | 12.7% | 21.2% | 42% |
| | No card | 15.1% | 13% | 22.6% | 48.1% |
| Rural | Medical Card | 12.1% | 10.3% | 21.4% | 53.2% |
| | No card | 6.8% | 7.2% | 21.8% | 62.3% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 33.94 $p < .001$ | $\chi^2$ (1) = 2.37 NS | $\chi^2$ (1) = .002 NS | $\chi^2$ (1) = 23.43 $p < .001$ |
| Phi | | $\varphi = .13$ | $\varphi = .03$ | $\varphi = .001$ | $\varphi = .1$ |

Overall, the pupil data reveal remarkably similar attitudes to school and to school work among urban and rural pupils from poor backgrounds. If anything, the data gathered suggest a slightly less positive attitude to school among rural than among urban pupils (e.g., liking school less, having less pride in their schoolwork, liking reading less, and having lower expectations of attending college or university – see Appendix 4 for detailed frequencies on these items). Where differences between the two groups emerge, they tend to relate to out-of-school activities and how pupils spend their free time, with urban pupils spending greater amounts of time hanging out with friends and engaging in computer-based and online activity.

***Home background factors***

A number of home background variables from the parent questionnaire emerged as being significantly different in urban and rural areas (see Appendix 5 for frequencies on all parent questionnaire items). There were differences between rural and urban parents that held medical cards in terms of their education level, the frequency with which they read books themselves, and the frequency with which they had read to their preschool children. A smaller percentage (18.6%) of urban respondents reported having completed the Leaving Certificate, compared with 27.2% of rural respondents ($\chi^2_1$= 20.48, $p < .001$, $\varphi = .1$), while 20.6% of urban respondents and 25.2% of rural respondents reported having a third level qualification ($\chi^2_1$= 5.6, $p < .05$, $\varphi = .05$). With respect to parents' own reading habits, 30.5% of parents in rural areas and 24.2% of parents in urban areas reporting that they read books most days or every day ($\chi^2_1$= 9.46, $p < .01$, $\varphi = .07$). Furthermore, a greater percentage of parents in rural areas (31.8%) than in urban areas (23.1%) reported that they, or another member of the household, had read to their child every day before he/she started formal schooling ($\chi^2_1$= 18.36, $p < .001$, $\varphi = .09$). There were also differences in family structure in urban and rural

households (Table 17). In rural homes with medical cards, the child's father was much more likely to reside in the house (70.7% of households) than in urban households, where only 46.3% of respondents indicated that the child's father normally lived in the home.

Other differences related to the educational resources in the home of urban and rural parents who are medical card holders. When asked to estimate how many books they had in their home, 31.9% of urban medical card holders indicated that they had 10 or fewer books while 12% indicated that they had 101 books or more (Table 18). These figures were in direct contrast to those of medical card holders in rural areas, of whom 12.4% indicated that they had 10 or fewer books while 30.8% indicated that they had more than 100 books in the home. These differences were statistically significant (10 or fewer: $\chi^2_1 = 94.06$, $p < .001$, $\varphi = .21$; 101+: $\chi^2_1 = 112.74$, $p < .001$, $\varphi = .23$).

**Table 17. Rural and urban parents' indications of who normally lives in the child's home, according to medical card status.**

| | | Mother | Father | Female Guardian | Male Guardian |
|---|---|---|---|---|---|
| Urban | Medical Card | 92.7% | 46.3% | 3.4% | 5.9% |
| | No card | 95.3% | 81.8% | 2% | 4.2% |
| Rural | Medical Card | 95.3% | 70.7% | 2.4% | 3.6% |
| | No card | 96.1% | 91.8% | .9% | 1.6% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 4.91 $p < .05$ | $\chi^2$ (1) = 113.34 $p < .001$ | $\chi^2$ (1) = 1.28 NS | $\chi^2$ (1) = 4.69 $p < .05$ |
| Phi | | $\varphi = .05$ | $\varphi = .23$ | $\varphi = .02$ | $\varphi = .05$ |

**Table 18. Rural and urban parents' estimates of the number of books in their home, according to medical card status.**

| | | 10 or fewer | 11-100 | 101+ |
|---|---|---|---|---|
| Urban | Medical Card | 31.9 | 55.5 | 12 |
| | No card | 13.7 | 55.1 | 30.3 |
| Rural | Medical Card | 12.4 | 55.8 | 30.8 |
| | No card | 5.8 | 50.1 | 43.2 |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 94.06 $p < .001$ | $\chi^2$ (1) = .007 NS | $\chi^2$ (1) = 112.74 $p < .001$ |
| Phi | | $\varphi = .21$ | $\varphi = .002$ | $\varphi = .23$ |

The use by pupils of other educational resources in the home also differs according to location (Table 19). There is a significant difference between the percentage of parents in rural and urban areas reporting that their child uses an atlas ($\chi^2_1 = 98.18$, $p < .001$, $\varphi = .21$) and a family dictionary ($\chi^2_1 = 61.07$, $p < .001$, $\varphi = .17$) at home. Almost twice the percentage (41.5%) of medical card holders in rural than in urban areas (21.1%) indicated that their child used an atlas

at home. A much greater percentage (62.1%) of medical card holders in rural areas than in urban areas (44.1%) indicated that their child uses a family dictionary, while slightly more rural pupils used computers at home compared with their urban counterparts.

**Table 19. Rural and urban parents' indications of their child's use of various educational resources in their home, according to medical card status.**

| | | Atlas | Family Dictionary | Computer |
|---|---|---|---|---|
| Urban | Medical Card | 21.1% | 44.1% | 52% |
| | No card | 31.5% | 53.3% | 71.5% |
| Rural | Medical Card | 41.5% | 62.1% | 57.4% |
| | No card | 52% | 67.4% | 73.1% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 98.18 $p < .001$ | $\chi^2$ (1) = 61.07 $p < .001$ | $\chi^2$ (1) = 5.38 $p < .05$ |
| Phi | | $\varphi = .21$ | $\varphi = .17$ | $\varphi = .05$ |

***Teachers' ratings of their pupils***

Teachers' ratings of pupils with medical cards were very similar in urban and rural locations. This finding applies to their ratings of pupils' reading and mathematics ability (see Appendix 6 for frequencies on the five areas rated by teachers). For example, teachers in urban areas rated the mathematics ability of 14.1% of their medical card holding pupils as 'very good' compared with 15.3% rated as 'very good' by rural teachers. Teachers' ratings of non-medical card holders in both locations were even more similar: Urban and rural teachers rated 24.8% and 25% of non-medical card holders as 'very good' at mathematics, respectively. This pattern of ratings was repeated in the area of English reading. The closeness in ratings may seem surprising because of what is known about the discrepancy between the achievements of pupils with medical cards in urban and rural areas. However, an examination of teacher responses at the other end of the rating scale (i.e., 'poor' or 'very poor') suggests that the differences are more marked there, with urban teachers describing 31% of their pupils with medical cards as having 'poor' or 'very poor' mathematics ability compared with 21.6% of rural pupils with medical cards.

Attendance rates among rural pupils were significantly higher than for urban pupils, with rural pupils with medical cards attending for just under 1½ days more ($M$=53.14, $SD$=15.4) than urban pupils ($M$=51.76, $SD$=12.9; $t_{2154}$=-2.18, $p < .05$) in the second quarter of 2007. Percentage attendance rates were very high overall, with pupils in all categories having over 95% attendance during the quarter. The highest rates overall were observed among rural pupils without medical cards (99.6%) while the lowest were among urban pupils with medical cards (95.9%).

**Table 20. Teachers' reports of the average number of days attended in the second quarter by 3rd class rural and urban pupils in 2007, according to medical card status.**

| | | Mean | SD | Modal number of days the school was open | % attendance |
|---|---|---|---|---|---|
| Urban | Medical card | 51.76 | 12.9 | 54 | 95.9% |
| | No Card | 53.46 | 13.6 | 55 | 97.2% |
| Rural | Medical card | 53.14 | 15.4 | 54 | 98.4% |
| | No Card | 54.76 | 14.1 | 55 | 99.6% |
| t-test: Urban med v Rural med | | $t$ (2,154) = -2.18 $p < .05$ | | | |

Teachers' ratings concerning behaviour in school were more positive for rural than urban pupils, with 52.3% of rural pupils and 42.5% of urban pupils being described as having 'very good' behaviour ($\chi^2_1$=17.82, $p < .001$, $\varphi$=.09). There were also slight differences in terms of teachers' ratings of home support, with teachers rating the home support given to 32.9% of children in rural areas and 25.4% of children in urban areas as 'very good' ($\chi^2_1$= 12.82, $p < .001$, $\varphi = .08$).

**Table 21. Teachers' reports of the behavior of 3rd class rural and urban pupils in 2007, according to medical card status.**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 2.5% | 7.3% | 19.2% | 28.3% | 42.5% |
| | No Card | .9% | 3.5% | 12% | 25.4% | 58.1% |
| Rural | Medical Card | 1% | 3.5% | 12.2% | 28.8% | 52.3% |
| | No Card | .2% | 1.6% | 9.9% | 23.5% | 62.3% |
| Chi-square: Urban med v Rural med | | $\chi^2$ (1) = 4.62 $p < .05$ | $\chi^2$ (1) = 11.25 $p < .001$ | $\chi^2$ (1) = 15.89 $p < .001$ | $\chi^2$ (1) = .04 NS | $\chi^2$ (1) = 17.82 $p < .001$ |
| Phi | | $\varphi = .05$ | $\varphi = .07$ | $\varphi = .09$ | $\varphi = .004$ | $\varphi = .09$ |

2. *Does the relationship between pupil achievement and pupil background factors differ in urban and rural contexts?*

A series of analyses, using correlations or *t*-tests (as appropriate), were performed to examine the relationship between achievement and all relevant background variables in urban and rural samples[13]. The purpose of this exercise was to identify variables which might differentially predict achievement in rural and urban areas and so shed light on the different levels of achievement observed in both samples. Table 22 contains a list of small to moderate correlations (i.e. $\rho \geq .1$) identified between suitable variables in the Parent, Pupil and Teacher

[13] Tables containing all correlations and *t*-tests (including non-significant ones) may be seen in Appendix 7.

Questionnaires and reading achievement. These variables are listed in order of strength of correlation with achievement in relation to the rural sample.

On the whole, reading achievement was predicted by a similar group of variables for both the urban and rural samples. These variables can be considered as falling into two main groups: educational practices within the home, and student attitudes and behaviours. For both rural and urban samples, the two highest correlations were found for the variables concerning the number of books in the home and teacher ratings of home support. Early educational practices within the home were also important, with the frequency with which pupils were read to prior to entering primary school, and the frequency with which pupils read at home when in Infant classes, being significantly correlated with achievement in both rural and urban samples. Higher levels of parental education were associated with higher levels of reading achievement in both rural and urban samples. Results of the *t*-tests indicated that for both urban and rural samples, the presence of educational resources, such as an atlas, dictionary or computer, and family use of libraries were associated with higher levels of reading achievement (see Appendix 7).

**Table 22. Correlations[1] between a variety of background variables and urban and rural pupils' reading achievement in 2007.**

| | | Correlations | |
|---|---|---|---|
| **Questionnaire** | **Item** | **Rural** | **Urban** |
| Parent | 19. About how many books are in your home? | $\rho_{692} = .38, p < .001$ | $\rho_{1456} = .25, p < .001$ |
| Teacher | Rating of Home Support | $\rho_{676} = .36, p < .001$ | $\rho_{1431} = .34, p < .001$ |
| Parent | 2. How often did anyone in your home read books to your child before s/he started primary school? | $\rho_{691} = .35, p < .001$ | $\rho_{1430} = .18, p < .001$ |
| Teacher | Rating of Behaviour | $\rho_{676} = .22, p < .001$ | $\rho_{1438} = .22, p < .001$ |
| Pupil | 2. How far would you like to go in school? | $\rho_{528} = .21, p < .001$ | $\rho_{1188} = .21, p < .001$ |
| Pupil | 24. How often do you 'hang out' with your friends, outside of school hours? | $\rho_{692} = -.21, p < .001$ | $\rho_{1451} = -.004, p = .89$ |
| Parent | 4. When s/he was in Infants classes, did your child read to you or anyone in your home? | $\rho_{685} = .21, p < .001$ | $\rho_{1432} = .16, p < .001$ |
| Parent | 20. What is the highest exam taken by you? | $\rho_{642} = .19, p < .001$ | $\rho_{1337} = .2, p < .001$ |
| Pupil | 10. I think school outings are boring | $\rho_{684} = -.18, p < .001$ | $\rho_{1430} = -.22, p < .001$ |
| Parent | 18c. How often do you read books? | $\rho_{626} = .16, p < .001$ | $\rho_{1233} = .05, p = .08$ |
| Pupil | 22. How much time do you spend playing computer games, on school days? | $\rho_{676} = -.13, p = .001$ | $\rho_{1442} = -.13, p < .001$ |
| Parent | 14. Number of Siblings | $\rho_{692} = -.12, p = .001$ | $\rho_{1444} = -.15, p < .001$ |
| Pupil | 18. How often do you read books for fun at home? | $\rho_{689} = .12, p = .001$ | $\rho_{1445} = .04, p = .12$ |
| Pupil | 13. I enjoy going on school trips | $\rho_{690} = .12, p = .001$ | $\rho_{1446} = .1, p < .001$ |

[1]Order determined by rural pupils

Teacher ratings of pupil behaviour were similarly correlated with reading achievement in both samples. Pupil ambitions also had a significant positive correlation with achievement, with

children in both samples who expressed a desire to go further in education tending to have higher reading scores. For both samples, pupils' enjoyment of school trips was significantly correlated with achievement and in fact, this correlation emerged in two variables ("I think school outings are boring" & "I enjoy going on school trips"). This may reflect a relationship between general enjoyment of and interest in school life and academic achievement. Time spent playing computer games was similarly correlated with achievement in both samples, indicating that those pupils who spent more time playing computer games had lower levels of reading achievement. The results of *t*-tests indicated that participation in certain extra-curricular clubs or activities was associated with lower levels of reading achievement. For both the urban and rural samples, membership of Boy Scouts or Girl Guides, or a youth club, was associated with lower levels of reading achievement. For the urban pupils, participation in a dance or drama club was also associated with lower levels of reading achievement. Membership of an online community such as Bebo or MySpace, was associated with lower reading achievement for both samples, though to a greater degree in the urban sample. Interestingly, membership of a band, choir or orchestra or a sports club, was not associated with lower reading achievement for either the urban or rural samples, suggesting perhaps that participation in these more structured extra-curricular activities did not have a deleterious effect on reading achievement. There was also a small negative correlation in both samples between reading achievement and family size, indicating that an increasing number of siblings was associated with lower levels of achievement in both rural and urban areas.

An examination of differences between the samples revealed that the achievements of rural pupils were predicted to a greater degree by a larger number of variables. In particular, the pattern of correlations suggests that educational practices within the home may have had a stronger influence on the reading achievement of rural children than urban children. For example, the number of books within the home correlated with reading achievement to a higher degree in the rural ($\rho$ = .38) than the urban sample ($\rho$ = .25). Similarly, early reading practices had higher correlations in rural than urban samples. Specifically, the frequency with which the child was read to within the home prior to primary school correlated with later reading achievement to the degree of $\rho$ = .35 in rural sample and $\rho$ = .18 in urban and the frequency with which children read within the home when in Infants classes correlated to a degree $\rho$ = -.21 in the rural and $\rho$ = .16 in the urban sample. Indeed, the frequency with which parents read books themselves emerged as a significant predictor of the reading achievement of their children in the rural sample ($\rho$ = .16) but not in the urban sample ($\rho$ = .05). Similarly, the

frequency with which children read books for fun at home was significantly correlated with their reading achievement in the rural ($\rho$ = .12) but not the urban sample ($\rho$ = .04).

The final variable that differentiated the two samples in terms of correlation with achievement was the frequency with which pupils 'hang out' with friends outside of school hours. This variable emerged as representing one of the main differences between the urban and rural samples in the comparisons presented earlier. 73.3% of urban pupils indicated that they 'hang out' with their friends outside of school hours 'every day or nearly every day' while only 43.8% of their rural counterparts indicated the same. Here, a correlation of $\rho$ = -.21 in the rural sample indicates that those pupils in rural areas who 'hang out' less frequently with friends tend to have higher reading achievement. Coupled with the correlations between reading achievement and computer game playing, and the finding that participation in social clubs was associated with lower achievement, this again suggests a negative effect of unstructured free time on reading achievement. The correlation in the urban sample ($\rho$ = -.004) may have been weak because frequent 'hanging out' is so widespread among urban pupils.

A similar set of variables was found to be predictive of maths achievement. Again, educational practices within the home emerged as being the strongest predictors in both samples. In both, teacher ratings of home support and the number of books within the home were the two variables which correlated most highly with children's level of maths achievement. The presence of resources, such as atlases, dictionaries or computers, was associated with higher levels of mathematics achievement in both samples (see *t*-tests, Appendix 7). Higher levels of parental education were associated with higher maths scores in both samples. In keeping with the results in relation to reading, a small negative correlation between family size and maths achievement was evident. Again, there was some evidence that educational practices within the home may have had a stronger influence on the maths achievement of the rural children. For example, the frequency with which the child was read to prior to starting primary school was more highly correlated with maths achievement in the rural ($\rho$ = .21) than urban ($\rho$ = .1) sample. The correlation between maths achievement and the frequency with which the child read to anyone in the home during Infants classes was slightly lower for urban ($\rho$ = .08) than rural ($\rho$ = .11) children. The frequency with which parents read magazines was significantly related to maths scores in the rural ($\rho$ = -.14) but not in the urban sample ($\rho$ = -.05). The direction of this correlation was opposite to that of the correlation between reading achievement and the frequency with which parents read books, which indicated that children

whose parents read books more often tended to have higher reading scores. Here, rural children whose parents indulged less frequently in magazine reading tended to have higher maths scores. The correlation was not statistically significant for urban pupils.

Student attitudes and behaviours were once again found to be predictive of achievement, with teacher ratings of behaviour, students' interests in school outings and student educational ambitions being similarly related to mathematical achievement in both samples. Two differences emerged in the pattern of correlations for rural and urban pupils. Similar to the correlations with reading, the frequency with which rural pupils 'hang out' with friends outside of school hours emerged as a significant predictor of maths achievement for rural ($\rho$ = -.16) but not urban pupils ($\rho$ = .02). For urban pupils, the frequency with which they engaged in playing computer games was negatively associated with mathematics achievement ($\rho$ = -.13). The relationship was not statistically significant for rural pupils ($\rho$ = -.06*)*. The results of *t*-tests indicated that membership of Boy Scouts or Girl Guides or a youth club had a negative association with mathematics achievement in both samples, though to a greater extent in the urban sample. Membership of a sports club was not related to mathematics achievement in either sample. Participation in a band, choir or orchestra or dance or drama club was associated with lower maths achievement for the urban but not the rural pupils. Membership of an online community was not associated with mathematics achievement in either sample (see Appendix 7).

**Table 23. Correlations[1] between a variety of background variables and urban and rural pupils' mathematics achievement in 2007.**

| | | Correlations | |
|---|---|---|---|
| **Questionnaire** | **Item** | **Rural** | **Urban** |
| Teacher | Rating of Home Support | $\rho_{675}$ = .37, $p$ < .001 | $\rho_{1432}$ = .34, $p$ < .001 |
| Parent | 19. About how many books are in your home? | $\rho_{691}$ = .23, $p$ < .001 | $\rho_{1458}$ = .25, $p$ < .001 |
| Pupil | 10. I think school outings are boring | $\rho_{683}$ = -.21, $p$ < .001 | $\rho_{1431}$ = -.21, $p$ < .001 |
| Parent | 2. How often did anyone in your home read books to your child before s/he started primary school? | $\rho_{690}$ = .21, $p$ < .001 | $\rho_{1432}$ = .1, $p$ < .001 |
| Teacher | Rating of Behaviour | $\rho_{675}$ = .2, $p$ < .001 | $\rho_{1439}$ = .24, $p$ < .001 |
| Pupil | 24. How often do you 'hang out' with your friends, outside of school hours? | $\rho_{691}$ = -.16, $p$ < .001 | $\rho_{1453}$ = .02, $p$ = .44 |
| Parent | 20. What is the highest exam taken by you? | $\rho_{641}$ = .15, $p$ < .001 | $\rho_{1339}$ = .19, $p$ < .001 |
| Pupil | 2. How far would you like to go in school? | $\rho_{527}$ = .14, $p$ = .001 | $\rho_{1190}$ = .16, $p$ < .001 |
| Parent | 18b. How often do you read magazines? | $\rho_{624}$ = -.14, $p$ < .001 | $\rho_{1217}$ = -.05, $p$ = .11 |
| Parent | 4. When s/he was in Infants classes, did your child read to you or anyone in your home? | $\rho_{684}$ = .11, $p$ =.003 | $\rho_{1434}$ = .08, $p$ = .003 |
| Parent | 14. Number of siblings | $\rho_{691}$ = -.1, $p$ = .009 | $\rho_{1446}$ = -.13, $p$ < .001 |

The correlational analyses suggested that overall, similar kinds of variables predicted achievement in the urban and rural samples but that some of the variables bore a stronger relationship to achievement in the rural sample. In order to further investigate this matter, multiple regression analysis was used to examine the degree to which reading achievement was predicted by the combination of these variables in the rural and urban samples. Factor analyses were, first of all, performed in order to reduce the large number of variables identified as being related to achievement to a smaller number of meaningful components. Separate factor analyses were run for the urban and rural samples, with both sets of analyses yielding similar components. The factor analyses suggested that the large number of variables identified as being related to achievement could be represented by the following three underlying components:

- Educational resources / practices within the home
- Student attitudes towards school
- Participation in extra-curricular activities

The factor solutions can be seen in Appendix 8. The first component, educational resources / practices within the home, was comprised of variables such as the estimated number of books in the home, the presence of an atlas or dictionary within the home and frequency of reading to children prior to formal schooling. The second component, student attitudes towards school, was composed of variables representing students' academic aspirations, enjoyment of school outings, and teacher ratings of their behaviour in school. The third component, participation in extra-curricular activities, contained variables indicating membership of an online community, Boy Scouts or Girl Guides and youth clubs, for example. (Note that it did not include membership of a sports club or band, choir or orchestra, membership of which was found to be unrelated to reading achievement in both samples). The factor solutions were used to create factor scores, which were then entered into multiple regressions in which reading achievement was regressed upon these three components for the urban and rural samples. (Details of the results of these analyses are presented in Appendix 8). As expected on the basis of the previous analyses using correlations and *t*-tests, all three components made significant and unique contributions to variance in reading achievement for both the urban and rural samples. The solution indicated that for children in urban and rural areas, reading achievement was higher for those students who had more access to educational resources or who engaged more frequently in educational practices within the home, who had more positive attitudes towards school and who tended not to engage in as many extra-curricular activities. There were

differences between the solutions for the urban and rural samples, however. These three components explained a greater proportion of the variance in reading achievement in the rural (35.2%) than in the urban (22.3%) sample. Furthermore, for the rural sample, the component relating to home educational resources and practices emerged as the most significant factor predicting achievement, followed by student attitudes and then, student activities. In contrast, for the urban children, student attitudes emerged as the strongest predictor of achievement, followed by home educational resources and practices and finally, student activities.

For reasons already outlined, virtually all of the analyses in this report are based on data from 3rd class pupils in 2007. However, to establish if a similar pattern of results emerged for a different cohort, the factor analyses and multiple regressions were replicated for urban and rural pupils in 3rd class in 2010. A similar pattern of results was found. The three components relating to home educational resources and practices, student attitudes, and student activities, were once again identified through factor analyses for the urban and rural samples. Again, these three components were found to significantly predict reading achievement for the urban and rural samples, with higher reading achievement being related to the presence of educational resources or practices within the home, positive student attitudes towards school and a tendency not to engage in extra-curricular activities. As before, student attitudes emerged as the strongest predictor of reading achievement for urban pupils while home educational resources and practices was the strongest predictor for rural pupils. The main difference between the results for the 2007 and 2010 data related to the percentage of variance in reading achievement explained by the combination of the three components. In 2007, a higher proportion of variance was explained for the rural sample (35.2%) than for the urban sample (22.3%). The analyses of the 2010 data indicated that the three components explained a similar amount of variance in the urban (19.8%) and rural samples (22.8%). This represents a considerable drop in the amount of variance in reading achievement explained by these three components for the rural pupils (i.e., 35.2% in 2007 v 22.8% in 2010). The implication of this is that some other factor (or factors) explained more of the variance in achievement on the second occasion. It is impossible to say what those factors might be based on the limited data available. However, one obvious contender is participation in the DEIS programme. If the programme is indeed having an effect, then one would expect the close relationship between background factors and achievement to be weakened.

3. *What have the data revealed about the differences between the urban and rural samples that might explain their differing levels of academic achievement?*

In an attempt to understand why similarly disadvantaged students in urban and rural areas differ in terms of their scholastic achievement, we have compared the attitudes, characteristics and habits of parents, children and teachers living and working in urban and rural areas. We have done so in two steps, first searching for differences between the two groups in terms of home background or process, pupil attitudes and behaviour and teacher ratings of pupils in certain areas, and then examining the relationship between reading and maths scores and suitable variables in order to ascertain whether there were any differences in the set of variables predicting achievement in the two samples.

Two sets of variables emerged as significant differentiators of the two samples. The first set related mainly to educational practices within the home. Rural parents reported having a significantly greater number of books in the home and that their children made more frequent use of atlases and family dictionaries within the home. Rural parents also had slightly higher levels of education. They reported reading books more frequently and reported having read to their children more frequently prior to the commencement of primary school. Teachers' ratings of home support were slightly higher for rural than for urban pupils. The second set of variables that significantly differentiated between the two samples related to how pupils spent their free time. Urban pupils spent much more time engaged in unstructured free-time activities such as 'hanging out' with friends or engaged in computer-based activities, such as playing computer games, browsing internet pages or involving themselves in social networking sites.

These two sets of variables also emerged as being significantly related to achievement in the areas of reading and maths. The results of the factor analyses and associated multiple regression analyses indicated that for pupils in urban and rural areas, reading achievement was higher for those students who had access to more educational resources or who engaged more frequently in educational practices within the home and for those students who tended to spend less time engaged in extra-curricular activities. A third set of variables which emerged as being predictive of achievement related to student attitudes, with those students who held more positive attitudes towards school tending to have higher levels of achievement. The key difference between the two samples was that these sets of variables explained achievement in

the rural sample to a greater degree than that in the urban sample. Furthermore, results of the regression analyses indicated that variables relating to home educational resources and practices emerged as being of greater relative importance in the rural sample, while student attitudes emerged as being of greater relative importance in the urban sample, in the prediction of reading achievement.

*Conclusions*

In attempting to explain the differences in the achievements of disadvantaged pupils in urban and rural areas, this exploratory exercise has suggested that the achievements of rural pupils may have been somewhat protected by their parents' engagement in, and emphasis on, education within the home. It would appear that, not only did the rural children have greater access to educational materials and were more frequently engaged in educational activities such as reading, but that these educational practices within the home had a greater influence on the achievement of the rural pupils than their urban counterparts. The findings also suggest that the achievements of urban pupils may have been negatively affected by the presence of distractions. Urban children were found to engage more frequently in unstructured free-time activities, such as playing with friends or on computers, and it may be that an excess of time spent so engaged may have had a negative effect on their achievement.

The finding that a lower percentage of the variance in reading achievement was explained for students in urban areas also begs the question as to whether other factors not measured in this study were impacting on the achievements of urban children. It is possible, for example, that a social context effect may have been operating in schools in the urban sample, militating against potential positive influences (such as home educational practices) on achievement. In this context, it is interesting that student attitudes emerged as being the strongest predictor of reading achievement for urban pupils, suggesting that those urban children who did achieve to a higher standard did so largely on the strength of their own scholastic ambitions and interests[14]. Family structure is also implicated in levels of student achievement. Large family size is negatively associated with achievement in both urban and rural areas (and, indeed, due to its relationship with an achievement measure in previous work (see Archer & Sofroniou, 2008), was one of the indicators used in identifying schools for participation in the SSP).

[14] Note: this component may have emerged as most significant for the urban children simply because educational resources and practices within the home are lacking for these children. That would mean that the educational resources and practices component simply could not emerge as having the biggest influence.

Participation in certain extra-curricular activities and clubs was associated with poor achievement. These activities (e.g., boy scouts and girl guides, youth clubs, online communities), seem to be either largely social or relatively unstructured ones. Participation in other group activities (i.e., bands, choirs, orchestras, and sports clubs) was not related to reading achievement (though, band membership was negatively associated with mathematics achievement among urban pupils). It is conceivable that these more structured activities do not have a negative impact on achievement while the more social, unstructured activities act as distractions, taking time or focus away from schoolwork. The findings of the current study are very similar to those of a national study (Growing Up in Ireland) of nine-year olds from poor socioeconomic backgrounds (as defined by family medical card possession). Data from that study found membership of a sports club to be associated with academic resilience (by which we mean that a pupil's performance in school is better than expected given their socioeconomic circumstances), while membership of a youth club is associated with academic vulnerability (Rachel Perkins, personal communication, August 8, 2013). The study also found that being a member of a group such as scouts or guides group was not significantly associated with academic resilience. Furthermore, children who spend some time with their friends almost every day were more likely to be vulnerable than those who do so less frequently. It was hypothesised that activities such as participation in sports clubs teach children self-regulation and discipline, which then have a positive impact on their school work (Rachel Perkins, personal communication, August 8, 2013).

It is possible to speculate on why student attitudes emerged as the best predictor of achievement among urban pupils. We know that teachers rate 'home support' as lower for urban than rural pupils and that they are lacking the educational resources and practices in rural homes. It is possible that teachers in urban schools, being cognizant of this, are putting a greater effort into emphasising the importance of staying in school because pupils do not have the back-up from home. Staff in rural schools may not need to focus so much on instilling such attitudes in pupils as they can rely upon the home environment for encouragement. It should be borne in mind that pupils in the current study are relatively young (nine years old on average), and may be more or less susceptible to home influences than older children. If the same analyses were repeated using data from 6$^{th}$ class pupils (12-year-olds), achievement might well be predicted by a different set of variables.

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## Appendix 1: Statistical analyses pertaining to cross-sectional comparisons

**Table 1A. Results of comparisons (independent *t*-tests) between pupils in rural schools in 2007 and 2010.**

| | | Reading | | | Mathematics | | |
|---|---|---|---|---|---|---|---|
| **Group** | **Level** | ***t; df*** | ***p*** | ***Meaning*** | ***t; df*** | ***p*** | ***Meaning*** |
| 2007 vs 2010 (all rural) | 3rd class | 3.7; 4,149 | <.001 | Significantly higher in 2010 | 3.3; 4,127 | <.01 | Significantly higher in 2010 |
| | 6th class | 5.7; 4,074 | <.001 | Significantly higher in 2010 | 6.1; 4,075 | <.001 | Significantly higher in 2010 |

**Table 1B. Results of comparisons (Chi-squared tests) between the percentages of rural pupils in 2007 and 2010 that were at or below the 10th percentile and at or above the 90th percentile in reading and mathematics.**

| | | Reading | | | Mathematics | | |
|---|---|---|---|---|---|---|---|
| **Group** | **Level** | ***$\chi^2$; df*** | ***p*** | ***Meaning*** | ***$\chi^2$; df*** | ***p*** | ***Meaning*** |
| 2007 vs 2010 (all) at/below 10th | 3rd class | 12.1; 1 | <.001 | Fewer in 2010 | 6.2; 1 | <.05 | Fewer in 2010 |
| | 6th class | 17.5; 1 | <.001 | Fewer in 2010 | 17.8; 1 | <.001 | Fewer in 2010 |
| 2007 vs 2010 (all) at/above 90th | 3rd class | 2.6; 1 | *ns* | No difference | 0.9; 1 | *ns* | No difference |
| | 6th class | 7.7; 1 | <.01 | More in 2010 | 18.9; 1 | <.001 | More in 2010 |

## Appendix 2: Statistical analyses pertaining to longitudinal comparisons

**Table 2A. Results of one-sample *t*-tests comparing reading and maths scores of the complete 2007 cohort and the longitudinal subgroup.**

| Subject | *t*-test results | Meaning |
|---|---|---|
| Reading | $t$ (1833) = 2.340, $p$ = .019 | Higher scores in longitudinal subgroup |
| Mathematics | $t$ (1834) = 2.236, $p$ = .025 | Higher scores in longitudinal subgroup |

**Table 2B. Results of paired samples t-tests comparing reading and mathematics scores of pupils tested in 3rd class in 2007 and in 6th class in 2010.**

| Subject | *t*-test results | Meaning |
|---|---|---|
| Reading | $t$ (1825) = -5.6, $p$ < .001 | Higher scores in 2010 |
| Mathematics | $t$ (1827) = -5.8, $p$ < .001 | Higher scores in 2010 |

**Table 2C. Results of chi-square tests examining changes from 2007 to 2010 in the percentage of pupils with scores in different percentile ranges for reading and mathematics.**

| Subject | Chi-square results | Meaning |
|---|---|---|
| Reading | $\chi^2$ (25) = 1523, $p$ < .001 | Significant changes between 2007 & 2010 |
| Mathematics | $\chi^2$ (25) = 1372, $p$ < .001 | Significant changes between 2007 & 2010 |

## Appendix 3: Achievement scores of non-disadvantaged rural sample (2010)

**Table 3A. Reading and mathematics achievements (average raw score, average standard score and percentages scoring at or below the 10th percentile and at or above the 90th percentile) of rural pupils in a non-disadvantaged comparison group in 2010, by grade level.**

| | Reading | | Maths | |
|---|---|---|---|---|
| | Level 3 (*N*=245) | Level 6 (*N*=264) | Level 3 (*N*=246) | Level 6 (*N*=263) |
| Mean raw score | 28.39 | 23.72 | 15.98 | 15.17 |
| Mean standard score* | 100.40 | 100.25 | 104.77 | 101.94 |
| At or below 10th percentile | 8.6% | 6.1% | 5.7% | 9.1% |
| At or above 90th percentile | 6.1% | 7.6% | 12.6% | 9.9% |

* Note that the mean standard score is above the national norm of 100 in all cases

**Appendix 4: Urban and rural pupils' questionnaire responses by medical card status in 2007**

**1. How much do you like school?**

| | | Like a lot | Like | Dislike | Dislike a lot |
|---|---|---|---|---|---|
| Urban | Medical Card | 33.2% | 37.8% | 8.7% | 19.9% |
| | No card | 25% | 45.2% | 12.5% | 16.9% |
| Rural | Medical Card | 15.5% | 42.1% | 16.2% | 25.9% |
| | No card | 12.5% | 49.4% | 19.9% | 17.8% |

**2. How far would you like to go in school?**

| | | Finish primary school | Do the Junior Cert | Do the Leaving Cert | Go to college or university | Don't know |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 10.1% | 5.5% | 16.8% | 48.8% | 18% |
| | No card | 7% | 2.8% | 16.6% | 54.8% | 18.2% |
| Rural | Medical Card | 8.6% | 3% | 14.2% | 49.9% | 23.4% |
| | No card | 7.3% | 4.2% | 14.2% | 53% | 20.4% |

**3. How far do you think you will actually go in school?**

| | | Finish primary school | Do the Junior Cert | Do the Leaving Cert | Go to college or university | Don't know |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 7.5% | 6.2% | 17.6% | 45.6% | 21.1% |
| | No card | 3.8% | 4.1% | 19% | 51.1% | 21.1% |
| Rural | Medical Card | 5.3% | 4.9% | 19.4% | 40.7% | 26.9% |
| | No card | 3.8% | 4.4% | 19.5% | 46.7% | 24% |

**4. I'm proud of my school work**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 47.2% | 40.5% | 6.6% | 5.2% |
| | No card | 44% | 47.9% | 4.9% | 3.2% |
| Rural | Medical Card | 26.4% | 58% | 10.2% | 5% |
| | No card | 27.6% | 60.8% | 7.6% | 3.6% |

**5. I feel I'm doing well in school**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 41.3% | 44.8% | 8.1% | 5% |
| | No card | 40.3% | 51.4% | 5.1% | 3% |
| Rural | Medical Card | 27% | 61.5% | 7.6% | 3.4% |
| | No card | 28.6% | 62% | 7% | 1.8% |

**Appendix 4 (Cont.)**

**6. To do well at school you need to be very smart**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 40.9% | 24% | 22.1% | 12.1% |
| | No card | 29.6% | 28.1% | 29.8% | 11.7% |
| Rural | Medical Card | 26.6% | 29.3% | 32.6% | 10.2% |
| | No card | 22.8% | 30.7% | 37.5% | 8.3% |

**7. To do well at school you need to do lots of hard work**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 54% | 30.3% | 9.1% | 5.7% |
| | No card | 49.9% | 34.5% | 11.2% | 3.9% |
| Rural | Medical Card | 38.8% | 41.7% | 13.6% | 4.9% |
| | No card | 36.5% | 44.7% | 14% | 4.1% |

**8. I like reading**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 46.5% | 31.1% | 10.2% | 11.2% |
| | No card | 45.8% | 35.5% | 9.3% | 8.9% |
| Rural | Medical Card | 38.5% | 38.9% | 11.4% | 9.9% |
| | No card | 39.3% | 41.2% | 12.4% | 6.1% |

**9. I like working out Maths problems**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 36.3% | 27.1% | 16.4% | 19.1% |
| | No card | 34.8% | 29.8% | 18% | 16.7% |
| Rural | Medical Card | 24.4% | 29.6% | 24% | 21% |
| | No card | 25.1% | 32.6% | 26.4% | 14.9% |

**10. I think school outings are boring**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 9.7% | 3.5% | 13.9% | 70.6% |
| | No card | 5.9% | 3.4% | 10.5% | 79.3% |
| Rural | Medical Card | 7.3% | 6.3% | 21% | 63.5% |
| | No card | 6.5% | 4.2% | 20.7% | 66.9% |

**Appendix 4 (Cont.)**

**11. My mind wanders a lot when I am reading**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 27.7% | 24.4% | 21% | 24.6% |
| | No card | 23.4% | 25.7% | 25% | 24.5% |
| Rural | Medical Card | 18.7% | 35.6% | 29% | 15.8% |
| | No card | 16.7% | 34.1% | 30.3% | 17.8% |

**12. I think Maths is boring**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 20% | 11.5% | 21.2% | 45.6% |
| | No card | 17.2% | 13% | 25.6% | 43.2% |
| Rural | Medical Card | 19.3% | 17.2% | 30.6% | 31.3% |
| | No card | 14.3% | 16.8% | 34.4% | 33.4% |

**13. I enjoy going on school trips (e.g., to the museum or the swimming pool)**

| | | Strongly agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Urban | Medical Card | 85.1% | 8.5% | 1.6% | 3.7% |
| | No card | 88.2% | 8.6% | .8% | 1.6% |
| Rural | Medical Card | 78.7% | 18% | .7% | 1.6% |
| | No card | 81.3% | 14.5% | 1.8% | 1.8% |

***How do you rate yourself on...?***

| | | | Near the top | Around the middle | Near the bottom |
|---|---|---|---|---|---|
| **14. Maths** | Urban | Medical card | 43.3% | 44% | 11.6% |
| | | No card | 44.6% | 47% | 8.1% |
| | Rural | Medical card | 36.4% | 50.9% | 11.9% |
| | | No card | 40.9% | 49.5% | 9.2% |
| **15. English Reading** | Urban | Medical card | 50.8% | 34.8% | 13.5% |
| | | No card | 52.2% | 39.2% | 8% |
| | Rural | Medical card | 51% | 37.9% | 9.8% |
| | | No card | 51.9% | 39.2% | 8.7% |
| **16. English Writing** | Urban | Medical card | 45.2% | 37.9% | 15.7% |
| | | No card | 47.5% | 39.8% | 12.2% |
| | Rural | Medical card | 37.5% | 49.1% | 11.9% |
| | | No card | 39.5% | 48.1% | 12% |

**Appendix 4 (Cont.)**

**17. How often do you borrow books from your school or public library?**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 14.3% | 37.8% | 20.2% | 27.2% |
| | No card | 11.9% | 37.5% | 24.4% | 25.5% |
| Rural | Medical Card | 11.1% | 32.6% | 32.9% | 22.8% |
| | No card | 9.3% | 33.6% | 33.9% | 22.7% |

**18. How often do you read books for fun at home?**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 38.4% | 24.7% | 13.9% | 21.8% |
| | No card | 41.6% | 27.6% | 15.4% | 14.7% |
| Rural | Medical Card | 34.8% | 26.6% | 15.7% | 21.8% |
| | No card | 36.4% | 28.5% | 18.1% | 15.8% |

**19. How often do you read part of a magazine or comic?**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 31.9% | 27.9% | 17.5% | 22.2% |
| | No card | 30% | 30% | 18.7% | 20.7% |
| Rural | Medical Card | 24.1% | 31.9% | 18.7% | 24.1% |
| | No card | 23.2% | 35.1% | 21.5% | 18.9% |

**20. How often do you read web pages on the internet, outside of school hours?**

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 28.9% | 20.7% | 13.4% | 36.2% |
| | No card | 25.9% | 24.7% | 19.2% | 29.8% |
| Rural | Medical Card | 10.5% | 17.5% | 18.5% | 52.6% |
| | No card | 9.9% | 19% | 24% | 46.2% |

## Appendix 4 (Cont.)

### 21. How much time do you spend watching TV / videos, on school days?

| | | More than 4 hours daily | 2-4 hours daily | 1-2 hours daily | 0-1 hours daily |
|---|---|---|---|---|---|
| Urban | Medical Card | 28.3% | 16.4% | 26.2% | 27.4% |
| | No card | 19.9% | 17.4% | 32.3% | 29.5% |
| Rural | Medical Card | 20.1% | 21.3% | 27.4% | 29.6% |
| | No card | 13.2% | 19.4% | 34.2% | 31.7% |

### 22. How much time do you spend playing computer games, on school days?

| | | More than 4 hours daily | 2-4 hours daily | 1-2 hours daily | 0-1 hours daily |
|---|---|---|---|---|---|
| Urban | Medical Card | 22.8% | 12.7% | 21.2% | 42% |
| | No card | 15.1% | 13% | 22.6% | 48.1% |
| Rural | Medical Card | 12.1% | 10.3% | 21.4% | 53.2% |
| | No card | 6.8% | 7.2% | 21.8% | 62.3% |

### 23. How much time do you spend doing your homework, on school days?

| | | More than 4 hours daily | 2-4 hours daily | 1-2 hours daily | 0-1 hours daily |
|---|---|---|---|---|---|
| Urban | Medical Card | 3.2% | 5.8% | 19.7% | 70.5% |
| | No card | 2.8% | 3.8% | 20% | 72.7% |
| Rural | Medical Card | 2.6% | 6.3% | 26.3% | 63.9% |
| | No card | 2.6% | 4.8% | 27% | 64.5% |

### 24. How often to you 'hang out' with your friends, outside of school hours?

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 73.3% | 13.5% | 4.8% | 7.7% |
| | No card | 68.7% | 16% | 7.6% | 7.1% |
| Rural | Medical Card | 43.8% | 29.5% | 14.2% | 11.8% |
| | No card | 28.5% | 38.6% | 20.7% | 11.4% |

### 25. How often do you play sports, outside of school hours?

| | | Every day, or nearly every day | Once or twice a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 58.2% | 24.5% | 6.4% | 9.8% |
| | No card | 61.9% | 25.1% | 5.7% | 6.5% |
| Rural | Medical Card | 61.8% | 24.9% | 5.9% | 6.5% |
| | No card | 66.2% | 24.4% | 5.3% | 3.6% |

**Appendix 4 (Cont.)**

**26. Are you a member of any of the following clubs or groups?**

| | Urban | | Rural | |
|---|---|---|---|---|
| | Medical Card | No card | Medical Card | No card |
| a.Boy Scouts / Girl Guides | 15.8% | 16.3% | 9.5% | 8% |
| b. Youth Club | 22.9% | 14.7% | 13.5% | 9.6% |
| c. Band / Choir / Orchestra | 23.5% | 24.4% | 27.6% | 35.3% |
| d. Sports Club | 54.6% | 61.9% | 63.4% | 71.3% |
| e. Homework club | 23.8% | 9.6% | 13.4% | 7% |
| f. Dance / Drama Group | 30.4% | 32.2% | 32.9% | 33.7% |
| g. Online Community (e.g. Bebo, MySpace) | 42% | 35.4% | 15.8% | 13.9% |

## Appendix 5: Urban and rural 3rd class parent responses by medical card status in 2007

**Table 5A. Number of children in 3rd class in 2007 with and without Medical Cards**

| | Total | Medical Card | No card | Missing / ambiguous |
|---|---|---|---|---|
| Urban | 4621 | 1486 (32.2%) | 1528 (33.1%) | 1607 (34.8%) |
| Rural | 2236 | 702 (31.4%) | 1039 (46.5%) | 495 (22.14%) |

The vast majority of the percentages reported below are calculated using these figures as denominators. Two exceptions occur in Questions 20 and 21, where figures relating to Partner's Education or Employment Status are calculated out of the total number of valid responses to the question. This was done to take account of the fact that many respondents do not have partners.

### 1. In the year before your child went to primary school, did s/he attend any of the following?

| | | Early Start | Preschool |
|---|---|---|---|
| Urban | Medical Card | 25.6% | 65.1% |
| | No card | 17.6% | 76.7% |
| Rural | Medical Card | 4% | 73.4% |
| | No card | 2.9% | 82.5% |

### 2. How often did anyone in your home read books to your child before s/he started primary school?

| | | Every day | A few times a week | A few times a month | Rarely or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 23.1% | 51.5% | 16.8% | 6.2% |
| | No card | 35.4% | 48.7% | 12% | 2.6% |
| Rural | Medical Card | 31.8% | 47.6% | 16.1% | 3.4% |
| | No card | 38% | 48.5% | 10.5% | 1.3% |

### 3. How did you choose this school for your child?

| | | Closest to home | Good school | Siblings attending | Only possibility |
|---|---|---|---|---|---|
| Urban | Medical Card | 46.8% | 51.7% | 30.5% | 3.8% |
| | No card | 45.3% | 57.5% | 30.1% | 2.4% |
| Rural | Medical Card | 67.9% | 38.3% | 34.3% | 1.6% |
| | No card | 68.8% | 39.8% | 31.3% | 1.4% |

### 4. When s/he was in Infants classes, did your child read to you or anyone in your home?

| | | Every day | A few times a week | A few times a month | Rarely or never |
|---|---|---|---|---|---|
| Urban | Medical Card | 41.6% | 41.1% | 7.7% | 7.3% |
| | No card | 46.2% | 40.5% | 6.8% | 5.7% |
| Rural | Medical Card | 44.4% | 36.9% | 8.7% | 7.8% |
| | No card | 47.5% | 38.3% | 5.8% | 6.8% |

**Appendix 5: (Cont.)**

**5. On a typical school day, about how long does your child spend on English homework (e.g., re*ading, writing, spelling*)?**

| | | Five minutes or less | About 15 minutes | About 30 minutes | About an hour | More than an hour |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 5.9% | 53.4% | 28.4% | 8.5% | 2.3% |
| | No card | 5.4% | 56.3% | 31.1% | 5.2% | .9% |
| Rural | Medical Card | 7.5% | 50.4% | 30.9% | 8.7% | 1.3% |
| | No card | 9.2% | 59% | 25.9% | 3.6% | 1.3% |

**6. How would you describe your child on each of the following?**

| | | | Very good | OK | Not great | Don't know |
|---|---|---|---|---|---|---|
| English Reading | Urban | Medical Card | 61.4% | 32% | 6.1% | .2% |
| | | No card | 71.1% | 23.9% | 4.5% | .3% |
| | Rural | Medical Card | 62.4% | 30.2% | 6.4% | .3% |
| | | No card | 65.4% | 29.3% | 4.9% | / |
| English writing | Urban | Medical Card | 47.3% | 43% | 7.3% | .3% |
| | | No card | 57.2% | 35.6% | 6.1% | .1% |
| | Rural | Medical Card | 46.4% | 42.3% | 8.7% | .3% |
| | | No card | 52.9% | 38.4% | 7.6% | / |
| Maths | Urban | Medical Card | 48.1% | 40.3% | 9.2% | .3% |
| | | No card | 55.8% | 35.1% | 7.7% | .1% |
| | Rural | Medical Card | 42.3% | 43.6% | 11.5% | .4% |
| | | No card | 53.3% | 38.8% | 6.4% | .1% |

**7. Do you think your child enjoys reading?**

| | | Very much | Somewhat | Not a lot | Not at all |
|---|---|---|---|---|---|
| Urban | Medical Card | 55.2% | 34.9% | 8.7% | .9% |
| | No card | 61.3% | 30.9% | 6.6% | 1% |
| Rural | Medical Card | 55.1% | 31.8% | 11.8% | 1% |
| | No card | 54.5% | 36.9% | 7.6% | .9% |

**8. Do you think your child enjoys mathematics?**

| | | Very much | Somewhat | Not a lot | Not at all |
|---|---|---|---|---|---|
| Urban | Medical Card | 39.1% | 41.6% | 16.9% | 1.7% |
| | No card | 41.4% | 44.6% | 12.2% | 1.6% |
| Rural | Medical Card | 34.2% | 43.2% | 18.4% | 3.8% |
| | No card | 40.2% | 46.1% | 12.2% | 1.2% |

**Appendix 5: (Cont.)**

**9. On a typical school day, about how long does your child spend on maths homework (*e.g., sums, tables)*?**

| | | Five minutes or less | About 15 minutes | About 30 minutes | About an hour | More than an hour |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 9.3% | 55.7% | 26.3% | 5.6% | 1.6% |
| | No card | 10.6% | 62.7% | 22.5% | 2.9% | .3% |
| Rural | Medical Card | 8.8% | 50.3% | 32.8% | 5.6% | 1.3% |
| | No card | 10.8% | 62.2% | 22.1% | 3.1% | .8% |

**10. Does your child attend a homework club at the moment?**

| | | Yes |
|---|---|---|
| Urban | Medical Card | 18.8% |
| | No card | 8.1% |
| Rural | Medical Card | 7.7% |
| | No card | 4.7% |

**11. How many things on the list below does your child use in your home?**

| | | Atlas | Family Dictionary | Computer |
|---|---|---|---|---|
| Urban | Medical Card | 21.1% | 44.1% | 52% |
| | No card | 31.5% | 53.3% | 71.5% |
| Rural | Medical Card | 41.5% | 62.1% | 57.4% |
| | No card | 52% | 67.4% | 73.1% |

**12. What is your relationship to this child?**

| | | Mother | Father | Female Guardian | Male Guardian |
|---|---|---|---|---|---|
| Urban | Medical Card | 83.4% | 8.7% | 1.3% | .6% |
| | No card | 83.8% | 11.1% | .9% | .1% |
| Rural | Medical Card | 87% | 6.3% | .7% | / |
| | No card | 86.7% | 9.7% | .4% | / |

**13. Which of the following people normally live in your home?**

| | | Mother | Father | Female Guardian | Male Guardian |
|---|---|---|---|---|---|
| Urban | Medical Card | 92.7% | 46.3% | 3.4% | 5.9% |
| | No card | 95.3% | 81.8% | 2% | 4.2% |
| Rural | Medical Card | 95.3% | 70.7% | 2.4% | 3.6% |
| | No card | 96.1% | 91.8% | .9% | 1.6% |

**14. Average family size of 3rd class pupils in 2007 based on number of brothers and sisters**

| | | Mean No. of Siblings | Min-Max |
|---|---|---|---|
| Urban | Medical card | 2.35 (*SD* = 1.69) | 0 – 12 |
| | No card | 1.7 (*SD* = 1.22) | 0 – 9 |
| Rural | Medical card | 2.48 (*SD* = 1.74) | 0 – 12 |
| | No card | 2.07 (*SD* = 1.22) | 0 – 12 |

## Appendix 5: (Cont.)

### 15. Percentages of 3rd class pupils in 2007 with differing numbers of sibling

| | | Only child | 1 / 2 siblings | 3 / 4 siblings | 5 or more |
|---|---|---|---|---|---|
| Urban | Medical card | 9.8% | 50% | 30.1% | 10% |
| | No card | 12.4% | 68.2% | 15.7% | 3.7% |
| Rural | Medical card | 7.2% | 50.3% | 31.5% | 11.1% |
| | No card | 4.7% | 64.4% | 27.5% | 3.4% |

### 16. Does anyone in your home use a public library?

| | | Yes |
|---|---|---|
| Urban | Medical Card | 62% |
| | No card | 68% |
| Rural | Medical Card | 62.5% |
| | No card | 69.5% |

### 17. Which language is most often used when speaking with your child at home?

| | | English | Irish | Another Language |
|---|---|---|---|---|
| Urban | Medical Card | 88.5% | 0.3% | 5.1% |
| | No card | 90.4% | - | 5.4% |
| Rural | Medical Card | 87.7% | 4.8% | 0.7% |
| | No card | 89.7% | 5.6% | 0.7% |

### 18. How often do you read the following?

| | | | Most days or every day | A few times a week | A few times a month | Hardly ever or never |
|---|---|---|---|---|---|---|
| Newspaper | Urban | Medical Card | 53.6% | 27.1% | 5.5% | 5.7% |
| | | No card | 55.6% | 30% | 7.3% | 3.3% |
| | Rural | Medical Card | 43.4% | 35.6% | 9.4% | 6.1% |
| | | No card | 50.1% | 33.9% | 7.9% | 3.5% |
| Magazines | Urban | Medical Card | 19% | 36.2% | 20.3% | 7.5% |
| | | No card | 16.2% | 35.8% | 28.7% | 8.5% |
| | Rural | Medical Card | 17.5% | 34% | 25.4% | 12.7% |
| | | No card | 12.6% | 38.5% | 28.5% | 11.5% |
| Books | Urban | Medical Card | 24.2% | 18.6% | 23.8% | 17.6% |
| | | No card | 29.2% | 20.5% | 26.8% | 15.2% |
| | Rural | Medical Card | 30.5% | 19.8% | 21.7% | 17.8% |
| | | No card | 30.3% | 17.6% | 25.8% | 19% |

### 19. About how many books are in your home?

| | | None | 1 – 10 | 11 – 50 | 51 – 100 | 101 – 250 | >250 |
|---|---|---|---|---|---|---|---|
| Urban | Medical Card | 4.4% | 27.5% | 38.6% | 17% | 7.4% | 4.6% |
| | No card | 0.7% | 13% | 33% | 22.1% | 16.9% | 13.4% |
| Rural | Medical Card | 1.1% | 11.3% | 32.3% | 23.5% | 19.4% | 11.4% |
| | No card | 0.3% | 5.5% | 25.9% | 24.3% | 23.7% | 19.5% |

**Appendix 5: (Cont.)**

**20. What is the highest exam taken by you, and by your partner, if you have one?**

| | | | Never sat an exam | Inter / Group /Junior cert | Leaving cert | Third-level cert or diploma | Third-level degree | Other |
|---|---|---|---|---|---|---|---|---|
| Urban | You | Medical Card | 18.4% | 33.6% | 18.6% | 15.8% | 4.8% | 4.2% |
| | | No card | 7.3% | 24.4% | 26.8% | 24.8% | 9% | 4.5% |
| | Partner | Medical Card | 25.5% | 35.5% | 18.8% | 11.7% | 7.4% | 1.1% |
| | | No card | 9.9% | 30.7% | 29.1% | 18.3% | 8.8% | 3.2% |
| Rural | You | Medical Card | 15% | 24.5% | 27.2% | 19.4% | 5.8% | 4.6% |
| | | No card | 3.5% | 15.2% | 30.8% | 28.6% | 15.1% | 4.2% |
| | Partner | Medical Card | 24.5% | 38.4% | 22.3% | 9.5% | 3.6% | 1.8% |
| | | No card | 6.5% | 34% | 28.2% | 19% | 9.8% | 2.5% |

**21. How would you describe the employment situation of you and your partner, if you have one?**

| | | | Full-time job | Part-time job | Full-time housewife/ husband | Un-employed | On long-term sick leave / disability | Full-time student | Other |
|---|---|---|---|---|---|---|---|---|---|
| Urban | You | Medical Card | 12.4% | 31.6% | 29.1% | 14.3% | 4.1% | 2.8% | 2.9% |
| | | No card | 39% | 30% | 22.4% | 1.4% | 2.4% | .9% | 2.1% |
| | Partner | Medical Card | 49.7% | 12.4% | 7% | 17.8% | 9.3% | 1.5% | 2.4% |
| | | No card | 85.4% | 5.2% | 3.7% | 1.7% | .9% | .2% | 2.9% |
| Rural | You | Medical Card | 12.1% | 26.5% | 42.3% | 7% | 3.8% | 2.1% | 3.1% |
| | | No card | 39.9% | 27.3% | 26.3% | 1.7% | .9% | .8% | 2.1% |
| | Partner | Medical Card | 50.6% | 14.5% | 5.8% | 14.5% | 5.6% | 1.2% | 7.9% |
| | | No card | 83.1% | 6.3% | 2.6% | 1% | 1.1% | .1% | 5.8% |

## Appendix 6: Urban and rural 3rd class pupils' ratings by teachers in 2007

**Table 6A. Number of pupils in 3rd class in 2007 for whom ratings were completed by teachers, and of those, the number with medical cards**

| | Total Number | Number of Rating Forms returned | Number missing Rating Forms | Number with Medical Cards | Number without Medical Cards |
|---|---|---|---|---|---|
| Urban | 4,621 | 4,469 (96.7%) | 152 (3.3%) | 1,486 (32.2%) | 1,528 (33.1%) |
| Rural | 2,236 | 2,178 (97.4%) | 58 (2.6%) | 702 (31.4%) | 1,039 (46.5%) |

**Table 6B. Number of days 3rd class pupils attended school in the quarter January to March 2007**

| | | Mean number of days (*SD*) |
|---|---|---|
| Urban | Medical Card | 51.76 (*12.9*) |
| | No Card | 53.46 (*13.6*) |
| | All | 52.56 (*15.6*) |
| Rural | Medical Card | 53.15 (*15.4*) |
| | No Card | 54.76 (*14.1*) |
| | All | 54.32 (*15.4*) |

**Table 6C. Teachers' ratings of their 3rd class pupils' behaviour in school in 2007**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 2.5% | 7.3% | 19.2% | 28.3% | 42.5% |
| | No Card | .9% | 3.5% | 12% | 25.4% | 58.1% |
| | All | 2.6% | 6.5% | 17.1% | 26.4% | 45.4% |
| Rural | Medical Card | 1% | 3.5% | 12.2% | 28.8% | 52.3% |
| | No Card | .2% | 1.6% | 9.9% | 23.5% | 62.3% |
| | All | .7% | 3% | 11% | 25.5% | 56.5% |

**Table 6D. Teachers' ratings of their 3rd class pupils' academic ability in 2007**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 6.7% | 16.9% | 33.8% | 26.6% | 15.6% |
| | No Card | 2.9% | 8.3% | 27.1% | 31.7% | 29.9% |
| | All | 6.4% | 14.1% | 30.3% | 27.4% | 19.5% |
| Rural | Medical Card | 4.5% | 14.3% | 33.9% | 28.2% | 17.3% |
| | No Card | 2.5% | 7.6% | 28.3% | 31.9% | 27.5% |
| | All | 4.6% | 11.6% | 30.8% | 28.1% | 21.9% |

**Table 6E. Teachers' ratings of home support with reference to 3rd class pupils in 2007**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 5.3% | 12.5% | 25.7% | 30.3% | 25.4% |
| | No Card | 1% | 3.6% | 15.7% | 29.5% | 49.8% |
| | All | 5.9% | 10.3% | 21.6% | 27.1% | 32.6% |
| Rural | Medical Card | 3% | 7.8% | 23.3% | 30.8% | 32.9% |
| | No Card | .6% | 2.9% | 12.8% | 29.2% | 52.2% |
| | All | 2.6% | 5.6% | 17.8% | 29.4% | 41.5% |

**Table 6F. Teachers' ratings of 3rd class pupils' English reading ability in 2007**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 8.5% | 19.7% | 28.2% | 25.8% | 17.4% |
| | No Card | 3.7% | 12.5% | 23% | 29.5% | 31% |
| | All | 8.4% | 17% | 25.4% | 26.3% | 20.6% |
| Rural | Medical Card | 4.5% | 14.3% | 31.6% | 26.8% | 20.9% |
| | No Card | 2.7% | 11.2% | 25.9% | 24.9% | 32.9% |
| | All | 4.9% | 13.9% | 27.5% | 24.5% | 25.9% |

**Table 6G. Teachers' ratings of 3rd class pupils' Mathematics ability in 2007**

| | | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|---|
| Urban | Medical Card | 10.9% | 20.1% | 31% | 23.4% | 14.1% |
| | No Card | 5.4% | 12.1% | 25.7% | 31.6% | 24.8% |
| | All | 9.8% | 17.5% | 28.2% | 25.7% | 16.5% |
| Rural | Medical Card | 6.6% | 15% | 31.9% | 27.4% | 15.3% |
| | No Card | 4.2% | 9.6% | 28.4% | 29.9% | 25% |
| | All | 6.7% | 13% | 29.3% | 27.7% | 19.2% |

## Appendix 7: Correlations between urban and rural pupils' reading and maths scores and a variety of background factors (pupils with a family medical card only)[15]

**Table 7A. Correlations between 3rd class pupils' achievements in reading and maths and variables on the Parent Questionnaire in 2007 (medical cards holders only)**

| Your Child | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 2. How often did anyone in your home read books to your child before s/he started primary school? | $\rho_{1430} = .18$, $p < .001$ | $\rho_{691} = .35$, $p < .001$ | $\rho_{1432} = .1$, $p < .001$ | $\rho_{690} = .21$, $p < .001$ |
| 4. When s/he was in Infants classes, did your child read to you or anyone in your home? | $\rho_{1432} = .16$, $p < .001$ | $\rho_{685} = .21$, $p < .001$ | $\rho_{1434} = .08$, $p = .003$ | $\rho_{684} = .11$, $p = .003$ |
| 5. On a typical school day, about how long does your child spend on English homework? | $\rho_{1444} = -.09$, $p < .001$ | $\rho_{691} = -.16$, $p < .001$ | $\rho_{1445} = -.05$, $p = .04$ | $\rho_{690} = -.06$, $p = .1$ |
| 6a. How is your child at English reading? | $\rho_{1458} = .51$, $p < .001$ | $\rho_{692} = .54$, $p < .001$ | $\rho_{1460} = .32$, $p < .001$ | $\rho_{691} = .36$, $p < .001$ |
| 6b. How is your child at English writing? | $\rho_{1431} = .31$, $p < .001$ | $\rho_{681} = .31$, $p < .001$ | $\rho_{1433} = .17$, $p < .001$ | $\rho_{680} = .21$, $p < .001$ |
| 6c. How is your child at Mathematics? | $\rho_{1430} = .28$, $p < .001$ | $\rho_{681} = .25$, $p < .001$ | $\rho_{1432} = .36$, $p < .001$ | $\rho_{680} = .4$, $p < .001$ |
| 7. Do you think your child enjoys reading? | $\rho_{1462} = .29$, $p < .001$ | $\rho_{697} = .37$, $p < .001$ | $\rho_{1464} = .18$, $p < .001$ | $\rho_{696} = .22$, $p < .001$ |
| 8. Do you think your child enjoys mathematics? | $\rho_{1456} = .1$, $p < .001$ | $\rho_{696} = .11$, $p = .003$ | $\rho_{1458} = .23$, $p < .001$ | $\rho_{695} = .26$, $p < .001$ |
| 9. On a typical school day, about how long does your child spend on maths homework? | $\rho_{1444} = -.12$, $p < .001$ | $\rho_{690} = -.12$, $p = .002$ | $\rho_{1445} = -.15$, $p < .001$ | $\rho_{689} = -.15$, $p < .001$ |

[15] A note on the correlations presented here. While the achievement variable is on an interval scale, many of the predicting (background) variables are on ordinal scales. Therefore, in line with best practice, Spearman correlations were performed and those values are presented here. However, subsequent factor analyses and regressions are based on Pearson correlations. It should be noted, however, that the Pearson and Spearman correlations are very similar in magnitude. Darker shading indicates higher correlations.

**Table 7B. Correlations between 3rd class pupils' achievements in reading and maths and variables on the Parent Questionnaire in 2007 (medical card holders only) (cont.)**

| You and Your Home | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 14. Brothers and sisters | $\rho_{1444} = -.15$, $p < .001$ | $\rho_{692} = -.12$, $p = .001$ | $\rho_{1446} = -.13$, $p < .001$ | $\rho_{691} = -.1$, $p = .009$ |
| 14 Brothers & sisters categories | $\rho_{1444} = -.14$, $p < .001$ | $\rho_{692} = -.12$, $p = .001$ | $\rho_{1446} = -.14$, $p < .001$ | $\rho_{691} = -.08$, $p = .05$ |
| 18a. How often do you read newspapers? | $\rho_{1345} = -.02$, $p = .48$ | $\rho_{661} = .02$, $p = .68$ | $\rho_{1347} = -.04$, $p = .14$ | $\rho_{660} = -.06$, $p = .16$ |
| 18b. How often do you read magazines? | $\rho_{1214} = -.04$, $p = .16$ | $\rho_{625} = -.06$, $p = .12$ | $\rho_{1217} = -.05$, $p = .11$ | $\rho_{624} = -.14$, $p < .001$ |
| 18c. How often do you read books? | $\rho_{1233} = .05$, $p = .08$ | $\rho_{626} = .16$, $p < .001$ | $\rho_{1235} = .04$, $p = .19$ | $\rho_{625} = .06$, $p = .17$ |
| 19. About how many books are in your home? | $\rho_{1456} = .25$, $p < .001$ | $\rho_{692} = .38$, $p < .001$ | $\rho_{1458} = .25$, $p < .001$ | $\rho_{691} = .23$, $p < .001$ |
| 20. What is the highest exam taken by you? | $\rho_{1337} = .2$, $p < .001$ | $\rho_{642} = .19$, $p < .001$ | $\rho_{1339} = .19$, $p < .001$ | $\rho_{641} = .15$, $p < .001$ |

**Table 7C. Correlations between 3rd class pupils' achievements in reading and maths and variables on the Pupil Questionnaire in 2007 (medical card holders only)**

Comparison of Urban & Rural pupils in terms of the correlations between achievement in reading and maths and variables on the Pupil Questionnaire
Grade 3 2007, Medical Card Holders

| Section 1 | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 1. How much do you like school? | $\rho_{1456} = .007$, $p = .78$ | $\rho_{695} = .09$, $p = .02$ | $\rho_{1458} = -.02$, $p = .47$ | $\rho_{694} = .09$, $p = .02$ |
| 2. How far would you like to go in school? | $\rho_{1188} = .21$, $p < .001$ | $\rho_{528} = .21$, $p < .001$ | $\rho_{1190} = .16$, $p < .001$ | $\rho_{527} = .14$, $p = .001$ |
| 3. How far do you think you will actually go in school? | $\rho_{1124} = .22$, $p < .001$ | $\rho_{490} = .19$, $p < .001$ | $\rho_{1124} = .22$, $p < .001$ | $\rho_{489} = .18$, $p < .001$ |

**Table 7D. Correlations between 3rd class pupils' achievements in reading and maths and variables on the Pupil Questionnaire in 2007 (medical card holders only) (cont.)**

| Section 2 | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 4. I'm proud of my school work | $\rho_{1456} = .13$, $p < .001$ | $\rho_{695} = .1$, $p = .01$ | $\rho_{1458} = .05$, $p = .06$ | $\rho_{694} = .07$, $p = .06$ |
| 5. I feel I'm doing well in school | $\rho_{1450} = .11$, $p < .001$ | $\rho_{694} = .06$, $p = .11$ | $\rho_{1452} = .04$, $p = .16$ | $\rho_{693} = .07$, $p = .07$ |
| 6. To do well at school you need to be very smart | $\rho_{1448} = -.09$, $p = .001$ | $\rho_{688} = -.1$, $p = .009$ | $\rho_{1450} = -.12$, $p < .001$ | $\rho_{687} = -.08$, $p = .05$ |
| 7. To do well at school you need to do lots of hard work | $\rho_{1448} = -.02$, $p = .48$ | $\rho_{690} = .02$, $p = .66$ | $\rho_{1450} = -.04$, $p = .12$ | $\rho_{689} = -.05$, $p = .16$ |
| 8. I like reading | $\rho_{1448} = .12$, $p < .001$ | $\rho_{688} = .25$, $p < .001$ | $\rho_{1450} = .02$, $p = .41$ | $\rho_{687} = .13$, $p = .001$ |
| 9. I like working out maths problems | $\rho_{1446} = -.06$, $p = .02$ | $\rho_{690} = -.02$, $p = .67$ | $\rho_{1448} = .08$, $p = .003$ | $\rho_{689} = .14$, $p < .001$ |
| 10. I think school outings are boring | $\rho_{1430} = -.22$, $p < .001$ | $\rho_{684} = -.18$, $p < .001$ | $\rho_{1431} = -.21$, $p < .001$ | $\rho_{683} = -.21$, $p < .001$ |
| 11. My mind wanders a lot when I am reading | $\rho_{1428} = -.06$, $p = .02$ | $\rho_{691} = -.03$, $p = .41$ | $\rho_{1430} = -.07$, $p = .005$ | $\rho_{690} = .01$, $p = .78$ |
| 12. I think maths is boring | $\rho_{1437} = .06$, $p = .03$ | $\rho_{686} = .08$, $p = .03$ | $\rho_{1439} = -.07$, $p = .007$ | $\rho_{685} = -.05$, $p = .21$ |
| 13. I enjoy going on school trips | $\rho_{1446} = .1$, $p < .001$ | $\rho_{690} = .12$, $p = .001$ | $\rho_{1448} = .07$, $p = .009$ | $\rho_{689} = .08$, $p = .03$ |

| Section 3 | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 14. Rating of self in maths | $\rho_{1446} = .07$, $p = .01$ | $\rho_{691} = .05$, $p = .2$ | $\rho_{1448} = .18$, $p < .001$ | $\rho_{690} = .17$, $p < .001$ |
| 15. Rating of self in English reading | $\rho_{1449} = .28$, $p < .001$ | $\rho_{688} = .28$, $p < .001$ | $\rho_{1451} = .13$, $p < .001$ | $\rho_{687} = .11$, $p = .004$ |
| 16. Rating of self in English writing | $\rho_{1444} = .09$, $p = .001$ | $\rho_{687} = .05$, $p = .18$ | $\rho_{1446} = -.003$, $p = .92$ | $\rho_{686} = .04$, $p = .26$ |

**Table 7E. Correlations between 3rd class pupils' achievements in reading and maths and variables on the Pupil Questionnaire in 2007 (medical card holders only) (cont.)**

| Section 4 | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| 17. How often do you borrow books from your school or public library? | $\rho_{1455}$ = -.04, $p$ = .13 | $\rho_{693}$ = .04, $p$ = .26 | $\rho_{1457}$ = -.03, $p$ = .24 | $\rho_{692}$ = -.005, $p$ = .89 |
| 18. How often do you read books for fun at home? | $\rho_{1445}$ = .04, $p$ = .12 | $\rho_{689}$ = .12, $p$ = .001 | $\rho_{1446}$ = .02, $p$ = .4 | $\rho_{688}$ = .006, $p$ = .87 |
| 19. How often do you read part of a magazine or comic? | $\rho_{1454}$ = .05, $p$ = .08 | $\rho_{689}$ = .04, $p$ = .35 | $\rho_{1456}$ = .02, $p$ = .47 | $\rho_{688}$ = .05, $p$ = .17 |
| 20. How often do you read web pages on the internet, outside of school hours? | $\rho_{1450}$ =-.004, $p$ = .87 | $\rho_{691}$ = -.001, $p$ = .98 | $\rho_{1452}$ = .03, $p$ = .35 | $\rho_{690}$ = .02, $p$ = .54 |
| 21. How much time do you spend watching TV / videos, on school days? | $\rho_{1438}$ = -.05, $p$ = .07 | $\rho_{686}$ = -.01, $p$ = .8 | $\rho_{1440}$ = -.06, $p$ = .02 | $\rho_{685}$ = .01, $p$ = .71 |
| 22. How much time do you spend playing computer games, on school days? | $\rho_{1442}$ = -.13, $p$ < .001 | $\rho_{676}$ = -.13, $p$ = .001 | $\rho_{1444}$ = -.13, $p$ < .001 | $\rho_{675}$ = -.06, $p$ = .11 |
| 23. How much time do you spend doing your homework, on school days? | $\rho_{1450}$ = -.1, $p$ < .001 | $\rho_{691}$ = -.17, $p$ < .001 | $\rho_{1452}$ = -.09, $p$ < .001 | $\rho_{690}$ = -.22, $p$ < .001 |
| 24. How often do you 'hang out' with your friends, outside of school hours? | $\rho_{1451}$ =-.004, $p$ = .89 | $\rho_{692}$ = -.21, $p$ < .001 | $\rho_{1453}$ = .02, $p$ = .44 | $\rho_{691}$ = -.16, $p$ < .001 |
| 25. How often do you play sports, outside of school hours? | $\rho_{1445}$ = .03, $p$ = .21 | $\rho_{690}$ = .05, $p$ = .22 | $\rho_{1447}$ = .06, $p$ = .02 | $\rho_{689}$ = .08, $p$ = .03 |

**Table 7F. Correlations between 3rd class pupils' achievements in reading and maths and class teachers' ratings in 2007 (medical card holders only)**

| | Reading | | Maths | |
|---|---|---|---|---|
| | Urban | Rural | Urban | Rural |
| Behaviour | $\rho_{1438}$ = .22, $p$ < .001 | $\rho_{676}$ = .22, $p$ < .001 | $\rho_{1439}$ = .24, $p$ < .001 | $\rho_{675}$ = .2, $p$ < .001 |
| Academic Ability | $\rho_{1436}$ = .62, $p$ < .001 | $\rho_{678}$ = .66, $p$ < .001 | $\rho_{1437}$ = .64, $p$ < .001 | $\rho_{677}$ = .65, $p$ < .001 |
| Home Support | $\rho_{1431}$ = .34, $p$ < .001 | $\rho_{676}$ = .36, $p$ < .001 | $\rho_{1432}$ = .34, $p$ < .001 | $\rho_{675}$ = .37, $p$ < .001 |
| English Reading | $\rho_{1434}$ = .65, $p$ < .001 | $\rho_{677}$ = .71, $p$ < .001 | $\rho_{1435}$ = .54, $p$ < .001 | $\rho_{676}$ = .58, $p$ < .001 |
| Mathematics | $\rho_{1435}$ = .5, $p$ < .001 | $\rho_{664}$ = .58, $p$ < .001 | $\rho_{1436}$ = .62, $p$ < .001 | $\rho_{663}$ = .67, $p$ < .001 |

**Table 7G. *t*-tests examining the influence of relevant variables on reading and maths achievement in urban and rural samples**

| | Urban | | Rural | |
|---|---|---|---|---|
| **Parent Q** | **Reading** | **Maths** | **Reading** | **Maths** |
| 11a. Atlas | $t_{1463} = 4.43$, $p < .001$ | $t_{1465} = 6.07$, $p < .001$ | $t_{697} = 5.24$, $p < .001$ | $t_{650} = 4.57$, $p < .001$ |
| 11b. Dictionary | $t_{1463} = 7.05$, $p < .001$ | $t_{1465} = 7.84$, $p < .001$ | $t_{697} = 6.63$, $p < .001$ | $t_{696} = 6.39$, $p < .001$ |
| 11c. Computer | $t_{1463} = 7.52$, $p < .001$ | $t_{1464.5} = 7.91$, $p < .001$ | $t_{697} = 3.93$, $p < .001$ | $t_{696} = 3.46$, $p = .001$ |
| 13b. Father living at home | $t_{1463} = .75$, $p = .45$ | $t_{1465} = .69$, $p = .5$ | $t_{697} = 1.77$, $p = .08$ | $t_{696} = 1.33$, $p = .19$ |
| 16. Use of library | $t_{1448} = 4.61$, $p < .001$ | $t_{1450} = 2.99$, $p = .003$ | $t_{694} = 3.6$, $p < .001$ | $t_{693} = 2.08$, $p = .04$ |
| **Pupil Q** | | | | |
| 26a. Boy scouts | $t_{1411} = -4.09$, $p < .001$ | $t_{1413} = -4$, $p < .001$ | $t_{678} = -2.47$, $p = .01$ | $t_{677} = -2.02$, $p = .04$ |
| 26b. Youth club | $t_{1407} = -4.53$, $p < .001$ | $t_{1409} = -2.43$, $p = .015$ | $t_{115.6} = -3.14$, $p = .002$ | $t_{676} = -1.85$, $p = .07$ |
| 26c. Band / choir | $t_{1405} = -.49$, $p = .62$ | $t_{1407} = -1.95$, $p = .05$ | $t_{666} = 1.44$, $p = .15$ | $t_{665} = -.13$, $p = .9$ |
| 26d. Sports club | $t_{1418} = -1.61$, $p = .11$ | $t_{1420} = -.1$, $p = .92$ | $t_{682} = -.69$, $p = .49$ | $t_{681} = .27$, $p = .79$ |
| 26f. Dance / drama club | $t_{1403} = -1.95$, $p = .05$ | $t_{949} = -3.5$, $p < .001$ | $t_{520.6} = 2.34$, $p = .02$ | $t_{676} = 1.04$, $p = .3$ |
| 26g. Online community | $t_{1373} = -2.4$, $p = .02$ | $t_{1424} = -.12$, $p = .9$ | $t_{676} = -1.82$, $p = .07$ | $t_{675} = -.82$, $p = .41$ |

## Appendix 8

## Results of Factor Analyses and Multiple Regression of Reading Achievement upon Components

### Urban

### Factor Analysis

All variables which had been identified as being related to reading achievement were entered into a factor analysis with the view to creating factor scores in order to reduce the number of variables. Following a varimax rotation, a 3-component solution, explaining 32% of the variance, was found to fit the correlation matrix. The components were defined as follows (see Table 8A):

- Presence of educational resources / practices within the home
- Positive student attitudes towards school
- Participation in extra-curricular activities

### Multiple Regression

Factor scores were created using the 'regression' option and a multiple regression, regressing reading achievement upon these three components, was conducted (see Table 8B). Together, these three components significantly predicted reading achievement, $F(3, 891) = 86.63$, $p < .001$, with $R^2$ adjusted value of 22.3%. As is clear from Table 2, all three components significantly predicted reading achievement, with Component 2, Student Attitudes, having the highest beta value (.36), followed by Component 1, Home Educational Practices (.26) and finally Component 3, Student Activities (-.16). According to these analyses, reading achievement is significantly higher for those students who have more positive attitudes towards school, are exposed to more educational resources or practices in the home, and who tend not to engage in as many extra-curricular activities.

## Appendix 8 (Cont.)

**Table 8A. Three Component Solution for Items in Urban Sample.**

| Item | Component | | |
|---|---|---|---|
| | Home Educational Practices | Positive Student Attitudes | Extra-Curricular Activities |
| Parent Q19. About how many books are in your home? | .673 | | |
| Parent Q2. How often did anyone in your home read books to your child before s/he started primary school? | .649 | | |
| Parent Q11. Does your child use an atlas in your home? | .540 | | |
| Parent Q16. Does anyone in your home use a public library? | .506 | | |
| Parent Q4. When s/he was in Infants classes, did your child read to you or anyone in your home? | .489 | | |
| Parent Q11b. Does your child use a family dictionary in your home? | .470 | | |
| Parent Q.20 What is the highest exam taken by you? | .448 | | |
| Teacher Rating of Home Support | | .648 | |
| Teacher Rating of Behaviour | | .646 | |
| Pupil Q13. I enjoy going on school trips | | .503 | |
| Pupil Q2. How far would you like to go in school? | | .497 | |
| Pupil Q10. I think school outings are boring | | -.383 | |
| Pupil Q22. How much time do you spend playing computer games on school days? | | -.292 | |
| Pupil Q26f. Are you a member of a dance or drama group? | | | .602 |
| Pupil Q26b. Are you a member of a youth club? | | | .594 |
| Pupil Q26a. Are you a member of the Boy Scouts/Girl Guides? | | | .591 |
| Pupil Q26g. Are you a member of an online social network? | | | .581 |

**Table 8B. Summary of Multiple Regression Analyses predicting Reading Achievement from Home Educational Practices, Student Attitudes and Participation in Extracurricular Activities for Urban Sample.**

| Predictor | B | SEB | β |
|---|---|---|---|
| Constant | 87.99 | 0.40 | |
| Home Educational Practices | -3.55 | 0.40 | .26 |
| Student Attitudes | 4.98 | 0.41 | .36 |
| Extracurricular Activities | 2.17 | 0.41 | -.16 |

*Note:* Adjusted $R^2 = .22$, $p < .001$

**Rural**

**Factor Analysis**

Table 8C presents the 3-component solution for the rural sample. Although the components consist of a slightly different set of variables, they appeared to represent components similar to those which were identified for the urban sample (i.e., Educational resources / practices within the home, Positive student attitudes towards school; Participation in extra-curricular activities). Together, they explained 31% of the variance.

**Multiple Regression**

The regression of reading upon these components revealed that the three components significantly predicted reading achievement, F (3, 373) = 69.11, p < .001, explaining 35.2% of the variance in Reading scores (see Table 8D). All three components made a significant, unique, contribution to reading scores, with Home Practices having the highest beta (.43), followed by Student Attitudes (.40) and finally, Student Activities (-.11). Similar to the solution for urban pupils, these results suggest that reading achievement is significantly higher for those students who have more educational resources or practice in the home, have more positive attitudes towards school and who tend not to engage in as many extra-curricular activities. However, this combination of variables predicted reading achievement in rural areas to a greater extent than in urban areas (35.2% v 22.3%; see beta values in Tables 8B and 8D). Also, for the rural pupils, Home Educational Practices (Component 1) made the largest contribution while for the urban pupils, Student Attitudes (Component 2) had the highest predictive power in relation to reading scores.

## Appendix 8 (Cont.)

**Table 8C. Three Component Solution for Items in Rural Sample.**

| Item | Component | | |
|---|---|---|---|
| | Home Educational Practices | Positive Student Attitudes | Extra-Curricular Activities |
| Parent Q19. About how many books are in your home? | .756 | | |
| Parent Q2. How often did anyone in your home read books to your child before s/he started primary school? | .681 | | |
| Parent Q18c. How often do you read books? | .658 | | |
| Parent Q.20 What is the highest exam taken by you? | .477 | | |
| Parent Q16. Does anyone in your home use a public library? | .429 | | |
| Parent Q11. Does your child use an atlas in your home? | .398 | | |
| Parent Q4. When s/he was in Infants classes, did your child read to you or anyone in your home? | .341 | | |
| Teacher Rating of Behaviour | | .708 | |
| Teacher Rating of Home Support | | .595 | |
| Pupil Q2. How far would you like to go in school? | | .458 | |
| Pupil Q22. How much time do you spend playing computer games on school days? | | -.442 | |
| Pupil Q10. I think school outings are boring | | -.367 | |
| Pupil Q13. I enjoy going on school trips | | .298 | |
| Pupil Q26g. Are you a member of an online social network? | | | .677 |
| Pupil Q26f. Are you a member of a dance or drama group? | | .391 | .531 |
| Pupil Q26a. Are you a member of the Boy Scouts/Girl Guides? | | | .461 |
| Pupil Q26b. Are you a member of a youth club? | | | .420 |
| Pupil Q24. How often do you 'hang out' with your friends, outside of school hours? | | | .281 |

**Appendix 8 (Cont.)**

**Table 8D. Summary of Multiple Regression Analyses predicting Reading Achievement from Home Educational Practices, Student Attitudes and Participation in Extracurricular Activities for Rural Sample.**

| Predictor | B | SEB | β |
|---|---|---|---|
| Constant | 93.64 | 0.58 | |
| Home Educational Practices | 6.13 | 0.59 | .43, $p < .001$ |
| Student Attitudes | 5.85 | 0.60 | .40, $p < .001$ |
| Extracurricular Activities | 1.62 | 0.60 | -.11, $p = .007$ |

*Note:* Adjusted $R^2 = .35$, $p < .001$