A Report on the First Phase of the Evaluation of DEIS

Susan Weir and Peter Archer,
with Adrian O'Flaherty
and Lorraine Gilleece

Educational Research Centre

A REPORT ON THE FIRST PHASE OF THE EVALUATION OF DEIS

Report to the Department of Education and Skills

Susan Weir and Peter Archer
with
Adrian O'Flaherty and Lorraine Gilleece

Educational Research Centre

http://www.erc.ie

Cataloguing-in-publication data

Weir, Susan

A report on the first phase of the evaluation of DEIS: Report to the Department of Education and Skills / Susan Weir and Peter Archer
Dublin: Educational Research Centre

x, 109 p., 30 cm.

ISBN: 978 0 900440 35 9

1. Educational equalisation – Ireland – Evaluation
2. Education and state – Ireland

2011
I Weir, Susan II Archer, Peter III Title.
379.2609415 dc23

Cover designed by eprint
Printed in the Republic of Ireland by eprint, Dublin

A REPORT ON THE FIRST PHASE OF THE EVALUATION OF DEIS

EXECUTIVE SUMMARY

In 2007, the Educational Research Centre (ERC) gathered data on the achievements in reading and mathematics of pupils in 120 schools participating in the urban dimension of the School Support Programme (SSP) under DEIS. In 2010, follow-up achievement data were collected from pupils in the same 120 schools. The purpose of this report is to provide an account of the achievements of pupils on both occasions. While achievement data were also collected from a sample of schools in the rural dimension of the SSP, the outcome of that exercise will be the subject of a separate report, and, therefore, results are reported here in summary form only.

A comparison of the achievements of pupils in 2007 with their counterparts in 2010 revealed that the latter group had significantly higher test scores in reading and mathematics at each grade level tested. A comparison of the same pupils' achievements on two occasions (e.g., those in 2nd class in 2007 with their scores on a different level of the test in 5th class in 2010) also showed significant improvements. At school level, school average scores in reading and mathematics more often increased than decreased between 2007 and 2010. All of these findings are suggestive of improved outcomes over the first three years of the programme. It should be borne in mind that the increases observed occurred despite the presence of several factors which might have been expected to impact negatively on achievement. These include increased poverty levels nationally (and almost certainly in participating schools), fewer exemptions of weak pupils from testing, better overall attendance among the student cohorts in 2010 than in 2007 (probably indicating that greater numbers of poor performers were included in the testing), greater percentages in the 2010 sample of pupils whose home language is neither English nor Irish, and increased class size at 2nd class level in the 120 schools in the sample.

Implementation data collected for the evaluation indicate that, at national level, most aspects of the urban dimension of the SSP under DEIS as it was originally designed have been put in place. In terms of implementation at school level, evaluation data

collected from a variety of sources, indicate that levels of engagement with aspects of the programme such as school planning and uptake of literacy and numeracy initiatives appear to be very high. Furthermore, feedback from teachers and others involved in implementing the programme suggests that the programme is being positively received.

While the improvements in achievements appear clearcut, it is not possible to say at this stage whether or not they are the result of participation in the programme, and, if so, which aspects of the programme are having an impact. Addressing these questions will require the collection of other data from schools. In particular, data on the extent to which the programme is being implemented fully by schools, and the extent to which this distinguishes schools that improved from those that did not, will be examined closely. It will not be possible to rely solely on self-report measures for this, and therefore, it will involve visits to schools and observational work in classrooms. Also, it will be necessary to continue to monitor achievements in participating schools in order to see if gains have been maintained or built on.

CONTENTS

TABLES

FIGURE

PREFACE

DEIS (Delivering Equality of Opportunity In Schools) is aimed at addressing the educational needs of children and young people from disadvantaged communities. Its core elements comprise a standardised system for identifying, and regularly reviewing, levels of disadvantage; and an integrated School Support Programme (SSP) which is intended to bring together, and build upon, existing interventions for schools and school clusters and communities with concentrated levels of educational disadvantage (DES, 2005). At the time of writing, about 340 urban and 340 rural primary schools, and 202 second level schools are participating in the SSP.

At the request of the Department of Education and Skills (DES), The Educational Research Centre (ERC) began work in 2007 on an independent evaluation of the SSP component of DEIS in primary and post-primary schools. The evaluation has many facets, and is attempting to monitor the implementation of the programme and assess its impact on students, families, schools, and communities at primary and post-primary levels. A wide variety of issues are being investigated over the course of the programme and beyond. While questionnaire studies are being used to investigate some issues, others involve more intensive data collection with smaller numbers of respondents. The monitoring of change in achievement (test scores in reading and mathematics) over the period 2006/07 to 2009/10 is a major component of the evaluation. Pupils in 2nd, 3rd, and 6th class were tested in reading and mathematics in a sample of 120 schools in the urban dimension of the SSP, while in the rural dimension of the scheme, pupils in 3rd and 6th class were tested. The focus of the present report is solely on reporting pupil achievement outcomes in urban primary schools participating in the SSP, although it draws on some other evaluation data to interpret the outcome data.

Chapter 1 provides a description of the DEIS programme and its evaluation. It also gives a summary account of previous provision for disadvantage, as well as an overview of previous evaluations of that provision. Chapter 2 describes the sample of pupils and the procedures used to collect test data. Chapters 3 to 5 are concerned with reporting the results of achievement testing. Chapter 3 focuses mainly on describing cross-sectional comparisons between pupils in 2007 and 2010 (e.g., 2nd class in 2007 with 2nd class in 2010). Chapter 4 is concerned with longitudinal comparisons involving pupils who took

the tests on both occasions (i.e., those who were in 2nd class in 2007 and in 5th class in 2010, and those who were in 3rd class in 2007 and in 6th class in 2010). Chapter 5 contains some school-level findings, and summarises pupil achievements in schools in the rural dimension of the SSP. In Chapter 6, some implementation issues are explored. For example, schools' engagement with planning and uptake of programmes is described in brief. A final chapter contains a brief discussion, and some emergent conclusions.

This is the second report in a series concerned with the evaluation of the SSP under DEIS. The first report, submitted in 2009, was concerned primarily with reporting baseline achievement outcomes from participating schools (Weir, Archer & Millar, 2009).

We would like to express our thanks to the members of the Advisory Group for the evaluation of DEIS, including staff from various sections of the Department of Education and Skills, representatives from the Irish National Teachers Organisation (INTO), Irish Primary Principals Network (IPPN), National Parents Council (NPC), and school management bodies. Thanks are due also to Eva Moran, John Coyle, Mary Rohan, Hilary Walshe and Paula Chute of the Educational Research Centre. In particular, we wish to acknowledge the huge contribution to the evaluation made by schools. The co-operation of principals, teachers and pupils with the often quite significant demands of the evaluation is gratefully acknowledged.

CHAPTER 1: BACKGROUND

This chapter has three main parts. The first is a brief description of previous initiatives aimed at addressing disadvantage and of the primary level dimension of the School Support Programme (SSP) under DEIS[1]. The second is an overview of the evaluation of the SSP at primary level. The third is a summary of the findings arising from previous evaluations that focused on schemes or programmes aimed at addressing disadvantage. This is followed by a brief outline of how the achievement data from the evaluation is organised and presented in the current report.

The School Support Programme (SSP) under DEIS

DEIS is the most recent in a series of programmes provided by the Department of Education and Skills (DES) aimed at addressing the needs of disadvantaged pupils at primary level. Some of the programme's predecessors are described briefly below.

Previous initiatives aimed at addressing disadvantage

Provision for disadvantage has been a feature of the Irish Education system for many years. The first mainstream scheme began in 1984 when the Department of Education introduced a set of measures to deal with the problem of disadvantage in selected primary schools in Dublin, Cork and Limerick. The additional provision, which later became known as the Disadvantaged Areas Scheme (DAS), initially allowed for increased capitation grants for participating schools, as well as a grant for the development of home-school links. Subsequently, schools were also eligible for concessionary teaching posts. By 2006/2007 the number of schools in the scheme had grown to 308, representing almost 10% of the 3,160 primary schools in the population. While entry to the scheme effectively closed in 1996/1997, it continued to have an impact in that participation in the DAS has sometimes been used to select subsets of schools for participation in schemes introduced subsequently. For example, eligibility for participation in Breaking the Cycle (urban), the Home-School-Community Liaison Scheme (HSCL), and Early Start was confined to schools that were already participating in the DAS (see Weir & Archer, 2005).

[1] A detailed account of the programme and of resources allocated to participating schools is available at www.education.ie

The HSCL scheme was initiated in 1990 as a pilot project in 55 primary schools that were already part of DAS. The HSCL scheme is a preventative strategy targeted at pupils who are at risk of not reaching their potential in the educational system due to background characteristics which tend to affect adversely pupil attainment and school retention. The scheme is concerned with establishing partnership and collaboration between parents and teachers in the interests of children's learning. The basic unit of the scheme is at local school level where a full-time co-ordinator serves the liaison needs of one school or of a number of schools in a given catchment area. Following several expansions, the HSCL scheme became available in almost all of the 310 primary and 210 post-primary schools in DAS. The scheme was 'mainstreamed' in 1993 (i.e., it was no longer regarded as a pilot project).

Early Start was introduced to eight schools in disadvantaged areas in the 1994/95 school year and to a further 32 schools in the following year. The initiative was set up to provide for three-year-old pre-school children. The programme is broadly concerned with the development of the whole child but it has a particular focus on the promotion of language and cognitive development and the prevention of school failure. Participating children are entitled to attend an Early Start centre, almost all of which are attached to primary schools, for a two and a half hour session in either the morning or afternoon for the duration of the primary school year. A qualified teacher and a Child Care worker are responsible for two groups of up to 15 children. All schools involved in Early Start have the support of a HSCL co-ordinator who is available to help parents of Early Start participants to become more involved in their children's education.

Following a review of the DAS scheme by Kellaghan, Weir, Ó hUallacháin, & Morgan, (1995), Breaking the Cycle was introduced by the Department of Education as a pilot scheme in 1996/97 to 33 urban schools and 123 rural schools to assist them in addressing problems associated with catering for large numbers of pupils from disadvantaged backgrounds. The scheme in rural schools provided for grants for the purchase of books, teaching materials and equipment, a dedicated grant for out-of-school activities and special projects, and continuing professional development for teachers. A major provision of the scheme in rural schools was the appointment of shared co-ordinators in clusters of participating schools to work with pupils and their families. The scheme in urban schools also provided for grants for the purchase of

books, teaching materials and equipment; enhanced capitation grants; and continuing professional development for teachers. A key provision of the urban dimension of the scheme was the reduction in size of junior classes (Junior infants – 2nd class) to about 15 pupils.

The immediate predecessor to DEIS – Giving Children an Even Break (GCEB) – differed from previous schemes in two important ways. First, it set out to provide additional resources to schools serving pupils from disadvantaged backgrounds, regardless of whether they contained large or small numbers of target pupils. Second, it had a significant rural component modelled on Breaking the Cycle (rural), which involved the allocation of a shared post to clusters of proximal schools. Schools were identified for participation in GCEB based on their responses to a survey administered by the ERC on behalf of the DES in 2000. This process resulted in a rank order of schools based on socioeconomic characteristics of families served. As well as extra funding, the highest scoring urban schools were eligible to be considered for additional staff. About one-quarter of schools in urban areas that participated in the survey were considered for additional posts to permit the operation of maximum junior and senior class sizes of 20 and 27 respectively. Just over half of these schools received additional posts based on their existing pupil and teacher numbers.

The DEIS programme

The DEIS programme focuses on addressing the educational needs of children and young people from disadvantaged communities, from pre-school through second-level education (3 to18 years). The aim of the programme is to ensure that the educational needs of children and young people from disadvantaged communities are prioritised and effectively addressed. Its core elements comprise a standardised system for identifying, and regularly reviewing, levels of disadvantage; an integrated School Support Programme which is intended to bring together, and build upon, existing interventions for schools and school cluster/communities with a concentrated level of educational disadvantage (DES, 2005). The differences between urban and rural disadvantage are taken into account in targeting actions under the programme at primary level. About

340 urban and 340 rural primary schools, and 200 second level schools are participating in the SSP[2].

In urban schools, participating schools are divided into two 'bands', depending on their assessed level of disadvantage in a survey conducted by the ERC in 2005. Schools in Band 1 (about 200 schools) have higher assessed levels of disadvantage than those in Band 2. Resource allocation under the scheme varies somewhat for schools in Bands 1 and 2. For example, schools in Band 1 are permitted to operate maximum class sizes of 20 pupils in all junior classes (Junior infants through 2nd class) and 24 in all senior classes (3rd class through 6th class). According to the Department's website, Band 1 and 2 urban schools have access to the following:

- the allocation of administrative principals on lower enrolment and staffing figures than apply in primary schools generally
- additional non-pay/capitation allocation based on level of disadvantage
- financial allocation under school books grant scheme based on level of disadvantage and additional funding targeted primarily at supporting the establishment, development and ongoing operation of book loan/rental schemes
- access to the School Meals Programme, with co-ordination provided at cluster level
- access to a literacy/numeracy support service and to literacy/numeracy programmes as follows: Reading Recovery; First Steps; Maths Recovery; Ready, Set, Go Maths; and homework clubs/summer camps assisting literacy and numeracy development
- access to Home/School/Community Liaison services (including literacy and numeracy initiatives involving parents and family members, such as paired reading, paired maths, Reading for Fun and Maths for Fun)
- access to a range of supports (both academic and non-academic, and including after-school and holiday-time supports) for young people, with the best practices identified through an evaluation of the School Completion Programme being incorporated into cluster-level action plans

[2] The second-level dimension of the SSP is also being evaluated by the ERC, but will not be described here.

- access to transfer programmes supporting progression from primary to second-level
- access to planning supports
- access to a range of professional development support
- eligibility for teachers/principals to apply for sabbatical leave scheme.

Rural schools in the SSP had access to a teacher/co-ordinator serving a cluster of schools, or alternative additional financial supports to underpin the development of home, school and community linkages, the implementation of literacy and numeracy measures, and school planning. In addition, rural schools are also entitled to the following:

- additional non-pay/capitation allocation based on level of disadvantage
- additional funding under school books grant scheme
- access to the School Meals Programme
- access to after-school and holiday-time supports
- access to transfer programmes supporting progression from primary to second level
- access to a range of professional development supports
- eligibility for teachers/principals to apply for sabbatical leave scheme.

One of the key features of the DEIS programme, and one that applies to both urban and rural schools in the SSP, is the requirement for schools to engage in a school planning process. This involves emphasising target setting, monitoring progress towards targets, and measuring outcomes. Schools were provided with planning templates in priority areas (e.g., literacy and numeracy) by the SDPS, and were given on-site assistance with the development of their plans. By 2008, virtually all schools had a plan in place, and almost 90% of responding schools indicated that an SDPS facilitator had some involvement in a school planning day in their school.

The SSP was introduced to primary schools in 2005/2006, although in many schools, implementation of some of the keys elements of the programme did not begin until 2006/2007 or later.

The evaluation of the SSP at primary level

The ERC is the independent evaluator of the SSP component of DEIS. The evaluation began in early 2007, and is attempting to monitor the implementation of the programme and assess its impact on students, families, schools, and communities at primary and post-primary levels. The thrust of the evaluation is systemic in the sense that it is designed to inform policy on the role that initiatives like DEIS can play in promoting social inclusion and to identify models of good practice. While some evaluation activities involve all SSP schools, most activities have been confined to samples of schools and/or students selected using research and evaluation procedures designed to permit conclusions to be generalised to all participating schools. Separate steering groups were established to provide advice on the evaluation of the primary and post-primary elements of the programme.

Evaluation components at primary level

The evaluation has a number of different components at primary level including, but not limited to, the following:

Monitoring changes in achievement

This involves monitoring changes in test scores at primary level, and other pupil outcomes, over the period 2006/07 to 2009/10. At post-primary level, it involves monitoring changes in variables such as retention levels and Junior Certificate examination results in participating schools.

Surveys of participating schools

A School Questionnaire, completed on a number of occasions over the course of the evaluation, will be used in conjunction with other data available to the Department of Education and Skills (DES) to assess schools' progress in relation to targets specified in their action plans.

Examination of implementation issues

Some implementation issues can be dealt with in the School Questionnaire(s) referred to above, or similar questionnaires for teachers or other personnel (e.g., HSCL coordinators). While these questionnaire studies typically involve large numbers of

respondents, more intensive data collection with smaller numbers of respondents is also necessary (e.g., classroom observation, and interviews with pupils, members of the Implementation Group, Professional Development Service for Teachers (PDST) advisors, and other support personnel in selected schools).

Longitudinal studies

It is planned to undertake one or more studies of pupils falling into particular categories of interest (e.g., pupils showing early signs of reading difficulties, children from families in which English or Irish is not normally spoken in the home, Travellers). Data from the baseline and follow-up testing phases of the evaluation are relevant to this, but other testing will be carried out also. Useful data may be collected also by classroom observation, focusing on selected pupils, interviews with specialist staff, and interviews with parents.

Evaluations within the evaluation

ERC staff are currently liaising with PDST staff regarding the use of national data on Reading Recovery as part of the broader evaluation of the SSP.

Evaluation activities undertaken to date

The following represent the main evaluation activities that have been completed, or are ongoing, at primary level.

Collection of test data

Reading and Mathematics test data were collected from students in second, third and sixth class in selected urban primary schools in May 2007. Students in second, third, fifth, and sixth class in the same schools were tested again in May 2010. (See the Method section for more details on the tests used and on the composition of the sample, and see Appendix 1 for a graphical outline of the grade levels and cohorts involved in the testing.) This aspect of the evaluation is the main focus of the present report.

Reading and Mathematics test data were collected from pupils in third and sixth class in selected rural primary schools in May 2007 and again in 2010.

On both occasions, teachers were asked to provide ratings and other information about pupils (including those who were withdrawn or otherwise absent from testing). Further detail on this, and on the parent questionnaire below, is provided in Chapter 2.

Collection of data from parents

A questionnaire for parents was also used. In 2007, it was issued to parents of pupils in all grade levels, while parents of second and third class pupils were asked to complete it in 2010. It contains a few questions about socioeconomic factors (e.g., possession of a medical card) and a larger number of questions about family processes that have been shown to be related to children's educational outcomes (e.g., the extent to which young children were/are read to). Some questions have been taken from questionnaires used in previous surveys to facilitate comparison.

A special study of disadvantage in rural schools

The inclusion of rural schools in the testing programme can be seen as part of the 'special study…on literacy and numeracy in rural primary schools with high concentrations of disadvantage, with the assistance of teacher/coordinators' referred to on p.79 of the DEIS action plan (DES, 2005). A report on the first phase of this study was submitted to the DES in March 2009 (Weir, Archer & Millar, 2009). However, it was recognised in that report that the issues that gave rise to the suggestion that this study should take place could not be fully addressed without also undertaking a testing programme in schools in rural areas not characterised by high concentrations of disadvantage. The testing of such a sample took place on a small scale (involving 32 schools) in May 2010.

Study of early literacy difficulties among pupils in a subsample of SSP schools

In line with the longitudinal nature of the evaluation, a new set of tests for the identification of early reading difficulties (Drumcondra Test of Early Literacy or 'DTEL') was tried out in October 2007 in the First classes of 22 schools in the SSP. It was subsequently tried out in May 2008 in the Senior infant classes of another group of about 20 schools in the SSP. It is planned to monitor the progress of pupils who appeared to be at risk of experiencing reading difficulties (in that they obtained low scores on DTEL) and to collect other data on what steps were taken in the schools to develop these pupils' reading skills.

Survey of schools on the implementation of the programme

The first questionnaire relating to implementation issues was sent to all primary school principals in the SSP (both urban and rural) at the end of the third term of 2007/08. The questionnaire dealt with the school's experience of the planning process, and sought information on any specific targets that may have been set. It also contained questions about the principal's experience and opinion of the SSP and the extent to which the school had access to various elements of the SSP. Members of the (then) School Development Planning Service (SDPS) provided very useful advice on the questionnaire. Data generated by this exercise was subsequently fed back to the (then) Primary Professional Development Service (PPDS). A follow-up questionnaire on planning is being developed, and will be sent to schools during the 2011/2012 school year.

Meetings with HSCL co-ordinators

Between January and May 2009, members of the evaluation team met with each of 13 Area Cluster groups of HSCL co-ordinators at locations countrywide. These meetings were intended to provide an outline of the evaluation to those present, to disseminate initial evaluation findings, and to seek the views of HSCL co-ordinators on DEIS and on disadvantage more generally.

Interviews with Learning Support Teachers in a sample of schools

Interviews with (in the main) Learning Support teachers in about 15 SSP schools were conducted in June 2009 to seek their views on the DTEL and on DEIS more generally. These interviews have been transcribed, and the content has been used in the development of a questionnaire to be distributed to learning support teachers in late 2011.

Development of an 'Implementation' database

Work has begun on establishing an 'Implementation Database' which is intended to link existing evaluation data on schools with data on their use of resources under DEIS (e.g., their use of literacy and numeracy programmes).

Questionnaire for class teachers

Class teachers in schools in the urban and rural test samples responded to a questionnaire in spring 2010 concerning issues such as classroom practice and their views of DEIS. Completed questionnaires were received from about two-thirds of teachers. As it was felt desirable to elicit feedback on the programme from *all* teachers, those who did not respond in spring 2010 were sent a slightly adapted version of the questionnaire in autumn 2010. Analysis of the data gathered is underway, and some preliminary findings will be presented in this report.

Meetings with groups of principals

A small number of meetings between Centre staff and groups of principals of SSP schools has taken place. These meetings typically involved Centre staff giving a presentation on the evaluation, followed by an open discussion forum and feedback on the programme from principals.

A summary of the findings of previous evaluations of programmes aimed at addressing disadvantage

The impact of previous programmes and schemes designed to address disadvantage has been examined in a series of evaluations, with the evaluation of DEIS being the most recent. The following represents a brief overview of findings relating to the impact of previous schemes. As the ultimate goal of schemes to address the problems experienced by pupils from disadvantaged backgrounds, whether stated explicitly or not, is to bring about improvements in their educational achievements and attainments, gathering data on educational outcomes has been a feature of many of the evaluations. The overview, therefore, will focus mainly on describing the impact, if any, of several interventions on the achievements of pupils at primary level. Specifically, the findings from the evaluations of Early Start, the HSCL scheme, and Breaking the Cycle will be described[3]. In all cases, these evaluations involved the administration of standardised tests in English reading and mathematics to assess the impact of the programmes on the achievements of participating pupils at primary level. More detailed summaries of these and other evaluations are available in a separate report (Weir & Archer, 2005), and an overview of provision and strategy for disadvantage in Ireland is contained in Archer & Weir (2005).

As part of the evaluation of the HSCL scheme, baseline test data on reading and mathematics were collected from 1st, 3rd and 5th class pupils in six participating schools in 1991 (Ryan, 1999). Follow-up testing was undertaken in 1995 with pupils in the same grade levels in the same schools. As the latter group experienced most or all of their schooling in the presence of the HSCL scheme, they represented the 'experimental' group. The results revealed that 1st class pupils in the experimental group performed better than the 1991 group on all 16 objectives in the Appraisal of Early Reading Skills, and their mean overall score was significantly above that of the 1991 group. In mathematics, the 1995 group performed better than their 1991 counterparts on two-thirds of the test's objectives, and equally well on a further 10% of items. At 3rd class level, pupils in the experimental group significantly outperformed the 1991 group on reading, and on two-thirds of the objectives of the mathematics test. However, at 5th class level,

[3] For more information on the HSCL Scheme, Early Start, and the Breaking the Cycle scheme, see www.education.ie.

the 1995 group were outperformed in both reading and mathematics by the 1991 group. Ryan suggested that several considerations needed to be borne in mind when interpreting the findings. First, achievements were assessed in a relatively small sample of HSCL schools. Second, as with any intervention, the scheme took time to be implemented and become embedded in school life. Third, the parents of pupils in junior classes were the major targets under the scheme. Ryan suggested that the latter factors were likely to be implicated in the explanation of the stronger performance of pupils in the junior grades relative to that of pupils in 5th class.

An evaluation of Early Start in the first eight participating schools was undertaken during the initial four years of operation between 1994 to 1998 (Educational Research Centre, 1998; Kelly & Kellaghan, 1999). The assessment of the impact of the programme on the achievements of pupils was a key element of the evaluation. As a baseline measure, all pupils who were in second class in the eight participating schools in 1994/95 when Early Start was introduced were tested in reading and mathematics using the Drumcondra Primary Reading Test (Level 2, Form A) and the Drumcondra Mathematics Test (Level 1, Form B). Subsequently, the same tests were administered in 1998/99 and 1999/2000 in the same eight schools to cohorts of second class pupils that included Early Start participants. A similar procedure was adopted in relation to junior infant pupils who were assessed in the areas of cognition, language, and motor skills development using the American Guidance Service 'Early Screening Profiles' tests. Follow-up testing of the first two cohorts of Early Start pupils was undertaken when they were in junior infants in 1995/96 and 1996/97, along with their classmates who had not participated in Early Start. Junior Infant teachers were interviewed and asked for additional information on pupils, including comparisons between Early Start and non-Early Start participants.

The Junior Infant teachers who were interviewed believed that children who had attended Early Start adapted more readily to school than non-Early Start children. However, this was not reflected in the achievement data. The scores of the first two cohorts of Early Start pupils on the Early Screening Profile when they were in Junior Infants did not differ significantly from those of pupils who had not attended Early Start, although the language performance of the second cohort was found to be significantly better than that of the first cohort. A similar picture emerged at 2nd class level, where no significant achievement differences were found between pupils who had and had not attended Early

Start. Kelly and Kellaghan (1999) suggested that problems with implementation, which had been identified in the first evaluation report (Educational Research Centre, 1998), may have contributed to the failure of the programme to impact on achievement. Some of the factors implicated were: the duration and intensity of the programme, which were considered inadequate by international standards; poor attendance rates in some schools; difficulties in securing the active involvement of some parents, and problems in the working relationship between teachers and childcare workers. Arguably more importantly, the report suggested that there may not have been sufficient emphasis on cognitive activities in the Early Start curriculum. It also endorsed reservations expressed by many Early Start teachers about the adequacy of the inservice training provided and the absence of curricular guidelines. Subsequently, the Department of Education and Science initiated a series of measures designed to address some of these shortcomings. Additional inservice support, involving visits to classrooms, and the preparation of a draft curriculum, were made available to Early Start providers in 1998. The implementation of Early Start has been monitored by the ERC. Lewis & Archer (2002 & 2003), for example, found that some, but not all, of the implementation issues identified in earlier reports had been addressed.

In the most recent programme evaluation in which test data were gathered – that of Breaking the Cycle – standardised achievement tests in reading and mathematics were administered to pupils in 3rd and 6th classes in the first (1997) and fourth (2000) years of the scheme, and to 6th class pupils in 2003. Levels 3 and 6 of the Drumcondra Primary Reading Test and of the Drumcondra Primary Mathematics Test (both Form A) were used to assess reading and mathematics. Baseline test scores in 1997 indicated that the achievements of pupils were significantly below those of pupils nationally (Weir & Eivers, 1998). Follow-up test data revealed no improvement in average achievement three years later, and, indeed, indicated that there was a statistically significant decrease in the average literacy and numeracy achievements of pupils in 6th class between 1997 and 2000 (Weir & Ryan, 2000). By 2003, 37.6% of the 6th class cohort were scoring below the 10th percentile in reading compared with fewer than 30% six years earlier, while the numbers scoring at this level in mathematics had risen to 45.6% from 35.5% in 1997 (Weir, 2003). It was also noted that there were very few high-achieving pupils, with fewer than 1% of pupils achieving scores above the 90th percentile in 2003. The failure of the scheme to effect improvements in achievement may have been the result of

a combination of factors, including poor attendance, high teacher turnover, the presence of relatively large numbers of unqualified teachers, teachers' instructional priorities, including insufficient attention to literacy, a lack of targeted professional development opportunities for teachers, and low expectations for pupils on the part of teachers and parents (Weir, Milis & Ryan, 2002).

In contrast, other sources of evidence from the evaluations suggest that the various programmes have impacted on participating schools in ways that would generally be regarded as very positive, and, indeed, likely to give rise to improved educational outcomes. Schemes have tended to be positively evaluated by those directly involved. For example, in the urban dimension of the Breaking the Cycle scheme, the scheme was perceived by junior class teachers to have had a range of benefits. Almost all believed that pupils had benefited from the reduction in the size of junior classes, citing factors such as increased individual attention to pupils, easier identification of individual pupils' needs, and a belief that participating in the scheme had improved their ability to respond effectively to the learning needs of disadvantaged pupils (Weir & Ryan, 2000). In Early Start, teachers perceived the scheme to have had positive effects on pupils, but as pointed out earlier, this was not supported by test data. Parents provided data for a number of programme evaluations, and parents involved in the HSCL scheme reported increased confidence in their own capacities to help their children (Conaty, 1999, 2002; Ryan, 1994).

As well as attempting to increase achievement and participation, many of the schemes had other, more 'intermediate' aims. For example, the HSCL scheme was found to have achieved its aim of increasing the involvement of parents in their children's education (Ryan, 1994), and Archer and Shortt (2003) found that large majorities of HSCL coordinators and school principals believed that the scheme had made progress toward its aims relating to community involvement and the dissemination of good practice as well its aims relating to pupils and parents. Furthermore, schemes to address disadvantage also aim to target additional resources towards schools serving pupils from disadvantaged backgrounds by increasing levels of funding and staffing. Archer and Weir (2005) noted that attempts towards positive discrimination have been successful in targeted schools in relation to staffing and some other resources (see also Kellaghan, Weir, Ó hUallacháin, & Morgan, 1995, and Weir, Archer & McAvinue, 2010). For

example, all schools in the Designated Areas Scheme were permitted to operate lower maximum class sizes than non-participating schools, schools in the urban dimension of Breaking the Cycle operated junior class sizes of 15:1 or lower, and urban schools with the greatest concentrations of pupils from disadvantaged backgrounds operated class size maxima of 20:1 and 27:1 in junior and senior grades respectively under Giving Children an Even Break.

Potential reasons for the failure to find evidence for programme impacts on achievement at primary level were considered in Archer and Weir's (2005) report to the Educational Disadvantage Committee. One possible reason concerns typical programme evaluation design. For example, it is not usually possible to have control groups in such evaluations (i.e., a group of pupils similar in every way to the experimental group except that they do not experience the intervention). Another reason relates to the challenge of separating the effect of the programme from other contemporaneous developments (e.g., demographic changes). Also, test data are usually gathered early in the life of a programme, while international evidence suggests that achievement effects are more likely to be found in interventions that have been in place for five years or more (Borman, Hewes, Overman & Brown, 2003). Apart from methodological factors such as these, however, weaknesses in the provision and implementation of interventions must also be considered.

On the basis of their review of existing provision and of the international literature relating to effective strategies for addressing disadvantage, Archer and Weir acknowledged that progress had been made in adopting strategies identified as effective elsewhere and in the literature on disadvantage. For example, the (then) Department of Education drew extensively on the recommendations of Kellaghan et al's (1995) report when introducing the Breaking the Cycle scheme in 1997. However, Archer and Weir also identified three important factors which were absent, or at least not assigned sufficient attention, in Irish interventions. The first of these was a lack of priority on literacy and numeracy. They suggested that

> ...specific attempts to develop intensive, innovative approaches to teaching reading and mathematics in classroom settings are not particularly evident in schemes for dealing with disadvantage. A number of ways of increasing the priority assigned to literacy and numeracy in schools with large numbers of children from disadvantaged backgrounds

> could be considered. These include increasing time for instruction, providing classroom teachers with specialist expertise, and focusing professional development activities on literacy and numeracy. Consideration also needs to be given to finding innovative ways of providing low achieving children with one-to-one tuition that does not impinge on their classroom work in literacy and numeracy.
> (Archer & Weir, p.32, 2005)

The second gap in existing provision concerned the absence of any concerted effort to encourage high, but realistic, expectations among teachers and parents for what children can achieve. The mere fact that schools were identified for inclusion in schemes because they serve significant numbers of children from disadvantaged backgrounds may lead to a collective reduction in expectations for what is achievable by pupils. In some schemes in other jurisdictions, which have been shown to be effective in bringing about sustained gains in achievement (e.g., Success for All in the United States), the promotion of high expectations features prominently (Borman et al., 2003).

The third shortcoming in Irish provision identified by Archer and Weir concerned the adequacy of professional development opportunities available to teachers. While successful interventions elsewhere are characterised by high-quality professional development activities for teachers, with the exception of the HSCL scheme, such support for teachers has not been prioritized in the Irish context. Among other things, it was suggested that, when innovative approaches to teaching are being attempted, teachers could benefit from opportunities for contact with other teachers, including reciprocal observation in the classroom, as well as from access to specialist expertise in particular curriculum areas.

It is worth noting that the structure of the SSP has attempted to address some of the shortcomings of previous interventions identified by Archer and Weir. The programme has an explicit focus on literacy and numeracy, and encourages the use of literacy and numeracy programmes. It provides for the professional development of teachers, including classroom-based development facilitated by advisors from the PDST. Furthermore, it could be argued that schools' participation in the DEIS planning process, in which targets are set in a variety of areas of school life, may well lead to raised expectations.

The focus of the present report is mainly on the reporting of achievement levels in schools in the SSP. While achievement in rural schools is described in brief, the main focus is on achievement in urban areas. Where relevant, data collected from other sources during the course of the evaluation (e.g., teachers), will be used to assist in interpreting the pupil outcome data.

Prior to presenting the results, however, the method by which the data were collected needs to be described. Therefore, details of the sample, response rates, and test instruments, as well as of the procedures used to administer the tests, follow in Chapter 2.

CHAPTER 2: METHOD

Sample of schools and pupils

Considerations involved in the sample design

When collecting baseline data in 2007, it was decided to test pupils in 2nd, 3rd and 6th class in a sample of the 340 urban SSP schools in 2007. The plan was to undertake follow-up testing three years later in 2nd, 3rd, 5th, and 6th class in the same schools. This would permit five main comparisons to be made. The results for 2nd and 3rd class in 2007 would be compared with their results in 5th and 6th class when tested again in 2010. Furthermore, the results for 2nd, 3rd, and 6th class in 2007 could be compared with the results for 2nd, 3rd and 6th class in 2010.

A number of factors was considered in deciding on the sample of urban schools. First, estimates of clustering derived from an earlier Literacy Survey (*Reading Literacy in Disadvantaged Primary Schools*, Eivers, Shiel and Shortt, 2004) were used to determine the number of schools to be selected. A sample size of 120 schools was deemed sufficient to produce an effective sample of at least 400 pupils at each of the three grade levels[4]. Second, the study is longitudinal in that pupils in 2nd and 3rd class in 2007 would be tested again in 5th and 6th class. Third, as the most junior grade level to be tested was 2nd class, junior schools without pupils in 2nd class were excluded from the sampling frame. It was decided to test all eligible pupils at the class levels of interest within selected schools to allow for some attrition, for example, due to pupils moving school. It is recognised that this is inefficient in terms of sampling methodology. However, selecting all pupils rather than, say, up to two intact classes should reduce the effects of clustering somewhat (although this marginal advantage would in no way outweigh the cost of testing increased numbers within schools). The major reason for testing all pupils

[4] In terms of accuracy of the estimation of population parameters, the most efficient sampling methodology would be to select a simple random sample (srs) of pupils from the population of interest. However, this option is rarely used. The major difficulty is the inefficiency of administering a test to one or two pupils in perhaps hundreds of schools to obtain the sample of 400. Instead, surveys like the current one use cluster designs, where schools are selected at the first stage and pupils (or classes) are selected at a second stage. This approach is less efficient in sampling terms in that it requires the selection of a larger number of pupils to achieve the same accuracy in population estimates. This loss of precision due to using a complex sample design (the design effect) occurs because, in general, pupils in the same school or class tend to be more similar in terms of the variable of interest than would be a selection of students drawn at random from the population. However, it is administratively easier, more cost effective, and less disruptive to schools, to select clusters.

was to improve the chance of recapture of 2nd and 3rd class pupils in 2010 when the majority could be expected to be in 5th and 6th class.

The sample

For the purpose of selecting a representative sample of 120 schools, the sampling frame of 319[5] DEIS Urban Band 1 and 2 schools was divided into 11 strata (Table 1). One stratum contained junior schools with pupils in 2nd class, while a further nine were based on school size and whether or not the school was previously designated under the Disadvantaged Area Scheme (DAS). Stratum 11 consisted entirely of schools that could not be included because they had closed or had no pupils beyond 1st class.

Table 1. The number of pupils and schools in the SSP population and in the target sample, by stratum.

				Target sample			
		Population		Schools	Pupils		
	Stratum	Schools	Pupils		2nd	3rd	6th
1	Junior schools (JI to 2nd)	32	1,895	6	373	-	-
2	DAS small (1-78 pupils, 3rd to 6th)	66	3,532	11	186	176	187
3	DAS medium (79-133 pupils, 3rd to 6th)	72	7,253	23	607	647	562
4	DAS large (134-300 pupils, 3rd to 6th)	66	12,262	39	1,046	2,020	1,784
5	DAS v. large (>300 pupils, 3rd to 6th)	2	833	2	92	232	216
6	Non-DAS Band 1	14	1,073	14	249	274	270
7	Non-DAS Band 2 small (1-78 pupils, 3rd to 6th)	22	958	3	49	42	27
8	Non-DAS Band 2 medium (79-133 pupils, 3rd to 6th)	23	2,414	8	230	206	206
9	Non-DAS Band 2 large (134-300 pupils, 3rd to 6th)	18	3,151	10	427	466	440
10	Non-DAS Band 2 v. large (>300 pupils, 3rd to 6th)	4	1,344	4	84	368	325
11	Excluded (Junior schools JI to 1st & 1 closing school)	21	21	-	-	-	8
	Total	340	34,736	120	3,343	4,431	4,009

[5] 20 Junior schools (with no pupils in 2nd class) and one school that was due to close were excluded from the sampling frame.

The sample of 120 schools was selected using probability proportional to size (PPS) sampling across each of the remaining 10 strata using a random start and a fixed interval procedure. Six of the 120 schools required for the urban sample were selected from stratum 1 – Junior schools (Junior Infants – 2nd class). The measure of size (MOS) used for schools in stratum 1 was the number of pupils in 2nd class according to the DES 2005/2006 primary database. The MOS used for all other schools was the numbers in 3rd through 6th class (although 2nd class pupils in such schools would also be tested). If 2nd class had been included, a number of senior schools (3rd through 6th) without pupils in 2nd class would have been assessed as being smaller. This follows the methodology used by Eivers et al. (2004) in the literacy survey. All 14 schools were selected from stratum 6 (Non-DAS Band 1 schools), because these schools were of particular interest.[6] The remaining 100 schools were assigned to the remaining 8 strata proportionally, on the basis of their population of 3rd through 6th class pupils. Since systematic PPS sampling was used, any school larger than the fixed interval was automatically selected and placed in a 'very large school' stratum. This sampling procedure produced an estimated sample (based on 05/06 school enrolments) of 11,783 pupils across 120 schools. All of the 120 urban schools that were invited agreed to participate.

Instruments

Five instruments were used in the collection of baseline and follow-up data:

- The Drumcondra Sentence Reading Test (DSRT)
- A shortened version of the Drumcondra Primary Mathematics Test – Revised (DPMT – R)
- A Pupil Questionnaire
- A Parent Questionnaire
- A Pupil Rating Form

For each of the levels tested (2nd, 3rd and 6th class in 2007 and 2nd, 3rd, 5th and 6th class in 2010), a single test booklet was prepared containing the reading test, the mathematics test, and the pupil questionnaire. These instruments, along with the others used, are described in further detail below.

[6] It should be noted that the sampling fraction for non-designated Band 1 schools was 100%. This contrasts with the fraction for schools in other categories, such as that for all non-designated Band 2 schools (n=67), where the overall sampling fraction was 37%.

Reading Test

The Drumcondra Sentence Reading Test (DSRT), a test developed by the ERC, was used to assess English reading[7]. There are six levels of the test, one for each class level from 1st to 6th. Although there are two forms of the test (A & B), only Form A was used to assess reading at 2nd, 3rd, 5th and 6th class levels in this study. 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. At Level 2, pupils record their responses directly into their test booklet, while pupils taking Levels 3, 5 and 6 of the test use a separate machine-scorable answer sheet. The DSRT is a secure test used for research purposes, and it has not been published. Therefore, pupils and teachers are not familiar with it. It is also a relatively short test to administer, taking approximately 35 minutes including time for distributing materials and completing examples. Another advantage of the DSRT is that scores can be placed on a test-wide scale. This means that the scores of pupils at any grade level can be placed on a single overall scale, allowing the progression of reading over time to be examined by comparing the results achieved with those of pupils nationally. The test has good reliability, at .93 at 2nd class, .92 at 3rd class, .89 at 5th class, and .89 at 6th class levels, respectively.

Mathematics Test

The Drumcondra Primary Mathematics Test – Revised (DPMT – R) is a standardised test which was developed by the ERC for use in primary schools from 1st class up to 6th class (level 1-6) (Educational Research Centre, 2007). Twenty-five items were selected from the 75 items in Form A of the DPMT – R 3, 5 and 6 to form the 3rd, 5th and 6th class tests. Thirty items were chosen from Form A of Level 2 of the DPMT – R to form the shorter test for 2nd class. At each level, test items were chosen to achieve a balanced coverage of the mathematics curriculum in terms of content and process skills at each level. The shortened mathematics test takes approximately 50 minutes to administer, and has reliabilities of .87, .87, .88, and .89 at 2nd, 3rd, 5th, and 6th class levels. Levels 3-6 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. For some items at Level 5 and 6, pupils were allowed to use calculators. Therefore, the ERC provided each

[7] For a more detailed account of the development of the DSRT, see Eivers, Shiel and Shortt (2004).

5th and 6th class pupil with a calculator. Schools were given the option of using an Irish-language version of the test[8].

Pupil Questionnaire

Pupils in 3rd, 5th, 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. To assist pupils with reading difficulties, the teacher 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. The questionnaire for pupils in 2nd class was shorter and simpler than that used with the more senior class levels. As with more senior classes, each item was read aloud along with the response options. The questionnaire contained 17 multiple-choice items, all of which required pupils to tick one of two or three response options, and sought information on pupils' scholastic self-evaluations, reading behaviour, and attitude to school.

Parent Questionnaire

In 2007, a parent questionnaire was provided for each child in 2nd, 3rd and 6th class that took the reading and mathematics tests. In 2010, only parents of 2nd and 3rd class pupils were asked to complete a questionnaire. This was to avoid the possibility of giving parents of 5th and 6th class pupils the same questionnaire that they had completed three years earlier. Schools which requested Irish language versions of the tests were supplied with bilingual versions of the questionnaire. 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.

[8] Only two schools in 2007 and one school in 2010 opted to administer the mathematics test in Irish.

Pupil Rating Form

Teachers of pupils in the classes that were 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 fill out details of each child's attendance and to provide ratings of his/her behaviour, home support and academic ability.

A pupil tracking form was used to record which pupils were absent or exempt on the day of testing. The pupil rating form, pupil tracking form, and a test administration manual were sent by the ERC to each class teacher whose class was being tested.

Procedure

Inviting schools to participate

The principals of urban schools in the sample were written to well in advance of the testing in 2007 to advise them that their school had been selected for the sample, to outline what was involved, and to invite them formally to participate in the testing programme. In 2010, principals were also invited by letter to participate, and were reminded that their school had taken part in a similar exercise in 2007. On both occasions, all 120 schools agreed to participate.

Collection of information on pupils and classes

Baseline data collection 2007

In 2007, principals were issued with templates on which they were asked to return details of all pupils in 2nd, 3rd and 6th class, and to indicate their class teacher's name. This approach is fairly standard practice in large-scale testing programmes that require test materials to be prepared in advance. It allows, for example, for pre-labelling test booklets with pupils' names, gender, and birth-dates. The information returned by schools was subsequently entered into a database which was used as a source of

[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.

information on the total numbers of pupils (for ordering test materials) as well as for producing individual labels, class lists, rating forms, etc.

Follow-up data collection 2010

An alternative approach to the collection of data on pupils was tried out in 2010. Due to the longitudinal nature of the study (recall that most pupils that were in 2nd and 3rd class in 2007 were expected to be re-tested when in 5th and 6th class in 2010), it was important to discover which pupils were in the classes as expected, which were not, and which pupils had joined the classes since the baseline data were gathered. Rather than attempting to gather this information by post or by email, it was decided to recruit a team of people to visit each of the 120 schools involved. With the assistance of the Irish Primary Principals' Network (IPPN) a group of about 15 recently retired primary school principals based in various areas countrywide were recruited to undertake the data collection exercise.

On average, each of these 'fieldworkers' was allocated eight schools. Each was provided with a laptop computer on which details of pupils who were in 2nd and 3rd class in 2007 (e.g., name, gender, date of birth) in their allocated schools were already recorded. The fieldworker's main task was to update the data by recording whether the pupils listed were in 5th and 6th class in 2010, entering the names of any additional pupils, and identifying pupils that were no longer in the classes. The details of all pupils in 2nd and 3rd class were also to be inputted, using lists provided by the school during the visit. As well as gathering data on pupils, fieldworkers were asked to record details of all class teachers in each school and the classes they taught. In relation to pupils in 5th and 6th class (largely comprised of pupils in 2nd and 3rd class from 2007), fieldworkers were asked to record which teachers taught them over the past three years, and what, if any, additional teaching (e.g., learning support) these pupils received. Because fieldworkers were typically present in schools for several hours, we took the opportunity to ask them to collect data from the principal on teacher turnover over the period 2006/2007 to 2009/2010. To facilitate this, a template was prepared which sought information on turnover rates among permanent and temporary teachers, and provided for information on the current status of teachers who had left the school during that period (e.g., if they had retired, were working in another school).

In a subsample of schools (44 out of the 120), fieldworkers were given an additional task. During 2007/2008, pupils in senior infants or 1st class in these schools participated in a study of early literacy. The study involved pupils taking a newly developed test called the DTEL. Fieldworkers visiting these schools were supplied with a set of questions concerning learning support (if any) received by each pupil that took part in the testing in 2007/2008 and 2008/2009. The information sought included, among other things, the reason learning support was indicated for a pupil, and the type and duration of support given. Typically, learning support teachers completed these forms.

All participating schools were contacted by the ERC in autumn 2009 to inform them of the forthcoming school visit and outlining its purpose. Fieldworkers attended a briefing session in the ERC in January, at which the task was explained in detail, and training in using the laptops and databases was given. Each school was subsequently contacted by its individual fieldworker to finalise the details of the visit. Principals were reminded of the data sought so that they could prepare as much of the information as possible in advance. When all visits were complete and all data returned, a debriefing session for fieldworkers was held at the ERC. The session provided those involved with an opportunity to describe their experiences, and to advise ERC staff of any aspects of the exercise that were perceived as problematic.

The administration of the tests and questionnaires

The role of class teachers

In both 2007 and 2010, class teachers administered the reading and mathematics tests and pupil questionnaire to pupils in their classes. In advance of the testing, teachers were sent a specially prepared administration manual containing detailed instructions for carrying out testing. They were asked to familiarise themselves thoroughly with the manual's contents before the day of testing. They were also advised that a member of the Department of Education and Skills (DES) Inspectorate would be present in the school to assist with, and oversee, the testing, and that the inspector assigned to the school would bring all required materials (booklets, answer sheets, calculators, questionnaires for parents, pencils) with them on the day.

As well as administering the tests, teachers were asked to complete a pupil rating form (described earlier) and a pupil tracking form for their class, on which they were asked to record pupil exemptions and absences on the day of testing.

Involvement of the Inspectorate

A briefing session was held at the ERC for inspectors overseeing the testing. In 2007, inspectors were given all of their test materials (test booklets, etc.) at this briefing session. In the following weeks, the members of the Inspectorate contacted the schools to organise a suitable day in May for testing. In 2010, members of the Inspectorate were briefed at an external location. The briefing was held earlier in the school year on this occasion, when test materials were not yet ready for distribution to individuals. The test materials were subsequently sent to members of the Inspectorate by courier. When testing in a school was complete, Inspectors ensured that all materials were returned to the ERC for processing.

Response rates

As this report involves, for the most part, comparisons of achievement outcomes in 2007 and 2010, response rates for both occasions are provided. As already noted, the school-level response rate was 100% on both occasions (i.e., all 120 sampled schools agreed to participate). The following two sections describe response rates at pupil level on both occasions.

Baseline testing in 2007

Testing took place in 120 schools on a single day in May 2007. Following receipt of completed test materials by the ERC, a database of pupil information was used to record details of all pupils in the relevant grade levels. The details of 12,791 pupils had been received in total. Of these, 229 pupils across all grade levels were exempted from testing by class teachers[10]. This provided a target sample of 12,562 pupils (12,791-229) across the three grade levels (Table 2). As the table shows, the number of exempted pupils was small, involving only a couple of percent of pupils at each grade level. Exemptions were highest at 2nd class level (2.4%) and lowest at 6th class level (1.8%).

[10] Data on exemptions ignores the fact that there were small differences in the numbers of pupils exempted from the reading test and the mathematics test. Where teachers elected to exempt pupils, they tended to exempt them from all testing.

Table 3 shows the total numbers and percentages of absent pupils in the achieved sample for reading and mathematics, as well as the total numbers in the achieved sample, by grade level. As the table shows, pupil absence on the day of testing increased with grade level in the case of both reading and mathematics[11]. Across grade levels, test data were provided by almost 90% of the student cohort. The implications of having, on average, more than 10% of pupils absent on the day of testing will be returned to later when comparing pupil achievement in 2007 and 2010.

Table 2. Total number of pupils at 2nd, 3rd, and 6th class levels in 2007, and total numbers and percentages of exempted pupils, by grade level.

Grade level	A. Total pupils	B. Pupils exempted from testing	Pupils in target sample (A-B)
2nd class	3,684	87 (2.4%)	3,597
3rd class	4,621	80 (1.7%)	4,541
6th class	4,486	62 (1.4%)	4,424
All	12,791	229 (1.8%)	12,562

Table 3. Total number of pupils in the target and achieved samples in 2007 for reading and mathematics, and numbers and percentages of absent pupils, by grade level.

Grade level	Pupils in target sample	Pupils absent for reading test	Achieved sample for reading test	Pupils absent for maths test	Achieved sample for maths test
2nd class	3,597	361 (10.0%)	3,236 (90.0%)	363 (10.1%)	3,234 (89.9%)
3rd class	4,541	478 (10.5%)	4,063 (89.5%)	485 (10.7%)	4,056 (89.3%)
6th class	4,424	505 (11.5%)	3,919 (88.5%)	515 (11.6%)	3,908 (88.4%)
All	12,562	1,344 (10.7%)	11,218 (89.3%)	1,363 (10.9%)	11,199 (89.1%)

[11] As the testing took place on a single school day, the small differences in numbers of pupils taking the reading and mathematics tests are probably due to pupils arriving after the testing had started or leaving before it had finished.

Follow-up testing in 2010

Testing took place on a single day in each of the 120 schools in May 2010. An additional grade level (5th class) was added in 2010. This meant that the total number of pupils tested in 2010 exceeded that in 2007. In 2010, there were 17,874 pupils in the grade levels to be tested (Table 4). Teachers exempted 276 pupils across all four levels from testing. The average percentage of exempted pupils across the grades (1.5%) was slightly smaller than the equivalent percentage in 2007 of 1.8%. As was the case in 2007, the percentage of exempted pupils was lowest at 6th class level.

The percentage of pupils that did not complete the tests due to absence from school on the day of testing was smaller in 2010 than in 2007 (Tables 3 and 5). For example, in 2007, 10% of pupils in 2nd class were absent for the reading test compared with 6.7% in 2010. As in 2007, pupil absence on the day of testing tended to increase with grade level. Decreases in the percentages of absent and exempted pupils between 2007 and 2010 will be discussed in the context of comparing overall test data on both occasions.

Table 4. Total number of pupils at 2nd, 3rd, 5th and 6th class levels in 2010, and total numbers and percentages of exempted pupils, by grade level.

Grade level	A. Total pupils	B. Pupils exempted from testing	Pupils in target sample (A-B)
2nd class	3,786	69 (1.8%)	3,717
3rd class	4,724	67 (1.4%)	4,657
5th class	4,717	90 (1.9%)	4,627
6th class	4,647	50 (1.1%)	4,597
All	17,874	276 (1.5%)	17,598

Table 5. Total number of pupils in the target and achieved samples in 2010 for reading and mathematics, and numbers and percentages of absent pupils, by grade level.

Grade level	Pupils in target sample	Pupils absent for reading test	Achieved sample for reading test	Pupils absent for maths test	Achieved sample for maths test
2nd class	3,717	250 (6.7%)	3,467 (93.3%)	241 (6.5%)	3,476 (93.5%)
3rd class	4,657	341 (7.3%)	4,316 (92.7%)	339 (7.3%)	4,318 (92.7%)
5th class	4,627	374 (8.0%)	4,253 (91.9%)	372 (8.4%)	4,255 (91.6%)
6th class	4,597	459 (10.0%)	4,138 (90.0%)	451 (9.8%)	4,146 (90.2%)
All	17,598	1,424 (8.1%)	16,174 (91.9%)	1,408 (8.0%)	16,195 (92.0%)

Some characteristics of the samples in 2007 and 2010

The samples in 2007 and 2010 were compared on factors that might be expected to lead to a change in achievement independent of any effect of participating in the SSP under DEIS. As Table 6 shows, there are no consistent differences between the samples in terms of gender or membership of the Traveller community. However, the most striking feature of Table 6 is probably the increased numbers of pupils from homes where English or Irish is not the main language spoken[12]. We will return to the implications of this later. There are no systematic differences between average class sizes in 2007 and 2010. The largest difference concerns 2nd class, in which average class size increased by more than one pupil between 2007 and 2010.

[12] These increases are at odds with the view that the recession has prompted many migrants to return to their home countries. The data here show, at the very least, that many migrants with young families have chosen to stay in Ireland.

Table 6. Some characteristics of pupils in the 2007 and 2010 samples.

		Grade level			
Characteristic	**Year**	**2nd**	**3rd**	**5th**	**6th**
% boys	**2007**	50.7% (*N*=1,866)	50.3% (*N*=2,325)	羊	51.9% (*N*=2,312)
	2010	49.3% (*N*=1,866)	50.7% (*N*=2,394)	52.2% (*N*=2,459)	50.2% (*N*=2,331)
% from Traveller Community	**2007**	4.0% (*N*=148)	3.9% (*N*=182)	羊	4.0% (*N*=179)
	2010	3.6% (*N*=137)	4.0% (*N*=193)	4.1% (*N*=193)	4.0% (*N*=188)
% from non-Irish or English speaking homes	**2007**	8.8% (*N*=324)	7.5% (*N*=347)	羊	5.6% (*N*=249)
	2010	16.7% (*N*=631)	13.5% (*N*=647)	10.7% (*N*=511)	8.7% (*N*=407)
Average class size	**2007**	19.2	21.8	羊	21.2
	2010	20.4	21.2	21.3	21.8

The following outlines the presentation of results, and the content of the remainder of the report:

1. Average test scores in 2007 and 2010 will be compared. In Chapter 3 pupils' achievements in 2010 will be placed in the context of national norms. Cross-sectional analyses will be presented (i.e., a direct comparison of the average reading and maths scores of pupils in 2nd, 3rd and 6th class levels in 2007 and 2010). Differences between sub-groups will be examined (e.g., pupils in Bands 1 & 2, Irish nationals and others, boys and girls, pupils in schools that were and were not participating in previous schemes).
2. In Chapter 4, the results of the analysis of longitudinal data (e.g., a comparison of test scores of 3rd class pupils in 2007 with their follow-up score in 6th class in 2010).
3. Other analyses of achievement data will be reported in Chapter 5. In particular, achievement aggregated to school level will be examined with a view to establishing the number of schools in which an increase in performance was observed. There will also be a brief presentation of data from rural schools.

4. Some data on other aspects of the evaluation (e.g., data from the planning questionnaire completed by principals, feedback on the programme provided by HSCL co-ordinators and principals) will be presented. These will not be full accounts, but rather will be used to supplement test data.
5. In Chapter 6, an attempt is made to address issues about the extent to which the programme was implemented as envisaged.

CHAPTER 3: A CROSS-SECTIONAL COMPARISON OF PUPIL ACHIEVEMENT IN READING AND MATHEMATICS, BY GRADE LEVEL, IN SSP (URBAN) SCHOOLS IN 2007 AND 2010

This section begins with straightforward, cross-sectional, comparisons of the reading and mathematics achievements of pupils in 2007 and 2010. This involves comparing average test scores at each class level, as well as examining the percentages of low- and high-scoring pupils on both occasions.

Overall average reading and mathematics scores

Average reading raw scores (the number of test items answered correctly on the DSRT) increased at each grade level between 2007 and 2010. The increases in reading average are statistically significant at all three grade levels (see Table A in Appendix 2 for results of individual comparisons using *t*-tests)[13]. The greatest increase occurred at 2nd class level, where the average number of items answered correctly increased from 22.8 in 2007 to 24.3 in 2010 (Table 7). It should be noted, however, that this average is still well below the national average of 29. The smallest increase occurred at 6th class level, where the increase was 0.4. At each grade level, the percentages of pupils with very low scores (those at or below the 10th percentile[14]) reduced significantly between 2007 and 2010 (see Table C in Appendix 2 for results of comparisons using Chi-squared tests). This decrease is most pronounced at 2nd class level, where there are just over 6% fewer pupils with scores below the 10th percentile in 2010 than was the case in 2007. It is worth noting, also, that this decrease was not accompanied by a reduction in the percentage of high-scoring pupils (those at or above the 90th percentile), as in both 2007 and 2010, 2.2% of 2nd class pupils achieved at this level. At 3rd class level, there were 3.4% fewer pupils, and at 6th class level, 2.4% fewer pupils below the 10th percentile in 2010 than in 2007. The percentage of very high-scoring pupils (above the 90th percentile), amounting to only a few percent of pupils at

[13] While there are complex statistical techniques for comparing means between groups, it was decided to limit the analyses reported in this section to testing for differences using independent *t*-tests and Chi-square tests between groups and sub-groups. The decision was based mainly on the fact that the same 120 schools formed the samples in 2007 and 2010, and the objective was to assess whether standards had changed in these schools over the three-year period, rather than to generalise the results to a population. Statistical tests comparing the percentages of low and high scorers (using Chi-square tests) are confined to the main tables in this section, specifically Tables 7-12. A full set of comparisons for all groups and sub-groups are provided in the next section which describes achievement from a longitudinal perspective.

[14] For raw score equivalences to percentile ranks in both reading and mathematics, see Table B in Appendix 2.

each level, remained fairly stable. There were no significant differences in the percentages in 2007 and 2010 scoring at or above the 90th percentile at any of the three grade levels. More than twice as many pupils in 3rd and 6th class have scores below the 10th percentile than do pupils in the norm group, although the discrepancy at 2nd class level is much smaller (15.9% in SSP schools vs 10% in all schools).

Table 7. The reading achievements (average raw score, average standard score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in 2007 and 2010, by grade level.

	2nd		3rd		5th		6th	
	2007	2010	2007	2010	2007	2010	2007	2010
	(*N*=3,236)	(*N*=3,467)	(*N*=4,063)	(*N*=4,316)		(*N*=4,253)	(*N*=3,919)	(*N*=4,138)
Mean raw score	22.8	24.3	22.1	22.7	-	19.4	18.0	18.4
Mean standard score	92.4	94.6	90.7	91.6	-	93.0	90.4	91.2
At or below 10th percentile	22.0%	15.9%	26.4%	23.0%	-	20.6%	28.0%	25.6%
11th-25th percentile	21.5%	19.3%	24.6%	23.7%	-	20.6%	22.3%	24.3%
26th-50th percentile	28.2%	32.2%	23.9%	27.3%	-	28.8%	27.7%	26.8%
51st-75th percentile	19.0%	20.7%	18.6%	20.3%	-	19.0%	15.0%	15.4%
76th-89th percentile	7.1%	9.7%	4.9%	4.5%	-	7.8%	4.8%	5.4%
At or above 90th percentile	2.2%	2.2%	1.6%	1.1%	-	3.3%	2.3%	2.5%

Note. The DSRT contains 40 items at each level 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 Levels 2 and 3, the norm group average raw score is 29, at Level 5 it is 23.5, 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. The full range of percentile equivalences are given in Table B in Appendix 2.

A similar pattern of results was found for mathematics achievement. As was the case with reading, average mathematics raw scores increased at each grade level between 2007 and 2010, and the increases are statistically significant at all three grade levels (Table 8). As with reading, the greatest increase occurred at 2nd class level and the smallest increase occurred at 6th class level. The percentages of pupils with very low mathematics scores (those at or below the 10th percentile) decreased markedly between 2007 and 2010, and were most pronounced at 2nd class level where 5% fewer pupils had scores below the 10th

percentile on the second occasion. The decreases in the percentages of low-scoring pupils were significant at all grade levels. This was accompanied by a significant increase in the percentage of high-scoring pupils (those at or above the 90th percentile) in 2010 in 2nd, 3rd and 6th class, although the smallest increase was observed at 6th class level. Despite across the board increases in achievement in mathematics, average test scores of pupils in the sample remain well below those of the norm group (i.e., 15 for pupils in the SSP versus 18 for those in the norm group).

Table 8. The mathematics achievements (average raw score, average standard score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in 2007 and 2010, by grade level.

	2nd		3rd		5th		6th	
	2007	**2010**	**2007**	**2010**	**2007**	**2010**	**2007**	**2010**
	(*N*=3,234)	(*N*=3,480)	(*N*=4,056)	(*N*=4,319)		(*N*=4,255)	(*N*=3,908)	(*N*=4,146)
Mean raw score	13.8	15.0	11.6	12.2	-	11.7	10.9	11.4
Mean standard score	91.5	93.9	91.1	92.6	-	92.3	89.7	91.2
At or below 10th percentile	21.8%	16.8%	24.1%	21.0%	-	25.1%	31.1%	28.3%
11th-25th percentile	25.4%	21.6%	27.4%	26.6%	-	21.6%	23.0%	21.4%
26th-50th percentile	29.3%	30.9%	20.5%	19.7%	-	23.6%	19.6%	21.4%
51st-75th percentile	14.6%	19.2%	16.0%	17.8%	-	19.2%	16.7%	18.4%
76th-89th percentile	6.2%	7.0%	6.6%	7.7%	-	5.9%	5.5%	5.0%
At or above 90th percentile	2.8%	4.5%	5.4%	7.3%	-	4.7%	4.1%	5.5%

Note. The mathematics test contains 30 items at 2nd class level, and 25 items at each of levels 3, 5 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 Level 2, the norm group average raw score is 18, at Level 3 it is 15.5, at Level 5 it is 16, and at Level 6 it 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.

Average reading and mathematics scores according to DEIS Band

As well as examining changes in pupil achievement overall, average test scores for pupils in schools in Bands 1 and 2 were calculated separately[15]. Tables 9 and 10 show the average reading test scores of pupils in Band 1 and 2 respectively. Two things are clear from a comparison of the data in these tables. First, in both 2007 and 2010, average reading achievement is poorer among pupils in schools in Band 1 than those in Band 2 at each class level, a fact that will prompt a momentary digression from the reporting of outcomes later in this section (see pages 40 and 41). In all cases, the differences are statistically significant. This finding is not unexpected, as schools in Band 1 have higher assessed levels of disadvantage than those in Band 2. Second, the average reading score of pupils at all grade levels in Band 1 was significantly higher in 2010 than in 2007, with the greatest increase observed at 2nd class level. The percentage of low-scorers (e.g., those at or below the 10th percentile) decreased significantly at all grade levels in Band 1 schools between 2007 and 2010. The decrease was most noticeable in 2nd class, where 7.4% fewer pupils had scores at that level in 2010 than was the case in 2007, and decreases were in the order of 5% at each of 3rd and 6th class levels. There was, however, no difference in the percentage of very high scorers (those at or above the 90th percentile) in Band 1 schools in 2007 and 2010. A very small percentage (less than 2% of pupils at 2nd, 3rd and 6th class levels) had scores that were at or above the 90th percentile in 2010.

In contrast, pupils in Band 2 showed a significant improvement in reading in 2nd class, but not at 3rd or 6th class levels (Table 10). Consistent with this, the percentage of low-scorers decreased significantly at 2nd class, but not at 3rd and 6th class levels. There were no significant differences in the percentages of high-scorers in 2nd and 6th class in 2007 and 2010. The exception occurred at 3rd class level, where the percentage of pupils with scores at or above the 90th percentile significantly decreased.

[15] Schools were classified into Bands 1 and 2 on the basis of principals' responses to a survey administered by the ERC in 2005 concerning the socioeconomic backgrounds of pupils. Following the computation of an index of disadvantage and a rank-ordering of schools based on it, schools identified as having the greatest concentrations of disadvantage were classified as Band 1. It should be noted, however, that the enrolment characteristics of pupils may have changed in the meantime. Also, there are large differences in levels of disadvantage *between* schools within bands (e.g., among Band 1 schools, the school that occupies first place in the rank order has a much higher level of assessed disadvantage than the 200th school).

Table 9. The reading achievements (average raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in Band 1 in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,782)	(*N*=1,835)	(*N*=2,138)	(*N*=2,287)	(*N*=2,343)	(*N*=2,054)	(*N*=2,186)
Mean raw score	21.6	23.3	20.5	21.6	18.1	16.2	16.9
At or below 10th percentile	26.0%	18.6%	31.6%	26.6%	25.5%	36.0%	31.1%
11th-25th percentile	22.8%	21.0%	27.9%	26.2%	22.2%	24.3%	27.2%
26th-50th percentile	28.1%	31.8%	21.4%	25.8%	28.3%	24.5%	25.4%
51st-75th percentile	16.4%	19.4%	15.2%	17.2%	16.6%	10.7%	11.5%
76th-89th percentile	5.1%	7.7%	3.0%	3.3%	5.4%	3.3%	3.7%
At or above 90th percentile	1.6%	1.5%	0.7%	0.8%	2.1%	1.3%	1.2%

Table 10. The reading achievements (raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in Band 2 in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,454)	(*N*=1,632)	(*N*=1,925)	(*N*=2,029)	(*N*=1,910)	(*N*=1,865)	(*N*=1,952)
Mean raw score	24.3	25.5	23.9	24.0	21.0	19.9	20.1
At or below 10th percentile	17.0%	12.9%	20.6%	18.9%	14.5%	19.1%	19.4%
11th-25th percentile	19.9%	17.4%	20.9%	20.9%	18.6%	20.0%	21.0%
26th-50th percentile	28.3%	32.7%	26.6%	29.0%	29.5%	31.3%	28.3%
51st-75th percentile	22.2%	22.2%	22.2%	23.9%	21.9%	19.8%	19.9%
76th-89th percentile	9.6%	11.8%	7.0%	5.9%	10.7%	6.4%	7.4%
At or above 90th percentile	3.0%	3.1%	2.6%	1.4%	4.8%	3.4%	4.0%

In mathematics, in both 2007 and 2010, pupils in schools in Band 2 at all grade levels had significantly higher average test scores than those in Band 1. Pupils at all grade levels in Band 1 schools showed a significant increase in test scores in 2010 compared with 2007 (Table 11). As was the case of reading, the increase in average score was greatest at 2nd class level. In Band 1 schools, there were significantly fewer low-scorers in mathematics in 2010 than in 2007 at 2nd and 3rd class level, although there was no difference at 6th class level. There were also significantly more high-scorers at each grade level (i.e., at or above the 90th percentile) in Band 1 schools in 2010 compared with 2007 (see Table C in Appendix 2 for results of individual comparisons). While pupils in Band 1 at all grade levels had significantly higher mathematics scores in 2010 than in 2007, this was not true of pupils in Band 2. Average mathematics scores among Band 2 pupils were significantly higher in 2010 among 2nd and 6th class pupils but not among pupils in 3rd class (Table 12). There were no differences between Band 2 pupils in 2nd and 3rd class in 2007 and 2010 in terms of the percentage achieving at or below the 10th percentile. At 6th class level, however, significantly fewer pupils achieved scores at this level in 2010 than was the case in 2007. There were significantly more very high scoring Band 2 pupils (those at or above the 90th percentile) in 2010 than in 2007 at 2nd class level. However, there were no significant differences between 2007 and 2010 in the percentage of such high scorers at 3rd or 6th class levels. The general picture that emerged from these analyses is that significant differences between 2007 and 2010 in the percentages of low and high scorers were observed more often among Band 1pupils than among those in Band 2.

Table 11. The mathematics achievements (raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in Band 1 in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,781)	(*N*=1,846)	(*N*=2,145)	(*N*=2,290)	(*N*=2,347)	(*N*=2,055)	(*N*=2,192)
Mean raw score	12.9	14.1	10.1	11.2	10.6	9.3	9.7
At or below 10th percentile	26.9%	19.6%	31.4%	25.8%	31.4%	39.2%	37.3%
11th-25th percentile	27.1%	24.6%	30.8%	28.7%	23.5%	25.9%	24.3%
26th-50th percentile	27.2%	30.6%	18.2%	18.4%	21.9%	17.8%	19.3%
51st-75th percentile	11.7%	16.0%	12.4%	15.8%	15.6%	11.8%	12.6%
76th-89th percentile	5.0%	5.9%	4.5%	5.8%	4.2%	3.3%	3.0%
At or above 90th percentile	2.1%	3.3%	2.7%	5.5%	3.5%	2.1%	3.5%

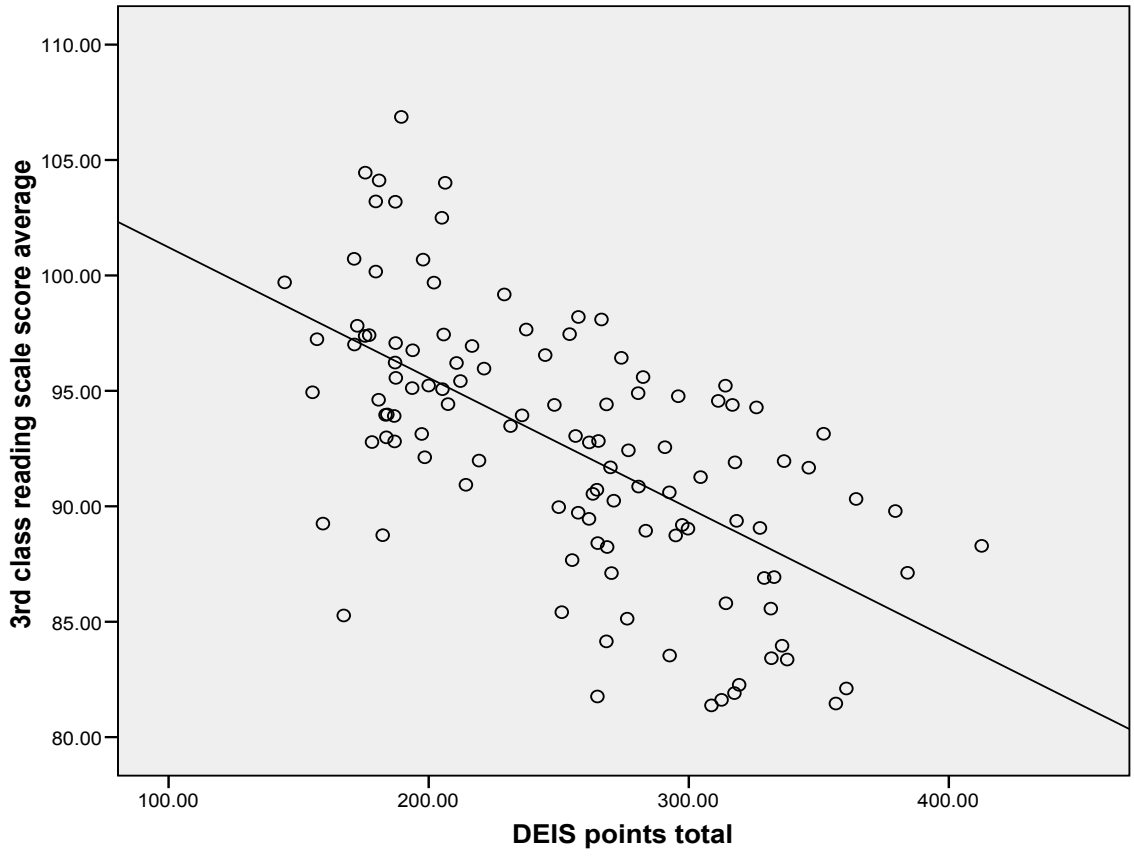
Table 12. The mathematics achievements (raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of pupils in Band 2 in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,453)	(*N*=1,634)	(*N*=1,911)	(*N*=2,029)	(*N*=1,908)	(*N*=1,853)	(*N*=1,954)
Mean raw score	15.0	16.0	13.2	13.3	13.1	12.6	13.3
At or below 10th percentile	15.5%	13.6%	15.9%	15.7%	17.3%	22.1%	18.1%
11th-25th percentile	23.4%	18.2%	23.7%	24.1%	19.1%	19.8%	18.1%
26th-50th percentile	31.7%	31.3%	23.0%	21.1%	25.7%	21.6%	23.8%
51st-75th percentile	18.1%	22.8%	20.1%	20.1%	23.6%	22.2%	24.9%
76th-89th percentile	7.8%	8.2%	8.9%	9.8%	7.9%	7.9%	7.2%
At or above 90th percentile	3.5%	5.9%	8.5%	9.3%	6.3%	6.4%	7.8%

The relationship between disadvantage and measured achievement

Consideration of the average scores achieved by pupils in schools in Band 1 calls for a brief departure from the reporting of results. Specifically, the fact that achievement levels were poorer in Band 1 than in Band 2 schools in 2007 provides some independent evidence for the validity of the methods used to identify schools for DEIS. To pursue this further, the points achieved in the survey of disadvantage used to identify schools for DEIS in 2005 were correlated with the average reading score achieved by pupils in 3rd class in 2007. The correlation between school-level achievement and assessed level of disadvantage was -0.62, indicating a strong relationship between the socioeconomic backgrounds of pupils served by the school and aggregated reading scores. The relationship is illustrated in Figure 1 which contains a scatterplot showing that, in general, as DEIS points increase (indicating greater levels of assessed disadvantage), average reading achievement decreases.

Figure 1. Scatterplot depicting the relationship between levels of disadvantage as assessed by a survey in 2005 and reading achievement among pupils in SSP (urban) schools.



Achievement levels among subgroups of pupils

Returning to the overall comparison of the 2007 and 2010 data, there seems to be a fair amount of evidence pointing to raised achievement levels in 2010. However, it is not inevitable that the changes observed are a result of schools' participation in the SSP. At this point, it would seem important to return to characteristics of the 2007 and 2010 samples that were described at the end of the previous chapter.

Pupils from homes in which English or Irish is not the main language spoken

The increase noted in the percentage of pupils from homes where neither English nor Irish is the main language spoken merits further investigation. Table 13 contains the average reading scores in 2007 and 2010 of pupils whose main home language is English or Irish, while Table 14 presents the equivalent data for pupils from homes in which a language other than English or Irish is mainly spoken. As the tables show, average reading scores of both groups (English speakers and others) were higher at all grade levels in 2010 than in 2007. All differences were statistically significant, indicating that reading levels have improved among all pupils at all grade levels regardless of the language spoken at home[16]. Somewhat predictably, the average English reading scores of pupils from homes where English is not the usual language (Table 14) are lower than those of pupils that normally speak Irish or English at home (Table 13). However, it should be noted that the increase in average reading score is greater among pupils who speak languages other than Irish or English at home than among English/Irish speakers. The percentages of very low-scoring pupils decreased markedly between 2007 and 2010 among both categories of pupil. However, there was no great change in the percentage of pupils with very high scores in reading in either group.

[16] While differences are significant, the small numbers of pupils in the sample relative to the comparison group should be noted. Because small numbers are involved, any conclusions drawn should be regarded as tentative.

Table 13. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from homes in which the main language spoken in the home is English or Irish in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=2,960)	(*N*=2,886)	(*N*=3,774)	(*N*=3,743)	(*N*=3,795)	(*N*=3,709)	(*N*=3,782)
Mean raw score	23.1	24.7	22.4	23.1	19.7	18.2	18.6
At or below 10th percentile	20.7%	15.4%	25.1%	21.6%	18.7%	26.9%	24.6%
At or above 90th percentile	2.4%	2.5%	1.7%	1.2%	3.5%	2.4%	2.7%

Table 14. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from homes in which the main language spoken in the home is a language *other than* English or Irish in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=276)	(*N*=581)	(*N*=289)	(*N*=573)	(*N*=458)	(*N*=210)	(*N*=356)
Mean raw score	19.1	22.3	17.7	20.5	16.6	13.8	16.0
At or below 10th percentile	35.1%	18.4%	42.6%	32.3%	35.8%	46.7%	36.0%
At or above 90th percentile	0.4%	1.0%	0.7%	0.3%	1.7%	0.5%	0.8%

Achievement data in mathematics for the two groups (English/Irish speakers and others) are presented in Tables 15 and 16 respectively. At all grade levels, the average mathematics test scores of pupils whose home language was English or Irish were significantly higher in 2010 than in 2007 (Table 15). The average mathematics scores of 2nd and 3rd class pupils from homes where English is not the main language were significantly higher in 2010 than in 2007 (Table 16). At 6th class level, although the average mathematics score in 2010 was above that in 2007 by almost one raw score point, the difference was not statistically significant. The percentages of very low-scoring pupils decreased markedly between 2007 and 2010 among both categories of pupil. This was accompanied by significant increases in the percentages of pupils at all grade levels scoring above the 90th percentile in both groups.

Table 15. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from homes in which the main language spoken in the home is English or Irish in 2007, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=2,958)	(*N*=2,894)	(*N*=2,767)	(*N*=3,745)	(*N*=3,797)	(*N*=3,697)	(*N*=3,789)
Mean raw score	13.9	14.9	11.6	12.0	11.6	10.8	11.3
At or below 10th percentile	21.7%	17.4%	24.5%	21.4%	25.9%	31.2%	28.8%
At or above 90th percentile	2.8%	4.3%	5.4%	6.9%	4.6%	4.1%	5.3%

Table 16. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from homes in which the main language spoken in the home is a language *other than* English or Irish in 2007, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=276)	(*N*=582)	(*N*=289)	(*N*=573)	(*N*=458)	(*N*=211)	(*N*=357)
Mean raw score	13.3	15.7	11.5	13.5	13.0	11.6	12.5
At or below 10th percentile	22.8%	13.7%	19.0%	18.5%	17.9%	28.4%	23.0%
At or above 90th percentile	2.2%	5.7%	5.2%	9.8%	6.3%	3.8%	7.6%

A series of *t*-tests between the scores of the various sub-groups of pupils involved in the comparisons in Tables 13-16 revealed some other findings worthy of comment (see Table A in Appendix 2 for a summary of all *t*-test results). Pupils from homes where English or Irish is the main language spoken significantly outperformed speakers of other languages in reading at all grade levels in both 2007 and 2010. This might be expected, as a greater familiarity with the test language undoubtedly confers an advantage on those taking a reading test in their normal language. This hypothesis may have some support from the separate finding that there were no significant differences between the average mathematics scores (the testing of which relies less on language ability) of pupils from homes where English or Irish is the main language spoken and speakers of other languages in 2007.

A somewhat surprising finding emerged, however, from a comparison of the average mathematics scores of English/Irish speaking pupils and other pupils in 2010. Unlike in 2007, pupils whose home language was neither English nor Irish significantly outperformed English/Irish speaking pupils in 2010 at all three grade levels. This finding will be explored further in subsequent reports, using evaluation data gathered from other sources (e.g., parent questionnaires). Another issue which will be explored further is a potential 'social context'[17] effect produced by the presence in the sample schools of pupils whose home language is neither English nor Irish. This is important in the context of the evaluation as it acknowledges the fact that the presence of large numbers of pupils whose first language is neither English nor Irish may, in and of itself, exert an impact on the achievements of other pupils. Anecdotal evidence from teachers in SSP schools indicates that the presence of non-national pupils serves to enhance the educational experiences (and ultimately the achievements) of others. If there is, indeed, such an effect, achievement at school level would be expected to be positively affected by increasing densities of these pupils. Therefore, not only would an individual pupil's test score reflect a range of factors including his or her own background characteristics, but, if a context effect based on an intercultural mix existed, there would be a positive effect on achievement over and above that determined by individual factors. A series of analyses aimed at testing the social context hypothesis is being undertaken and the outcomes will be reported at a later stage. However, at this preliminary stage, it appears as though the evidence for the social context hypothesis is mixed.

Pupils from the Traveller community

As pupils from the Traveller community comprise a small, but particularly disadvantaged, subset of the samples in 2007 and 2010, Tables 17 to 20 present the average test scores in reading and mathematics of pupils from the Traveller community separately from other pupils on both occasions. In 2007 and 2010, the average test scores of pupils from the Traveller community were significantly below those of non-Travellers at every grade level in both reading and mathematics, and the magnitude of the difference between the scores of the two groups is large in every case. However, the average scores in reading among Traveller pupils increased at every grade level between 2007 and 2010 although it is

[17] Data from Ireland and elsewhere have reported a 'context effect' based on another demographic factor, that of socioeconomic status. In an Irish study in which reading and mathematics achievement data were analysed at primary and second level, Sofroniou, Archer and Weir (2004) reported that the percentage of pupils with medical cards in a school had an effect on achievement over and above the effect of individual medical card possession.

important to note that the increase was not statistically significant[18] (Table 17). There was no corresponding increase in the mathematics scores of Traveller pupils (Table 19).

Table 17. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from the Traveller community, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=117)	(*N*=113)	(*N*=138)	(*N*=150)	(*N*=149)	(*N*=130)	(*N*=139)
Mean raw score	16.0	17.0	14.5	14.9	13.3	11.9	12.4
At or below 10th percentile	53.8%	41.6%	58.7%	55.3%	50.3%	63.8%	62.6%
At or above 90th percentile	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%

Table 18. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils *other than* those from the Traveller community, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=3,119)	(*N*=3,354)	(*N*=3,925)	(*N*=4,166)	(*N*=4,104)	(*N*=3,789)	(*N*=3,999)
Mean raw score	23.0	24.6	22.4	23.0	19.6	18.2	18.6
At or below 10th percentile	20.8%	15.0%	25.2%	21.8%	19.5%	26.7%	24.3%
At or above 90th percentile	2.3%	2.3%	1.7%	1.1%	3.4%	2.3%	2.6%

Table 19. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils from the Traveller community, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=117)	(*N*=115)	(*N*=139)	(*N*=151)	(*N*=151)	(*N*=129)	(*N*=140)
Mean raw score	10.4	10.4	7.1	7.5	7.3	6.3	5.9
At or below 10th percentile	45.3%	35.3%	54.7%	47.0%	58.9%	59.7%	70.0%
At or above 90th percentile	0.9%	0.9%	0.0%	0.0%	1.3%	0.0%	0.0%

[18]The very small numbers of pupils in the sample in Tables 17 and 19 should be noted. Because such small numbers are involved, any conclusions drawn should be regarded as tentative at best.

Table 20. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils *other than* those from the Traveller community, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=3,117)	(*N*=3,361)	(*N*=3,917)	(*N*=4,167)	(*N*=4,104)	(*N*=3,779)	(*N*=4,006)
Mean raw score	14.0	15.1	11.7	12.4	11.9	11.0	11.6
At or below 10th percentile	20.9%	16.2%	23.0%	20.1%	23.8%	30.1%	26.8%
At or above 90th percentile	2.8%	4.6%	5.6%	7.6%	4.9%	4.3%	5.7%

Pupils in schools that participated in previous initiatives for disadvantage

Tables 21 to 24 show the mean reading and mathematics scores of pupils that were, and were not, enrolled in schools that were participating in previous schemes aimed at addressing disadvantage. The schemes in question were the Disadvantaged Areas Scheme (DAS) and Giving Children an Even Break (in the case of the latter, only schools that were above the 'post-bar' and were eligible for additional staff under the scheme were counted). Although the figure varies slightly depending on grade level, about 20% of all pupils were in schools that were in receipt of resources for disadvantage for the first time through their participation in DEIS, while the remaining 80% were in schools that had received resources under other schemes. As the data in Tables 21-24 show, in 2007 and 2010 in both reading and mathematics, the average test scores of pupils in schools that had not previously participated in schemes for disadvantage were higher than those in schools that had been involved in previous initiatives. In all but one of these twelve comparisons (that involving 2nd class reading in 2007) the difference was statistically significant (see Table A in Appendix 2 for outcomes of individual comparisons). To investigate if the progress made by one group was greater than the other, the average reading and mathematics scores achieved in 2007 and 2010 by pupils in both groups were compared. Results of *t*-tests revealed that those who had participated in previous schemes had significantly higher reading and mathematics scores at all grade levels in 2010. However, among the group that had no experience of previous schemes, only 2nd class pupils increased their reading and mathematics scores significantly, and in some of the comparisons, the means are slightly lower in 2010 than in 2007.

Table 21. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils in schools that were in previous schemes for disadvantage, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=2,583)	(*N*=2,723)	(*N*=3,171)	(*N*=3,333)	(*N*=3,314)	(*N*=3,077)	(*N*=3,210)
Mean raw score	22.6	24.1	21.6	22.5	19.1	17.6	18.0
At or below 10th percentile	22.1%	16.3%	28.1%	23.7%	21.5%	30.0%	27.0%
At or above 90th percentile	2.1%	1.9%	2.2%	0.9%	2.8%	2.2%	2.1%

Table 22. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils in schools that were *not* in previous schemes for disadvantage, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=653)	(*N*=744)	(*N*=892)	(*N*=983)	(*N*=939)	(*N*=842)	(*N*=928)
Mean raw score	23.4	25.1	23.8	23.6	20.4	19.6	19.8
At or below 10th percentile	21.3%	14.4%	20.4%	20.5%	17.5%	20.5%	20.7%
At or above 90th percentile	2.1%	3.2%	3.4%	1.7%	5.0%	3.6%	4.1%

Table 23. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils in schools that were in previous schemes for disadvantage, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=2,583)	(*N*=2,735)	(*N*=3,164)	(*N*=3,334)	(*N*=3,316)	(*N*=3,066)	(*N*=3,217)
Mean raw score	13.6	14.7	11.1	12.1	11.4	10.5	11.0
At or below 10th percentile	23.2%	18.1%	26.3%	21.4%	26.7%	33.4%	30.2%
At or above 90th percentile	3.6%	4.4%	4.3%	7.0%	4.3%	3.7%	5.0%

Table 24. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of pupils in schools that were *not* in previous schemes for disadvantage, in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=651)	(*N*=745)	(*N*=892)	(*N*=985)	(*N*=939)	(*N*=842)	(*N*=929)
Mean raw score	14.8	15.9	13.1	12.7	12.8	12.2	12.7
At or below 10th percentile	16.3%	12.2%	16.3%	19.8%	19.2%	22.4%	21.5%
At or above 90th percentile	3.2%	5.1%	9.4%	8.2%	6.2%	5.6%	7.4%

Average reading and mathematics scores according to pupil gender

The following set of tables provides data on the performance of pupils in 2007 and 2010 by gender. Tables 25 and 26 show the average reading test scores of boys and girls respectively. The test scores of both boys and girls increased significantly in reading at all grade levels between 2007 and 2010. It is noteworthy also that, both in 2007 and 2010, girls performed significantly better in reading than boys at 2nd and 3rd class levels but not at 6th class level. Furthermore, the reading average of boys and girls in 5th class in 2010 is identical, while boys' average reading score at 6th class level is higher than that of girls, but not significantly so. It appears, therefore, that girls in schools in the SSP outperform boys in the junior grades, but that the difference disappears with increasing grade level.

Table 25. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of boys in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,622)	(*N*=1,707)	(*N*=2,037)	(*N*=2,180)	(*N*=2,205)	(*N*=2,011)	(*N*=2,035)
Mean raw score	22.2	23.9	21.5	22.1	19.4	18.1	18.6
At or below 10th percentile	25.5%	18.0%	29.1%	26.0%	21.4%	27.5%	26.3%
At or above 90th percentile	1.7%	2.1%	1.8%	0.7%	3.3%	2.7%	3.4%

Table 26. The reading achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of girls in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,613)	(*N*=1,758)	(*N*=2,025)	(*N*=2,135)	(*N*=2,048)	(*N*=1,908)	(*N*=2,103)
Mean raw score	23.4	24.8	22.7	23.4	19.4	17.9	18.3
At or below 10th percentile	18.4%	13.8%	23.6%	19.9%	19.7%	28.5%	24.8%
At or above 90th percentile	2.8%	2.3%	1.5%	1.5%	3.4%	1.8%	1.7%

In mathematics, in all but one comparison, the average scores of boys and girls increased significantly at each grade level between 2007 and 2010 (Tables 27 and 28). The exception was among 6th class boys, whose mathematics average in 2010 (11.6) did not differ significantly from their 2007 average (11.3). There is some evidence that mathematics achievement is higher among boys than among girls, particularly in 6th class. In both 2007 and 2010, there were no significant differences between the average mathematics scores of boys and girls in 2nd class (or in 3rd class in 2010). However, in both 2007 and 2010, 6th class boys' average scores were significantly higher than those of 6th class girls.

Table 27. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of boys in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,619)	(*N*=1,714)	(*N*=2,046)	(*N*=2,183)	(*N*=2,205)	(*N*=2,016)	(*N*=2,040)
Mean raw score	13.9	15.1	11.8	12.3	12.1	11.3	11.6
At or below 10th percentile	22.7%	19.0%	24.2%	21.5%	23.4%	28.1%	27.4%
At or above 90th percentile	3.2%	5.9%	6.5%	8.0%	5.7%	5.2%	6.2%

Table 28. The mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of girls in 2007 and 2010, by grade level.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
	(*N*=1,614)	(*N*=1,764)	(*N*=2,009)	(*N*=2,135)	(*N*=2,050)	(*N*=1,892)	(*N*=2,106)
Mean raw score	13.7	14.9	11.3	12.1	11.4	10.3	11.2
At or below 10th percentile	20.9%	14.6%	23.9%	20.5%	26.8%	34.2%	29.2%
At or above 90th percentile	2.4%	3.2%	4.3%	6.6%	3.8%	3.0%	4.8%

Four further tables concerned with pupil performance and gender are presented next. Tables 29 to 32 contain reading and mathematics data by gender and DEIS Band[19]. The purpose of these tables is to describe changes in pupil achievement between 2007 and 2010, while taking account, in a broad sense, of the degree of disadvantage at school level. (As mentioned earlier, the relationship between level of disadvantage and achievement will be explored in greater detail in this, and subsequent, reports). The first two tables (Tables 29 and 30) show the average scores in reading and mathematics, and the percentages of very low-scorers, among boys in Band 1 and Band 2 schools in 2007 and 2010. The average test scores of boys in Band 1 schools improved significantly in reading and mathematics at 2nd and 3rd class levels between 2007 and 2010. There was no significant improvement, however, in either reading or mathematics at 6th class level. Girls in Band 1 showed a significant increase in average test scores in both reading and mathematics at all grade levels. Increases in average scores were greatest at 2nd class level for both boys and girls.

Table 29. The reading raw scores (and percentages at or below the 10th percentile in parentheses) of boys in 2007 and 2010, by grade level and DEIS Band.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
Band 1	21.0 (29.7%)	22.5 (21.1%)	19.7 (35.7%)	20.9 (30.0%)	18.4 (26.2%)	16.5 (34.4%)	16.9 (31.8%)
Band 2	23.6 (20.4%)	25.3 (14.8%)	23.6 (21.9%)	23.4 (21.6%)	20.7 (15.4%)	19.7 (20.2%)	20.4 (20.1%)

[19] The numbers of boys and girls in Tables 29-32 are given in Table D in Appendix 2.

Table 30. The mathematics raw scores (and percentages at or below the 10th percentile in parentheses) of boys in 2007 and 2010, by grade level and DEIS Band.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
Band 1	13.1 (27.4%)	14.1 (23.4%)	10.4 (32.2%)	11.3 (26.0%)	11.1 (28.3%)	10.0 (33.8%)	10.0 (36.1%)
Band 2	15.1 (16.8%)	16.1 (14.6%)	13.3 (15.5%)	13.4 (16.6%)	13.4 (17.4%)	12.8 (22.1%)	13.6 (17.2%)

Table 31. The reading raw scores (and percentages at or below the 10th percentile in parentheses) of girls in 2007 and 2010, by grade level and DEIS Band.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
Band 1	22.1 (22.3%)	24.0 (16.3%)	21.2 (27.6%)	22.3 (23.2%)	17.9 (24.8%)	15.9 (37.5%)	16.9 (30.3%)
Band 2	25.0 (13.7%)	25.7 (10.8%)	24.2 (19.1%)	24.8 (16.1%)	21.2 (13.6%)	20.2 (17.9%)	19.8 (18.8%)

Table 32. The mathematics raw scores (and percentages at or below the 10th percentile in parentheses) of girls in 2007 and 2010, by grade level and DEIS Band.

	2nd		3rd		5th	6th	
	2007	2010	2007	2010	2010	2007	2010
Band 1	12.7 (26.4%)	14.1 (16.2%)	9.8 (30.7%)	11.1 (25.5%)	10.1 (34.7%)	8.6 (44.6%)	9.5 (38.5%)
Band 2	15.0 (14.2%)	15.9 (12.7%)	13.0 (16.2%)	13.2 (14.6%)	12.9 (17.3%)	12.4 (22.1%)	13.1 (18.9%)

An overview of findings in this chapter

A comparison of test data from 2007 and 2010 showed an overall improvement in average reading and mathematics achievement. This is present in all grade levels and in both subjects. Improvements are greatest at lower grade levels, with the largest gains being noted among pupils in 2nd class. Improvements appear to be more marked among pupils in Band 1 schools than those in Band 2. The average reading and mathematics score of pupils at all grade levels in Band 1 schools increased significantly between 2007 and 2010, but not all increases among Band 2 pupils were statistically significant. There is also evidence of greater improvements among pupils attending schools that were involved in schemes for disadvantage prior to the introduction of DEIS.

Improvements in average achievement were accompanied by sizeable reductions in the percentage of pupils with very low scores. There were significant reductions in the percentages of pupils with scores below the 10th percentile at each grade level and in both reading and mathematics. The decrease in very low-achieving pupils was most marked at 2nd class level.

While there seems to be a fair amount of evidence pointing to raised achievement levels in 2010, this cannot be attributed to the programme without first ruling out the impact of other factors, including changes in the sample between 2007 and 2010. For example, the presence in the 2010 sample of greater percentages of pupils from homes where English or Irish is not the main language was assessed to see if this was related to changes in achievement. Analysis revealed that, while the reading and mathematics scores of pupils whose home language was not English or Irish did increase significantly between 2007 and 2010, so too did those of native English/Irish speakers, although the magnitude of the improvement was not as great among the latter group.

CHAPTER 4: A LONGITUDINAL COMPARISON OF PUPIL ACHIEVEMENT IN READING AND MATHEMATICS IN SSP (URBAN) SCHOOLS

This chapter describes a longitudinal study in reading and mathematics in two student cohorts. Only pupils that had test data in 2nd and 3rd class in 2007 and who were tested again in 5th and 6th class three years later are involved in these comparisons. The comparisons in this section differ from the cross-sectional ones described in the previous section in that each pupil involved here has a score in both 2007 and 2010. The analyses used also differ, and paired *t*-tests are performed to give an indication of whether differences between achievement levels on the two occasions are significant.

The second class cohort

The numbers of pupils involved in the complete cohort in 2nd class in 2007 and those in the longitudinal comparison group are shown in Table 33. As the table shows, only about three-quarters (77%) of the original starting group in 2007 participated in the follow-up study three years later.

Table 33. Numbers of 2nd 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.

Cohort	Reading	Mathematics
All pupils	3,236	3,234
Longitudinal group	2,496	2,492

While some sample attrition is to be expected, it is important to compare the test scores of the entire cohort in 2007 with those of pupils who were not recaptured in 2010. This is because pupils may have dropped out of the sample for reasons that may relate to scholastic achievement (e.g., absence from school, grade retention). If significant differences were found between the achievements of both groups in 2007, it would complicate the interpretation of the longitudinal data. Table 34, therefore, shows the average reading and mathematics scale[20] scores of pupils in the entire cohort and of pupils in the subsample in the longitudinal study.

[20] While raw scores (the number of items answered correctly) were used to describe pupils' achievement in the previous section, scale scores will be used in describing longitudinal findings in this section. This is because scale scores are, by design, equivalent at 2nd class and 5th class level, and have a norm group average of 100 regardless of grade level. In contrast, the average number of raw score items achieved by the norm group varies depending on test/grade level.

Table 34. Average reading and mathematics scale scores of 2nd 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	92.4 (13.5)	91.5 (13.6)
Longitudinal group	93.1 (13.4)	92.0 (13.4)

A one-sample *t*-test was used to examine the statistical significance of the differences in 2007 between the scores of the whole group and those of pupils in the longitudinal study. In reading, a comparison value of 92.4 was used (i.e., the mean of the whole group of 2nd class pupils). The difference between the subgroup and the whole group is not statistically significant (*t*=-.005; *df*=3,235; *ns*). In mathematics, a comparison value of 91.5 was used. Again, the difference is not statistically significant (*t*=-.004; *df*=3,233, *ns*). The failure to find any significant differences in reading or mathematics indicates that there were no achievement differences between pupils in the full cohort and those in the longitudinal study. It is possible, therefore, to proceed with describing the achievements of pupils in the longitudinal study without introducing any obvious caveats.

Overall average reading and mathematics scores

The mean reading and mathematics scores of pupils who were in 2nd class in 2007 and in 5th class in 2010 are presented in Table 35. Paired sample *t*-tests indicate that there is a statistically significant improvement in reading scores between 2007 and 2010 (*t*=-6.8; *df*=2,493; *p*<.001). There is also a statistically significant difference increase between mathematics scale scores in 2007 and 2010 (*t*=-5.3; *df*=2,487; *p*<.001). It seems, therefore, that pupils who were in 2nd class in 2007 gained ground in reading and mathematics over the following three years[21].

Table 35. Average reading and mathematics scale scores of pupils in the longitudinal study in 2nd class in 2007 and in 5th class in 2010.

Reading Mean (*SD*) (*N*=2,494)		Mathematics Mean (*SD*) (*N*=2,488)	
2007	**2010**	**2007**	**2010**
93.1 (13.4)	94.5 (13.5)	92.0 (13.4)	93.2 (14.5)

[21] It should be noted, however, that achievements were assessed using different levels of the test and that there is an element of error involved in all such measurement.

It is important to recognise that when pupils are tested on more than one occasion, regression of their scores to the mean may occur (e.g., a pupil with a low score on the first occasion tends to achieve a better score when re-tested). A note on this phenomenon, and a description of how it was found not to have had any practical impact on outcomes here, is provided in Appendix 3. While adjusting the data here for regression to the mean results, for example, in fewer pupils in the extreme categories than when unadjusted scores are used, there is no significant (or practical) difference between adjusted and unadjusted average scores. This means that the overall averages reported in the section of this report that deals with longitudinal data may be taken as valid estimates of pupil achievement.

Pupils' achievements 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 36). 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. Results of chi-square tests investigating whether or not there were overall differences in the percentages of pupils occupying the various categories reveal statistically significant differences in both reading (χ^2=2,166; *df*=25; $p<.001$) and mathematics (χ^2=1,517; *df*=25, $p<.001$).

Table 36. Percentages of pupils in 2nd class in 2007 and 5th 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	20.0%	16.6%	20.0%	22.8%
11th to 25th	21.5%	20.3%	25.8%	21.4%
26th to 50th	28.8%	29.7%	29.9%	23.7%
51st to 75th	19.8%	21.0%	14.7%	20.4%
76th to 89th	7.5%	8.7%	7.1%	6.1%
At or above 90th	2.5%	3.8%	2.6%	5.6%

An examination of the percentages in Table 36 shows that there was a sizeable decrease in the percentage of pupils with scores at or below the 10th percentile in reading, but an increase in pupils scoring at this level in mathematics. However, this appears to be compensated for by the occurrence of a greater percentage of scores above the 50th

percentile in 2010. For example, in 2007 about a quarter of all pupils' scores were above the 50th percentile, whereas almost one-third of the same set of pupils scored at this level in 2010. In both reading and mathematics there was a small increase in the percentage of pupils scoring at or above the 90th percentile. Table 37 shows a cross-tabulation of percentages of pupils in 2007 and 2010 with reading scores in various percentile categories. The shaded diagonal line contains the numbers of pupils who did not change their percentile category between 2007 and 2010. An examination of the numbers in these shaded cells shows that the majority of pupils were located in the same category for reading in 2010 as they had been in 2007. If pupils' starting categories in 2007 (on the extreme right-hand side of the table) are examined, it shows that of the 498 pupils in 2007 that had scores at or below the 10th percentile, 256 remained in that category in 2010, 143 had moved up one category, and 73 had moved up two categories to a point where they were scoring between the 26th and the 50th percentile. Where pupils moved category between 2007 and 2010, the direction was more often upward than downward.

Table 37. Cross-tabulation of numbers in the cohort of pupils in 2nd class in 2007, and again when they were in 5th 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	51th to 75th	76th to 89th	at or above 90th	Total
Percentile rank category 2007	at or below 10th	256	143	73	20	6	0	498
	11th to 25th	124	178	181	50	3	0	536
	26th to 50th	33	155	327	175	28	1	719
	51th to 75th	3	26	146	210	83	25	493
	76th to 89th	0	3	13	63	78	29	186
	at or above 90th	0	0	0	6	19	37	62
Total		416	505	740	524	217	92	2494

Table 38 contains the equivalent cross-tabulation for mathematics. The overall picture in mathematics is similar to that in reading in that the majority of pupils in 2010 remained in their 2007 percentile category. However, in contrast with the situation in reading, there are more pupils with scores at or below the 10th percentile in mathematics in 2010 (*N*=568) than there were in 2007 (*N*=498). On the other hand, twice as many pupils in 2010 achieved scores above the 90th percentile than was the case in 2007. In mathematics, therefore, it appears that the major change has occurred at the higher end

of the achievement range (above the 50th percentile) whereas in reading change was most noticeable at the lower end.

Table 38. Cross-tabulation of numbers in the cohort of pupils in 2nd class in 2007, and again when they were in 5th 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	51th to 75th	76th to 89th	at or above 90th	Total
Percentile rank category 2007	at or below 10th	285	124	73	14	1	1	498
	11th to 25th	189	212	165	65	7	3	641
	26th to 50th	78	162	243	205	40	16	744
	51th to 75th	15	26	80	145	58	40	364
	76th to 89th	1	7	25	69	31	42	175
	at or above 90th	0	0	3	10	16	37	66
Total		568	531	589	508	153	139	2488

Reading and mathematics achievement according to gender

When the achievements of boys and girls are examined separately, analyses show that, for boys, changes in reading and mathematics between 2007 and 2010 are statistically significant. In 2010, boys achieved a mean reading score which was significantly above their mean score in 2007 (t=-8.8; df=1,263; p<.001) and a mean mathematics score which was significantly higher than in 2007 (t=-5.2; df=1,259; p<.001). However, while there was a significant difference in girls' mathematics scores between 2007 and 2010 (t=-2.2; df=1,227; p<.05), there was no statistically significant difference in their average reading scores (t=-0.6, df=1,229; *ns*) (Table 39).

Table 39. Average reading and mathematics scale scores of boys and girls in the longitudinal study in 2nd class in 2007 and in 5th class in 2010.

	Reading Mean (*SD*)		Mathematics Mean (*SD*)	
Gender	2007	2010	2007	2010
Boy (*N*=1,264)	92.1 (13.7)	94.6 (13.6)	92.4 (13.9)	94.1 (14.7)
Girl (*N*=1,230)	94.2 (13.0)	94.4 (13.4)	91.6 (12.9)	92.3 (14.2)

The percentages of boys and girls with scores falling into various percentile categories in reading are given in Table 40. There appears to be a general upward shift in boys' scores, with almost 7% fewer boys in 2010 achieving scores at or below the 10th

percentile in reading than in 2007. Chi-square analysis revealed significant differences in the percentages scoring in the various percentile categories (χ^2=1,041; *df*=25, *p*<.001). The results among girls is different in that, although there are significant differences in the percentages of girls' reading scores falling into each of the categories (χ^2=1,137; *df*=25, *p*<.001), the differences at the lower end are small. Furthermore, among girls there is only a slight shift upwards through the categories, and there is even a small (non-significant) increase in the percentage of girls at or below the 10th percentile in reading. This might be expected given that the average scale score for reading among girls only rose by 0.2 of a scale score point (see Table 39).

Table 40. Percentages of boys and girls in 2nd class in 2007 and 5th 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.

Reading	Boy		Girl	
	2007	2010	2007	2010
At or below 10th	23.8%	16.9%	16.1%	16.4%
11th to 25th	21.4%	19.7%	21.5%	20.8%
26th to 50th	26.3%	29.2%	31.3%	30.2%
51st to 75th	19.1%	21.1%	20.5%	20.8%
76th to 89th	7.6%	9.6%	7.3%	7.8%
At or above 90th	1.7%	3.6%	3.2%	4.0%

In mathematics, an upward shift in percentile category is observed for boys. For example, 21.6% of boys had scores just above the median in 2010 compared with 14.8% in 2007 (Table 41). However, there are some unusual features of the scoring pattern among girls when compared with that of boys. First, it is noteworthy that 5% more girls in 2010 (at 24.8%) had scores at or below the 10th percentile than had been the case in 2007. Second, girls' scores are not distributed predictably in the sense that the percentage in the category immediately above the 10th percentile (11th-25th percentile) decreases to 21.5% and then increases again to 24.4% for the next category (26th-50th). It should be noted, however, that the categories are large and the cut-points are fairly arbitrary, and if alternative (or a greater number of) cut-points were used, a different pattern might emerge.

Table 41. Percentages of boys and girls in 2nd class in 2007 and 5th 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.

Mathematics	Boys		Girls	
	2007	2010	2007	2010
At or below 10th	20.6%	20.9%	19.3%	24.8%
11th to 25th	24.8%	21.2%	26.7%	21.5%
26th to 50th	29.2%	23.1%	30.5%	24.4%
51st to 75th	14.8%	21.6%	14.5%	19.1%
76th to 89th	7.3%	6.6%	6.8%	5.7%
At or above 90th	3.3%	6.6%	2.0%	4.5%

Pupils with large discrepancies in their test scores in 2007 and 2010

Finally, the data presented here indicate that reading and mathematics achievements tend to be quite stable. For example, as noted earlier, Table 37 shows that individuals tended to occupy the same general achievement category in reading when tested on two separate occasions. Furthermore, if pupils have moved up or down, they tend to move into adjacent categories rather than to categories that are far removed from those in which they started. There are, of course, exceptions to this pattern. Table 42 shows the numbers of pupils whose scores are very discrepant as indicated by the fact that their initial and follow-up scores differ by one standard deviation[22] or more in reading.

Table 42. Numbers and percentages of pupils whose reading scale scores[23] in 5th class in 2010 were within 15 scale score points (one standard deviation) of, were 15 scale score points below, or were 15 scale score points above their initial scale score in 2nd class in 2007.

Category	Number	%
2010 scale score 15 points or more **higher** than 2007	221	8.9%
2010 scale score **within** 15 points of score in 2007	2,165	86.8%
2010 scale score 15 points or more **lower** than 2007	108	4.3%
Total	2,494	100%

[22] The standard deviation (*SD*) of a set of scores is a measure of their dispersion (i.e., an indication of how spread out the scores are around the average). However, the *SD* is often used also as a benchmark or cut-off point denoting extreme scores. This is because predictable percentages of scores fall within one, two, and three *SD*s from the mean. For example, in a normal distribution of DSRT scores, 68% of pupils would be expected to have scores that fall between the mean and one *SD* of it. A pupil scoring exactly one *SD* above the mean would be outperforming 84% of pupils at that level, while a pupil scoring exactly one standard deviation below the mean would be outperformed by 84% of pupils.

[23] These scores are not adjusted for regression to the mean. They are the actual scale scores recorded for pupils in the sample.

As Table 42 shows, almost 9% of pupils achieved a reading score in 2010 which was at least one standard deviation higher than their 2007 score. Less than half of that percentage achieved a score that was at least one standard deviation below their 2007 score. In mathematics, while the general pattern is similar, there are greater numbers of very discrepant scores (Table 43), with one in every five pupils achieving at very different levels on both occasions.

Table 43. Numbers and percentages of pupils whose mathematics scale scores[24] in 5th class in 2010 were within 15 scale score points (one standard deviation) of, were 15 scale score points below, or were 15 scale score points above their initial scale score in 2nd class in 2007.

Category	Number	%
2010 scale score 15 points or more **higher** than 2007	297	11.9%
2010 scale score **within** 15 points of score in 2007	1,994	80.1%
2010 scale score 15 points or more **lower** than 2007	197	7.9%
Total	2,488	100%

An examination of the factors associated with such large improvements and disimprovements is beyond the scope of this initial report, although it is intended to examine them in more detail (e.g., using data provided by teachers) in future reports.

The third class cohort

The numbers of pupils involved in the complete cohort in 3rd class in 2007 and those in the longitudinal comparison group are shown in Table 44. As the table shows, about four-fifths (81%) of the 2007 group participated in the follow-study. The percentage recapture among this cohort is slightly higher than that among the 2nd to 5th class cohort described earlier. About four-fifths of the 3rd to 6th class cohort were tested on a second occasion compared to just over three-quarters of the 2nd to 5th cohort. This may to be due to the fact that more of the 3rd to 6th class cohort are enrolled in the same schools as they were attending in 2007. Following 2nd class pupils to 5th class, on the other hand, may be complicated by the fact that some 2nd class pupils may have been enrolled in junior (i.e., different) schools in 2007 that were not in the test sample.

[24] These scores are not adjusted for regression to the mean. They are the actual scale scores recorded for pupils in the sample.

Table 44. 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.

Cohort	Reading	Mathematics
All pupils	4,063	4,056
Longitudinal group	3,323	3,313

The test scores of the entire cohort in 2007 were compared with those of pupils who were recaptured in 2010. Table 45 shows the average reading and mathematics scale scores of pupils in the entire cohort and of pupils in the subsample in the longitudinal study.

Table 45. Average reading and mathematics scale 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	90.7 (14.0)	91.1 (15.6)
Longitudinal group	91.7 (13.5)	91.5 (14.8)

A one-sample *t*-test was used to test for significant differences between the scores of the whole group and those of pupils in the longitudinal study in 2007. In reading, a comparison value of 90.7 was used (i.e., the mean of the whole group of third class pupils). The difference between the subgroup and the whole group is not statistically significant (t=.010; df=4,062; *ns*). In mathematics, a comparison value of 91.1 was used. Again, the difference is not statistically significant (t=-.008; df=3,233, *ns*). As was the case with the 2nd to 5th class longitudinal cohort, the absence of significant differences between the average reading and mathematics scores of the whole group and the longitudinal subgroup facilitates the uncomplicated description of the progress or otherwise of the latter group.

Overall average reading and mathematics scores

Table 46 shows the mean reading and mathematics scores of pupils who were in 3rd class in 2007 and in 6th class in 2010. Paired sample *t*-tests indicate that there is a statistically significant improvement in reading scores between 2007 and 2010 (t=-4.6; df=3,323; p<.001). However, average scale scores in mathematics did not differ significantly in 2007 and 2010 (t=-.11; df=3,313; *ns*). Therefore, while pupils who were in 3rd class in 2007 gained ground in reading over the following three years, this was not true in the case of mathematics.

Table 46. 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*=3,333)		Mathematics Mean (*SD*) (*N*=3,319)	
2007	**2010**	**2007**	**2010**
91.2 (13.9)	92.0 (13.5)	91.6 (15.5)	91.7 (14.7)

Pupils' achievements 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 47). Percentile rank categories were as before: less than or equal to the 10th percentile; 11th to 25th; 26th to 50th, 51st-75th; 76th to 89th; and 90th or above. Results of chi-square tests investigating whether or not there were overall differences in the percentages of pupils occupying the various categories reveal statistically significant differences in both reading (χ^2=2,406; *df*=25; *p*<.001) and mathematics (χ^2=2,490; *df*=25, *p*<.001).

Table 47. 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 (*N*=3,333)	**2010** (*N*=3,330)	**2007** (*N*=3,319)	**2010** (*N*=3,334)
At or below 10th	25.2%	23.3%	23.1%	26.9%
11th to 25th	24.4%	23.9%	27.1%	21.3%
26th to 50th	24.2%	27.4%	20.8%	21.7%
51th to 75th	19.3%	16.5%	16.5%	19.2%
76th to 89th	5.1%	5.9%	6.9%	5.1%
At or above 90th	1.8%	2.9%	5.5%	5.8%

As Table 47 shows, there was a small decrease in the percentage of pupils with scores at or below the 10th percentile in reading, but a slightly larger increase in pupils scoring at this level in mathematics. In both reading and mathematics there was a small increase in the percentage of pupils scoring at or above the 90th percentile. In reading, there was a greater percentage of pupils at or below the 50th percentile in 2010 than in 2007 (74.6% vs 61.6%). In mathematics, a slightly greater percentage of pupils in 2007 (71.0%) had scores at or below the 50th percentile than was the case three years later (69.9%). Table 48 shows a cross-tabulation of percentages of pupils in 2007 and 2010

with reading scores in various percentile categories, with the shaded diagonal line containing the numbers of pupils who remained in the same percentile category on both occasions. An examination of the diagonal shows that the majority of pupils were located in the same category for reading in 2010 as they had been in 2007. If pupils' starting categories are examined, it shows that of the 837 pupils in 2007 that had scores at or below the 10th percentile, 244 had moved up one category by 2010, 121 had moved up two categories, and 20 had moved up three categories to a point where they were scoring between the 51st and the 75th percentile. Unlike the pattern among 2nd class pupils reported earlier, where pupils moved category between 2007 and 2010, the direction was more often downward than upward. For example, of the 805 pupils in 2007 that had scores between the 26th and 50th percentile, 211 went down one category in 2010 while only 159 went up one category.

Table 48. 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	51th to 75th	76th to 89th	at or above 90th	Total
Percentile rank category 2007	at or below 10th	451	244	121	20	1	0	837
	11th to 25th	237	287	218	60	9	0	811
	26th to 50th	72	211	335	159	25	3	805
	51th to 75th	11	52	215	241	91	30	640
	76th to 89th	1	2	20	63	52	33	171
	at or above 90th	0	0	4	6	19	31	60
Total		772	796	913	549	197	97	3324

Table 49 reveals a similar picture in mathematics, with the largest group in 2007 composed of pupils with scores between the 11th to 25th percentile (*N*=896) having more pupils migrating to the category immediately below their starting category (*N*=318) than to the one immediately above it (*N*=202). However, there are groups of pupils who demonstrated considerable progress. For example, of the 765 pupils who were at or below the 10th percentile in mathematics in 2007, 197 increased their score in 2010 by one percentile category, while 60 pupils increased it by two categories.

Table 49. 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	51th to 75th	76th to 89th	at or above 90th	Total
Percentile rank category 2007	at or below 10th	496	197	60	12	0	0	765
	11th to 25th	318	295	202	72	6	3	896
	26th to 50th	69	159	262	169	24	7	690
	51th to 75th	14	49	154	226	55	51	549
	76th to 89th	0	7	32	101	42	48	230
	at or above 90th	0	1	7	57	38	81	184
Total		897	708	717	637	165	190	3314

Reading and mathematics achievement according to gender

When boys and girls are considered separately (Table 50), a statistically significant difference in reading scores between 2007 and 2010 exists for boys (t=-8.3; df=1,639; p<.001) but not girls (t=1.8, df=1,683, *ns*). In mathematics, the difference is not statistically significant for either boys (t=-.78; df=1,644; *ns*) or girls (t=.6; df=1,688, *ns*).

Table 50. Average reading and mathematics scale scores of boys and girls in the longitudinal study in 3rd class in 2007 and in 6th class in 2010.

	Reading Mean (*SD*)		Mathematics Mean (*SD*)	
Gender	2007	2010	2007	2010
Boy (*N*=1,647)	90.4 (14.2)	92.5 (14.3)	92.3 (16.1)	92.5 (15.1)
Girl (*N*=1,687)	92.1 (13.5)	91.6 (12.7)	91.0 (14.7)	91.0 (14.3)

Change in the percentage of very high and low scoring pupils between 2007 and 2010 was examined separately for boys and girls (Table 51). Results of chi-square tests revealed statistically significant differences in the percentage of boys (χ^2=1,246; df=25; p<.001) and girls (χ^2=1,269; df=25, p<.001) scoring at different percentile categories in reading in 2007 and 2010. There was a marked decrease in the percentage of boys, but not girls, scoring at or below the 10th percentile in 2010. It should be noted, however, that this reduction in very low scores among boys served only to bring them up to a marginally more favourable position than girls in 2010.

Table 51. Percentages of boys and girls in 3rd class in 2007 and 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.

Reading	Boys		Girls	
	2007	2010	2007	2010
At or below 10th	27.8%	23.9%	22.6%	22.8%
11th to 25th	24.1%	23.1%	24.7%	24.8%
26th to 50th	23.8%	26.0%	24.7%	28.8%
51th to 75th	17.4%	16.1%	21.0%	16.8%
76th to 89th	4.9%	7.0%	5.4%	4.9%
At or above 90th	2.0%	3.9%	1.6%	2.0%

In mathematics, significant changes in the occupancy of various percentile categories were also observed for boys (χ^2=1,304; *df*=25; *p*<.001) and girls (χ^2=1,212; *df*=25, *p*<.001). Among boys, there appears to be a general upward shift in percentile category, with a smaller percentage of low-scorers and a greater percentage of high scorers (Table 52). There was little change among girls, on the other hand, with the exception of a shift in occupancy of the middle categories, with slightly more girls in 2010 in the category at or below the 50th percentile than in the 51st to 75th percentile. Of course, major changes in percentile categories occupied by girls would be unlikely given that their mean 3rd class mathematics scale score of 91 is identical to their mean 6th class scale score three years later.

Table 52. Percentages of boys and girls in 3rd class in 2007 and 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.

Maths	Boys		Girls	
	2007	2010	2007	2010
At or below 10th	23.0%	25.7%	23.3%	28.0%
11th to 25th	24.9%	20.6%	29.2%	22.1%
26th to 50th	20.0%	21.5%	21.5%	21.9%
51th to 75th	17.9%	20.1%	15.2%	18.3%
76th to 89th	7.7%	5.3%	6.2%	4.9%
At or above 90th	6.5%	6.8%	4.6%	4.7%

Pupils with large discrepancies in their test scores in 2007 and 2010

As was pointed out in relation to the data relating to the 2nd to 5th class cohort, there are pupils for whom test scores on two occasions are extremely discrepant. Table 53 shows the numbers of pupils whose initial and follow-up scores are within, and that differ by, one standard deviation or more in reading.

Table 53. Numbers and percentages of pupils whose reading scale scores[25] in 6th class in 2010 were within 15 scale score points (one standard deviation) of, were 15 scale score points below, or were 15 scale score points above, their initial scale score in 3rd class in 2007.

Category	Number	%
2010 scale score 15 points or more **higher** than 2007	330	10.0%
2010 scale score **within** 15 points of score in 2007	2,783	83.7%
2010 scale score 15 points or more **lower** than 2007	211	6.3%
Total	3,324	100%

One in every ten pupils achieved a reading score in 2010 which was at least one standard deviation higher than their 2007 score (Table 53), while just over 6% of pupils achieved a score that was at least one standard deviation below their 2007 score. A pupil with a test score which is one standard deviation greater or less than their corresponding score on a previous occasion is fairly uncommon. Sometimes major progress on a pupil's part results in gains of such magnitude. For example, improved language skills among non-English speaking pupils may result in greatly improved reading scores. On the other hand, concentration, application, and luck with the pool of items could also lead to greatly improved scores. In mathematics, highly discrepant scores are less common (Table 54), with fewer than one in nine pupils achieving at very different levels on both occasions. Furthermore, unlike in reading, the numbers of pupils achieving scores that are 15 standard score points above and below their 2007 score in mathematics are virtually equal.

An examination of the factors associated with such large improvements and disimprovements is beyond the scope of this initial report, although it is intended to examine them in more detail (e.g., using data provided by teachers) in future reports.

[25] The scores in this table and in Table 54 are not adjusted for regression to the mean. They are the actual scale scores recorded for pupils in the sample.

Table 54. Numbers and percentages of pupils whose mathematics scale scores in 6th class in 2010 were within 15 scale score points (one standard deviation) of, were 15 scale score points below, or were 15 scale score points above, their initial scale score in 3rd class in 2007.

Category	Number	%
2010 scale score 15 points or more **higher** than 2007	280	8.4%
2010 scale score **within** 15 points of score in 2007	2,760	83.3%
2010 scale score 15 points or more **lower** than 2007	274	8.3%
Total	3,314	100%

An overview of findings in this chapter

The findings relating to the two longitudinal cohorts of pupils are consistent with the outcomes of cross-sectional comparisons described in Chapter 3. However, while the findings are broadly consistent with those of the cross-sectional analysis, they are not uniformly so. While pupils in 5th class in 2010 improved significantly on their 2nd class achievements in both reading and mathematics, significant improvement at 6th class level was confined to reading. There were also differences between the pattern of scoring in reading and mathematics. For example, in both cohorts, fewer pupils had very low reading scores (at or below the 10th percentile) in 2010 than was the case when they were in 2nd or 3rd class three years earlier. In contrast, a greater percentage of pupils in both cohorts had mathematics scores that were at or below the 10th percentile in 2010 than had been the case in 2007. However, this appears to be compensated for somewhat by greater percentages of pupils with achievements that are above average. The findings relating to gender are mixed, but boys appear to have made more progress in reading than did girls, although the lower starting base of boys needs to be acknowledged.

Because the data in this section relate to the same pupils on two occasions, factors such as increases in the presence of pupils whose home language is not English or Irish are less relevant to the interpretation of any observed changes in achievement than when cross-sectional comparisons are involved. However, a more detailed set of analyses is planned which will use data from a variety of sources to identify school and individual level factors associated with achievement gains and losses.

CHAPTER 5: OTHER FINDINGS RELATED TO PUPIL ACHIEVEMENT

Some preliminary analyses of achievement data at school level among SSP (urban) schools

While most of the analyses carried out in relation to achievement has been at an individual pupil level, some preliminary work has been done with achievement data which have been aggregated to school level.

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 urban schools would increase and half would decrease. However, an examination of the aggregated data for reading achievement reveals that this is not the case.

School-level changes in reading

Of the 101 schools that took part in the testing at 2nd class level, 70.3% showed an increase in their average raw score for reading since testing in 2007 (Table 55). At 3rd and 6th class level the average raw score of almost 60% of schools increased between 2007 and 2010. It should be noted, however, that these increases and decreases take no account of the magnitude of the change.

An attempt was made, therefore, to identify non-arbitrary benchmarks or cut-off points that could be considered to represent a meaningful change in both reading and mathematics. For this, standard deviations associated with observed reading averages were examined. There was some variation in the standard deviations for the average raw score measurements in reading at different levels. The standard deviation was close to 9 in all cases except for 6th class level, where it was closer to 8. Therefore, for reading (see Table 55), it is reasonable to interpret the benchmark representing the greatest change in scores (i.e., plus or minus 6 average raw score points) as a change of two-thirds of a standard deviation for 2nd and 3rd class, and as a change of three-quarters of a standard deviation for 6th class. An examination of large changes in average raw scores for 2nd class reading indicates considerable improvements between 2007 and 2010. About 9% of schools had an increase of 6 (i.e., two-thirds of a standard deviation) or more raw

score points on their 2007 average, while none had a comparably sized decrease in points. The same comparisons were less marked at 3rd and 6th class levels but both showed that more schools had an increase of two-thirds or more of a standard deviation than had had a similarly sized decrease. Further examination of data from 2nd class revealed that about 30% of schools showed an increase of at least one-third of a standard deviation (i.e., approximately 3 raw score points), compared to only 2% of schools that showed a decrease of the same magnitude. It is also worth noting that most (about 70% at each level) of the increases and decreases observed are small (i.e., between 0 and 3 average raw score points). At 2nd and 3rd class levels there were no average decreases greater than 6 average raw score points.

Table 55. Percentages of schools showing increases and decreases of varying magnitudes in average reading raw scores between 2007 and 2010.

	Class level		
	2nd (*N*=101)	**3rd (*N*=113)**	**6th (*N*=114)**
Increase > 6	8.9%	2.7%	3.5%
Increase between 3 and 6	20.8%	19.5%	10.5%
Increase between 0 and 3	40.6%	35.3%	45.6%
Total % showing average increase	**70.3%**	**57.5%**	**59.6%**
Decrease between 0 and 3	27.7%	34.5%	29.9%
Decrease between 3 and 6	2.0%	8.0%	7.9%
Decrease > 6	–	–	2.6%
Total % showing average decrease	**29.7%**	**42.5%**	**40.4%**

One category of school that is of particular interest is schools that have demonstrated increases in reading at all grade levels. Some preliminary work in this area indicates that a significant minority of schools fall into this category. Reading test data were available at 2nd, 3rd and 6th class levels in both 2007 and 2010 for 95 urban schools. Of these, 22 showed an increase in average reading raw score across all three levels, while only three schools showed a decrease in their average reading score across all three levels.

School-level changes in mathematics

The standard deviation for mathematics, at all levels and for all measurements, was around 6. Therefore, a change of 4 raw score points may be seen as a change (increase

or decrease) in the order of two-thirds of a standard deviation. On the basis of preliminary analysis of the data, the situation with mathematics appears less positive. Only a slightly greater percentage of schools have seen an increase, as opposed to a decrease, in their average scores in mathematics and this is true at all three grade levels. However, it is clear from Table 56 that in 2nd class there was a greater percentage (10.9%) of schools with an increase of two-thirds (i.e., approximately 4 raw score points) or more of a standard deviation compared to 3.9% of schools with a similarly sized decrease. There is a slight upward trend (from 50.5% of schools at 2nd class level to 56.1% of schools at 6th class level) in average scores for mathematics. This trend is different from that for reading. In reading, the highest percentage of 'improving schools' is seen at 2nd class level (70.3%).

Table 56. Percentages of schools showing increases and decreases of varying magnitudes in average mathematics raw scores between 2007 and 2010.

	Class level		
	2nd (*N*=101)	**3rd (*N*=113)**	**6th (*N*=114)**
Increase > 4	10.9%	7.1%	6.1%
Increase between 2 and 4	13.9%	7.9%	15.8%
Increase between 0 and 2	25.7%	36.3%	34.2%
Total % showing average increase	**50.5%**	**51.3%**	**56.1%**
Decrease between 0 and 2	31.7%	28.3%	23.6%
Decrease between 2 and 4	13.9%	15.9%	11.4%
Decrease > 4	3.9%	4.4%	8.8%
Total % showing average decrease	**49.5%**	**48.6%**	**43.8%**

Analysis of mathematics data also revealed that 20 out of 94 schools showed an increase in average mathematics raw score across all three grade levels, while 14 showed an average decrease. As mentioned earlier, this analysis is preliminary. As part of the evaluation it is planned to carry out further, more in-depth, studies in schools where improvement is significant in reading or in mathematics, (or in both), at one or more levels. These studies may take various forms, including observation in schools and interviews with staff members.

Achievement in rural schools: A summary account

The rural samples in 2007 and 2010

As part of the evaluation of the rural dimension of the SSP, baseline achievement data were collected in May 2007 in a sample of 276 participating rural schools using the English reading and mathematics tests described earlier with 3rd and 6th class pupils (Table 57). Follow up testing was carried out in May 2010 in many of the same schools and with many of the same pupils. In both years, rural co-ordinators undertook the testing in schools in their clusters. Where the co-ordinator post was vacant, specially trained administrators were recruited and sent to the schools to do the testing. This was also the case in schools that were categorised as 'unclusterable' due to their lack of proximity to other SSP schools.

In 2010, 271 rural schools were identified for testing. All of these schools had taken part in the testing in 2007[26]. Following the withdrawal of 14 schools, the final sample was composed of 257 schools, with six of these schools testing at one grade level only.

Table 57. Numbers of schools and clusters in the rural sample in 2007 and 2010.

	2007		2010	
Category	**Schools**	**Clusters**	**Schools**	**Clusters**
Has co-ordinator	221	67	223	52
Does not have co-ordinator	36	12	1	1
Unclusterable	19	NA	35	NA
Total	**276**	**79**	**259**	**53**

[26] In 2007, where co-ordinators were working with clusters of schools, they were asked to administer, (or to oversee the administration of) the tests in those schools. In 2007, all 221 schools in clusters that had appointed co-ordinators were selected for testing. Of the schools in clusters in which the co-ordinator post was vacant, about half were randomly chosen to participate in the testing. This resulted in the selection of a further 36 schools in 12 clusters. Approximately two-thirds of the 31 schools that were not in a cluster at all were randomly sampled to provide an additional 23 schools. Four of these schools were subsequently excluded because they were situated on remote islands, resulting in a final sample of 19 unclusterable schools. Schools in the categories described amounted to 276 schools in total. However, not all of the 276 schools selected for the sample participated. Following the withdrawal of several schools, for example, because they had no pupils in 3rd or 6th class or were due to close, the final sample consisted of 266 schools. Between 2007 and 2010 changes were made to the composition of many of the rural clusters. Some of these changes were necessitated because schools that had been in clusters due to their participation in GCEB were not selected for inclusion in DEIS under SSP. When deciding on the sample to re-test in 2010, co-ordinators were asked to test only schools in their cluster that had been tested in 2007. Ten of the 271 schools identified for testing in 2010 were in HSCL clusters with either a post-primary co-ordinator or no co-ordinator and it was decided not to test in these schools. A further two schools had no pupils in either 3rd or 6th class and so did not take part in the testing. Two schools which had taken part in the testing in 2007 had since amalgamated and this new school was included in the testing. One school had closed since 2007. A further four schools indicated that they had no 3rd class pupils and two schools indicated that they had no pupils in 6th class. This gave a final total of 257 schools in the sample in 2010.

Very similar numbers of students were involved in the testing in both 2007 and 2010 (Table 58), although the overall figure in 2010 was slightly lower at 4,537. Of the 6th class pupils tested in 2010, 2,075 (90.6%) had been tested as 3rd class pupils in 2007. Table 58 shows the numbers of pupils and percentages of pupils exempted from testing in both 2007 and 2010[27]. In both years, exempted pupils comprise a very small percentage of the overall sample. In 2010, the overall percentage of exempted pupils is slightly lower than the 2007 figure at both grade levels. Exemptions were highest at 3rd class level in 2007 (1.7%) and lowest at 6th class level in 2010 (1.1%).

Table 58. Total number of pupils at 3rd and 6th class levels in 2007 and 2010, and total numbers and percentages of exempted pupils, by grade level, for both years.

Grade level	2007			2010		
	A. Total pupils	B. Pupils exempted from testing	Pupils in target sample (A-B)	C. Total pupils	D. Pupils exempted from testing	Pupils in target sample (C-D)
3rd class	2,380	40 (1.7%)	2,340	2,247	31 (1.4%)	2,216
6th class	2,259	28 (1.2%)	2,231	2,290	25 (1.1%)	2,265
All	4,639	68 (1.5%)	4,571	4,537	56 (1.2%)	4,481

There were slightly lower percentages of pupils absent in 2010 than in 2007 for both reading and mathematics at each grade level. The overall absenteeism rate dropped from just over 7% in 2007 to just over 6% in 2010, although the difference is not statistically significant.

A cross-sectional comparison of average reading achievement in rural schools

This section describes the achievements of pupils in rural schools that were involved in the testing in 2007 and 2010. The results of cross-sectional analyses, including comparisons of average test scores on both occasions at 3rd and 6th class levels, and of the percentages of low and high-scoring pupils, are presented. Some comparisons are made between girls and boys also.

[27] Data on exemptions ignore the fact that there were small differences in the numbers of pupils exempted from the reading test and the mathematics test. Where teachers elected to exempt pupils, they tended to exempt them from all testing.

Average reading raw scores (the number of test items answered correctly on the DSRT) increased at both grade levels (i.e., 3rd class and 6th class) between 2007 and 2010 (Table 59). The size of the increases in reading average scores was about the same at 3rd and 6th class level, and the increases were statistically significant at both grade levels (see Table A in Appendix 4 for results of individual comparisons using *t*-tests). The 3rd class average reading score increased from 25.7 to 26.7, while the 6th class increase was slightly greater, going from 21.0 in 2007 to a 2010 average of 22.4. These average scores for each level are both slightly below the national norm. 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. The percentage decrease is slightly greater in 6th class with 4.3% fewer pupils with very low scores in 2010 than was the case in 2007. For 3rd class the percentage of pupils with scores at or below the 10th percentile dropped from 15.9% in 2007 to 12.1% in 2010, a decrease of 3.8%. 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 4.4% in 2007 to 6.3% in 2010 (see Table B in Appendix 4 for results of individual comparisons using Chi-Square tests). 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.

Table 59. The reading achievements (raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of rural pupils in 2007 and 2010, by grade level.

	3rd class		6th class	
	2007	2010	2007	2010
	(*N*=2,206)	(*N*=2,116)	(*N*=2,097)	(*N*=2,139)
Mean raw score	25.7	26.7	21.0	22.4
Mean standard score	96.3	97.8	95.6	98.1
At or below 10th percentile	15.9%	12.1%	16.2%	11.9%
11th-25th percentile	18.9%	17.2%	19.2%	16.3%
26th-50th percentile	24.8%	26.2%	30.1%	31.3%
51st-75th percentile	25.9%	29.2%	20.6%	24.5%
76th-89th percentile	10.1%	12.0%	9.4%	9.8%
At or above 90th percentile	4.3%	3.3%	4.4%	6.3%

Note. The DSRT contains 40 items at each level 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. The full range of percentile equivalences are given in Table B in Appendix 2.

Analysis of mathematics data revealed a significant increase in average test scores at both grade levels also. 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 (Table 60). This average score for 6th class mathematics is very close to the national norm of 15.5. The average raw score of 14.8 for 3rd class pupils involved in the testing is very close also to the national norm for that 3rd class of 15.5. 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 4.3% fewer pupils had scores at or below the 10th percentile. For 3rd class the percentage of pupils having very low mathematics scores decreased from 12.3% to 10%. Increases were observed also 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, 8.8% of 6th class pupils in the sample achieved very high test scores in mathematics (at or above the 90th percentile). By 2010 the percentage of high-scoring pupils had increased to 13%. An increase was seen in the percentage of high-scoring 3rd class pupils also, but the difference between the percentages in 2007 and 2010 was not statistically significant.

Table 60. The mathematics achievements (raw score, and percentages scoring at various ranges of percentiles, including at or above the 90th percentile and at or below the 10th percentile) of rural pupils in 2007 and 2010, by grade level.

	3rd class		6th class	
	2007	2010	2007	2010
	(N=2,211)	(*N*=2,090)	(*N*=2,097)	(*N*=2,139)
Mean raw score	14.3	14.8	13.9	15.1
Mean standard score	98.2	99.4	96.9	99.9
At or below 10th percentile	12.3%	10.0%	15.8%	11.5%
11th-25th percentile	20.9%	20.0%	16.6%	13.9%
26th-50th percentile	20.8%	20.4%	24.0%	23.1%
51st-75th percentile	23.3%	24.1%	25.9%	25.7%
76th-89th percentile	10.7%	12.6%	8.8%	12.7%
At or above 90th percentile	12.1%	12.8%	8.8%	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.

Reading and mathematics achievement according to gender

Tables 61 and 62 show the average reading and mathematics test scores of boys and girls. The test scores of both boys and girls increased significantly in reading at both grade levels. In mathematics, girls in 3rd class did not show a significant increase in test scores. In 2010, girls performed significantly better than boys in reading at 3rd class level. The opposite was true for mathematics, where the boys' average test score was significantly higher than that of girls. No significant difference was found between the average test scores of boys and girls in 6th class, for either reading or mathematics.

Table 61. The reading and mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of boys in 2007 and 2010, by grade level.

	Reading				Mathematics			
	3rd class		6th class		3rd class		6th class	
	2007	2010	2007	2010	2007	2010	2007	2010
	(*N*=1,123)	(*N*=1,073)	(*N*=1,004)	(*N*=1,081)	(*N*=1,126)	(*N*=1,058)	(*N*=1,004)	(*N*=1,081)
Mean raw score	24.8	26.0	20.5	22.5	14.5	15.1	14.1	15.4
At or below 10th percentile	19.4%	14.8%	18.4%	13.6%	12.9%	10.2%	9.4%	12.1%
At or above 90th percentile	4.0%	3.3%	4.8%	7.4%	13.5%	14.7%	16.3%	15.4%

Table 62. The reading and mathematics achievements (raw score, and percentages scoring at or above the 90th percentile and at or below the 10th percentile) of girls in 2007 and 2010, by grade level.

	Reading				Mathematics			
	3rd class		6th class		3rd class		6th class	
	2007	2010	2007	2010	2007	2010	2007	2010
	(*N*=1,083)	(*N*=1,043)	(*N*=1,093)	(*N*=1,057)	(*N*=1,085)	(*N*=1,032)	(*N*=1,093)	(*N*=1,057)
Mean raw score	26.6	27.5	21.5	22.4	14.0	14.4	13.7	14.9
At or below 10th percentile	12.3%	9.4%	14.1%	10.1%	10.6%	9.7%	15.4%	10.9%
At or above 90th percentile	4.5%	3.3%	4.1%	5.1%	11.7%	10.9%	8.3%	10.7%

There was no significant difference in the percentage of high-scoring girls at either grade level in 2010 compared to 2007. However, there were significantly higher percentages of 6th class boys scoring at or above the 90th percentile in 2010 than in 2007 in both reading and mathematics. This may indicate that the overall jump in percentages of 6th class pupils with very high scores was attributable to boys at that grade level with very high scores (at or above the 90th percentile) in 2010. In 2007 and 2010, there were significantly fewer low-scoring girls than boys in reading at both grade levels. In 2010, no difference was observed between the proportions of low-scoring boys and girls in mathematics. It is worth noting, however, that in reading in 2010 there were significantly lower percentages of boys scoring at or below the 10th percentile, than was the case in 2007. No difference was observed in mathematics at either grade level for low-scoring boys between 2007 and 2010.

Achievement in rural schools with low levels of poverty

Finally, as part of a special study exploring the relationship between poverty and achievement in rural areas, an additional data collection exercise was carried out in spring of 2010. This 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. Thirty-two of these schools were recruited to participate in a testing programme using the same instruments as those 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. The implications of this will be explored further in a future report on the nature of disadvantage in rural areas.

An overview of findings in this chapter

The findings regarding achievement at school level are consistent with those at individual level. Aggregated reading data indicate that schools improved their average scores more often between 2007 and 2010 than disimproved them. While more schools improved their mathematics average than disimproved it, the difference was less marked than in reading. Greater percentages of schools showed improvements at lower rather than higher grade levels in reading. In mathematics, on the other hand, improvements were greatest at the

most senior grade level (6th class). These findings are preliminary, and future work will involve examining school-level changes in much greater detail.

As was the case in urban pupils, the reading and mathematics achievements of rural pupils in schools in the SSP increased significantly between 2007 and 2010. However, the achievements of rural pupils are much closer to that of the national average in both subjects than are those of their urban counterparts. The rural achievement data will be described in more detail in a future report.

CHAPTER 6: IMPLEMENTATION OF THE SSP IN URBAN SCHOOLS

Implementation studies are an essential part of the evaluations of programmes and other innovations. These studies are typically designed to establish whether the innovation was actually put in place in some meaningful way and ideally happen before, or in conjunction with, any attempt to assess outcomes. If the presence of the innovation is confirmed, implementation studies move on to examine ways in which its presence varies from one location to another.

As indicated elsewhere in this report, variation in implementation and the association between such variation and measured outcomes will be the subject of later reports. However, at this stage, it is necessary to address two questions about implementation in the context of the evaluation of DEIS: (1) To what extent has it been possible at national level to proceed with various aspects of the Action Plan as outlined for urban schools at its launch in 2005? (national-level implementation); and (2) How have schools responded to the various initiatives that have been made available to them? (school-level implementation).

National-level Implementation

Because of reduced availability of resources and policy developments in other areas, the DES did not proceed with some aspects of DEIS as it was originally designed (access to early education for three-year-olds expected to attend urban SSP schools[28]; a sabbatical leave scheme for teaching staff). However, provision was made for most other aspects of the Action Plan. For example, provision for extra staffing to reduce pupil-teacher ratios was made. Preliminary analysis of class size data indicates that the target size of 20 pupils or fewer in junior classes was met by a majority of Band 1 schools in 2007/2008. Further analysis will be carried out on data for 2007/2008, and for other school years, to establish to what extent the minimum ratios for classes were achieved over the first few years of the operation of the programme. Several services were offered to SSP schools that catered for community and family aspects of a child's educational experience, as well as academic aspects. These included the HSCL service and the SCP. HSCL co-ordinators' two main tasks are to ensure children in their schools, in particular those who may be struggling in school, engage as much as possible in the learning

[28] This was compensated for somewhat by the introduction of a state-funded universal preschool year in January 2010.

process and to encourage co-operation among home, school and community agencies to enhance the educational experience of the children (and their parents). The co-ordinators use literacy and numeracy programmes (e.g., Maths for Fun, Reading for Fun) in an effort to create an environment where children derive maximum benefit from the learning process. HSCL co-ordinators are assigned school clusters and may work in both primary and post-primary schools. The SCP provides access for schools to a range of academic and non-academic supports. The main aim of the SCP is to increase retention of pupils in primary and post-primary schools to Leaving Certificate level. Retention plans are put in place at a local level and these are overseen by a designated co-ordinator. The planning process incorporates input from primary and post-primary schools, parents and other relevant community and national agencies. Supports provided by the SCP include out-of-school initiatives (e.g., summer camps), and before and after school initiatives (e.g., breakfast clubs).

Table 63 outlines the measures which were intended to be in place on the full implementation of the SSP (urban dimension) under DEIS.

Table 63. Overview of measures to be in place on full implementation of the School Support Programme (DES, 2005, p84).

For the 150 primary schools serving communities with the highest concentrations of disadvantage:	In place?	Comment
access to early education for children, aged from three up to school enrolment, who will subsequently attend these primary schools	✗	This measure was not introduced. An Early Childhood Care and Education Scheme (ECCES) was subsequently provided for all pre-school children.
maximum class sizes of 20:1 in all junior classes (Junior infants through 2nd class) and 24:1 in all senior classes (3rd class through 6th class)	✓	Schools were permitted to appoint additional staff to operate lower pupil-teacher ratios. However, research into a similar class size reduction initiative under GCEB revealed that, while a majority of junior classes were reduced to 20 or below, a considerable minority were not (Weir, Archer, Pembroke & McAvinue, 2007). Preliminary analyses of class size in DEIS schools in 2007/2008 indicate that the junior class size targets set out in the DEIS document have been achieved by a majority of schools in Band 1. Further analyses of annualised class size data in schools in the SSP will be done when the data become available.
For all 300 urban/town primary schools participating in the SSP:		
allocation of administrative principals on lower enrolment and staffing figures than apply in primary schools generally	✓	
additional non-pay/capitation allocation based on level of disadvantage	✓	

Table 63 (cont.). Overview of measures to be in place on full implementation of the School Support Programme (DES, 2005, p84).

For all 300 urban/town primary schools participating in the SSP:	In place?	Comment
financial allocation under school books grant scheme based on level of disadvantage and additional funding targeted primarily at supporting the establishment, development and ongoing operation of book loan/rental schemes	✓	
access to the School Meals Programme, with co-ordination provided at cluster level	✓	This programme was administered by the Dept of Social Protection (DSP). Constraints on DSP funding arising from budget changes necessitated refusing school meals to some schools, including SSP schools. As of Spring 2011, there were 26 SSP schools on the school meals waiting list.
access to a literacy/numeracy support service and to literacy/numeracy programmes as follows: Reading Recovery, First Steps, Maths Recovery, Ready, Set, Go Maths (RSGM) and homework clubs/summer camps assisting literacy and numeracy development	✓	DEIS Band 1 and 2 schools were allocated a DEIS Advisor under PCSP from 2006/2007 and they were prioritised for support by Band (i.e., Band 1 schools were given Tutor Training in First Steps/Reading Recovery and Maths Recovery before Band 2). In 2007/2008 DEIS Advisors established a separate team within PCSP. Remit was First Steps training and RSGM training predominantly. Some programmes (Maths Recovery, Ready, Set, Go Maths) are only available in DEIS schools. Professional development support has continued for DEIS Band 1 & 2 schools from 2008 to date. Support was subsequently provided by PPDS, and from Sept 2010, the PSDT.
access to Home/School/Community Liaison services (including literacy and numeracy initiatives involving parents and family members, such as paired reading, paired maths, Reading for Fun and Maths for Fun)	✓	
access to a range of supports (both academic and non-academic, and including after-school and holiday-time supports) for young people, with the best practices identified through an evaluation of the School Completion Programme being incorporated into cluster-level action plans	✓	
access to transfer programmes supporting progression from primary to second-level	✓	
access to planning supports	✓	DEIS school planning support under SDPS was offered from 05/06 as part of the normal SDPS service to schools. The usual model at that time was a facilitated planning day and a pre-planning meeting and possibly a post-planning meeting. Supports specific to DEIS schools (e.g., planning templates for the DEIS 3-year plan) were provided. Evidence gathered as part of the evaluation indicates that practically all schools in the SSP had been visited by an advisor in relation to planning by 2008.
access to a range of professional development supports	✓	
eligibility for teachers/principals to apply for sabbatical leave scheme	✗	This aspect of the programme was deferred

Implementation at school level

There are two parts to the second implementation question outlined above (the manner in which schools have responded to the various initiatives that have been made available to them): the first part relates to what happened in schools, and the second part relates to the opinions of people in the schools about what happened.

Part 1: Sources of data on implementation

In terms of the first part (what happened), the present evaluation is able to draw on some data held by the DES. Also, implementation data were collected specifically for the evaluation in a number of different ways.

Between January and May of 2009 ERC staff attended HSCL co-ordinator cluster meetings at thirteen locations across the country. The presence of ERC staff at these meetings was to primarily get feedback regarding the SSP under DEIS from as many co-ordinators in the country as possible. Five meetings were held in Dublin with one each in Cork, Limerick, Sligo, Donegal, Galway, Waterford, Dundalk, and Portlaoise. Across the thirteen sessions, approximately 300 HSCL co-ordinators (primary and post-primary) attended. The ERC input began with a twenty-minute presentation of baseline data and preliminary findings. This was followed by a questions and answers session and open discussion.

Similar meetings were held with groups of principals on a number of occasions. For example, in 2010 the IPPN facilitated separate meetings with principals of Band 1 and Band 2 schools. Also, the evaluation team was in regular contact with staff in the PDST[29] and its predecessors, and had several meetings with members of the Inspectorate who were working on a separate evaluation of DEIS. In addition, there was a large amount of informal contact with school principals (e.g., phone conversations with school principals relating to testing in schools often included insights into the nature of

[29] When DEIS was introduced, schools in the SSP were given priority support from two separate organisations, the School Development Planning Support (SDPS) service and the Primary Curriculum Support Programme (PCSP). These organisations subsequently merged to become known as the Primary Professional Development Service (PPDS). In 2010, the service became known as the Professional Development Service for Teachers (PDST). For convenience, the term PDST is used here to refer to the service as it existed since the programme began.

disadvantage in their schools). These contacts, along with incidental school visits, yielded some valuable insights on how DEIS is impacting in schools.

In 2008, a questionnaire with a particular focus on school development planning was sent to the principal of each of the 664 primary schools participating in the SSP. This questionnaire contained questions relating to all stages of the planning process with some further questions relating to the perceived impact of DEIS from the schools' perspective. Part of the questionnaire sought detailed information on target-setting within the schools and a follow-up exercise is planned to gather longitudinal data in relation to some of these targets. Completed questionnaires were returned from 494 schools, giving a response rate of 74.4%.

In May 2010 a questionnaire was sent to each class teacher in the sample of 120 urban schools taking part in the achievement-testing phase of the evaluation. Teachers were asked for their assessment of the impact of DEIS in their school and for their opinions on how they felt their school's DEIS action plan was working. Questionnaires were returned from 1,069 urban[30] class teachers, giving a response rate of 74%.

Findings regarding implementation at school level

On the basis of data collected using the methods described above, some clear findings emerge related to implementation. First, responses to the Teacher Questionnaire survey in spring 2010 confirm data held by the DES to the effect that almost all participating schools in the urban dimension of the SSP are implementing some or all of the four literacy/numeracy initiatives associated with DEIS (Reading Recovery; First Steps; Maths Recovery; Ready, Set, Go Maths). The four programmes mentioned are only available to SSP schools, apart from Reading Recovery which was available prior to the roll-out of DEIS.

Table 64 shows the level of uptake of the DEIS literacy and numeracy programmes by all urban primary schools in the SSP. Only about a third of these schools participated in the achievement-testing phase of the evaluation in 2007 and 2010. However, there was a very similar pattern of uptake among the 120 schools in the sample and those not in the sample.

[30] Questionnaires were also completed by 601 rural class teachers.

Table 64. Uptake of DEIS literacy and numeracy programmes by urban SSP schools.*

	Reading Recovery	Maths Recovery	Ready, Steady, Go Maths	First Steps – Writing	First Steps – Reading	First Steps – Speaking and Listening
Urban SSP schools (*N*=345)	62.0%	85.2%	74.0%	97.7%	62.6%	11.3%
Urban Sample (*N*=120)	55.8%	88.3%	65.0%	97.5%	65.0%	13.3%

*Source: Teacher Education Section (TES)

Table 65 shows the frequency of uptake of the four literacy and numeracy programmes among the 120 evaluation sample urban schools. All of the schools were implementing at least one of the programmes. However, it should be noted that in some schools the programme may not apply (e.g., Reading Recovery; Ready, Set, Go Maths; or Maths Recovery would not be implemented in a senior primary school). However, it is understood from the Teacher Education Section of the DES that work has commenced in supporting teachers to apply the principles, approaches, and strategies to senior classes.

Table 65. School level uptake of the four literacy and numeracy programmes for the 120 urban sample schools.*

No. of programmes being implemented in the school	No. of schools	% of sample
4 programmes	64	53.3%
3 programmes	17	14.2%
2 programmes	33	27.5%
1 programme	6	5.0%
Total	120	100%

*Source: Teacher Education Section (TES). Some schools indicated that they were implementing programmes from 2010/2011, according to data received from the TES. There is an assumption in the data that there has been no delay in delivery of the programmes in any of the schools. Also, some programmes are aimed at particular class levels and not all schools in the sample have all class levels.

Second, there is evidence that a policy of positive discrimination for SSP schools in terms of the provision of support services (e.g., PDST) was successfully implemented. Urban SSP schools were allocated a DEIS advisor under the then PCSP from 2006/2007 and within this structure schools were prioritised for support by band (i.e., Band 1 schools were given tutor training in First Steps, Reading Recovery and Maths Recovery before Band 2 schools). Over the years, the remit of DEIS advisors widened to include DEIS planning, Health and Safety, Code of Behaviour, etc., along with their initial

responsibilities for literacy and numeracy support. More recently, there has been a greater emphasis on giving schools and their staff greater autonomy to work in developing and delivering supports. The planning supports provided for SSP schools were different to those offered to non-SSP schools as the 3-year action plan for DEIS was a requirement solely for DEIS schools. Specially prepared templates for schools were made available to guide them in developing their 3-year plan.

Third, a survey of principals shows that all but a very small number of primary schools participating in the SSP (rural and urban) had, by the end of the 2007/2008 school year, complied with the requirement to develop a school plan for DEIS in each of the five priority areas: (1) Literacy, (2) Numeracy, (3) Attendance, transfer & retention, (4) Parental involvement and (5) Partnership with other schools and agencies. Less than 1% of responding schools had taken no planning action in the areas of literacy or numeracy. Just over 4% had taken no planning action in the areas of attendance, transfer & retention of pupils and involvement of parents in their child's education. Of responding schools, 16.4% said that they had taken no planning action in relation to developing partnerships with other schools or agencies. It is worth noting that the data are not current and schools have indicated since that their plans are 'living' documents and that they continue to develop them. It is likely that areas that may have initially received little attention, now have detailed targets set.

Furthermore, it appears that in most cases there had been a good deal of involvement in developing the plan by most of the school staff and, in the case of about one third of schools, some input from parents. Of particular significance perhaps, in relation to the school plan, is the finding that, as intended, setting of targets was a central part of the planning process. An analysis by the evaluation team of sample targets supplied by principals indicates that while not all targets are in perfect compliance with guidelines (e.g., in terms of the extent to which they incorporate quantifiable change), the basic underlying concept appears to have been taken on board by schools. It was noted from questionnaire responses, that in setting targets for literacy and numeracy, schools tended to take national targets into account while recognising their own particular circumstances. This was confirmed in discussions that took place during meetings with principals and the PDST.

Part 2: Feedback from participants on the operation of DEIS

Obtaining feedback about DEIS from participants (school staffs, members of national support and co-ordinating teams and, to a limited extent, students and parents) is an ongoing part of the evaluation. It is also, of course, the second part of the second implementation question outlined earlier that concerns what is happening in schools as a result of DEIS. To date, using the methodologies referred to earlier in this chapter, the main focus has been on participants' experience of and opinions about the operation and impact of DEIS in four areas: resources, the extent to which approaches to tackling disadvantage are integrated, school development planning, and professional support for teachers.

Resources

There is almost universal positivity about the extra resources available to schools in the SSP. Great value is placed by school staffs on the resources attached to specific initiatives such as those for literacy and numeracy. For example, in the May 2010 Teacher Questionnaire, 85% of classroom teachers indicated that the type of support that pupils with learning difficulties receive in their school is now more appropriate as a result of DEIS. The uptake of the various literacy and numeracy programmes available under DEIS was described in Tables 64 and 65 above. Table 66 presents the percentage of Teacher Questionnaire respondents who indicated that each programme was available in their school and implemented by themselves or another member of staff with their class. There was some variation in the uptake of the programmes with, for example, First Steps being available in the majority of schools and classes while Science for Fun was only available in a minority. For many of the programmes, there was also a discrepancy between the percentage of teachers indicating that the programme was available within the school and the percentage indicating it was implemented with their class. This suggests that even if programmes were available within schools, not all classes were benefiting from them. Teachers almost universally endorsed the programmes available, however, with 93%-97% of teachers who had experience of the programmes agreeing that the benefits of the programmes justified the level of resourcing required.

Table 66. The availability of DEIS programmes within schools and classes.

Programme	The percentage of teachers who indicated that the programme was available in their school	The percentage of teachers who indicated that the programme was implemented in their class
Reading Recovery	67.8%	20.3%
First Steps	95.7%	79.0%
Maths for Fun	66.6%	23.1%
Science for Fun	21.8%	6.5%
Maths Recovery	72.8%	21.5%
Ready, Set, Go Maths	50.1%	20.4%
Literacy Liftoff	36.7%	13.8%

In the Teacher Questionnaire, teachers were asked to identify, in their opinion, the most and least effective components of the SSP. The two components deemed to be most effective by teachers in Band 1 schools were the reduction in class size for junior classes (mentioned by 44% of teachers) and access to a literacy/numeracy support service (mentioned by 22% of teachers). Teachers in Band 2 schools mentioned most frequently access to a literacy/numeracy support service (35% of teachers) and access to the home/school/community liaison service (21% of teachers) as the most effective elements of DEIS. Approximately one third of teachers did not answer the section on the least effective components, suggesting perhaps that they found it difficult to identify the least effective aspects. The components which were most frequently mentioned by teachers in Band 1 schools were access to transfer programmes (16% of teachers), access to planning supports (14%) and access to a range of professional development supports (13%). Teachers in Band 2 schools indicated that access to transfer programmes (18%), access to the school meals programme (14%) and access to a range of professional development supports (14%) were the least effective elements of DEIS.

As can be seen from the opinions of teachers in Band 1 schools, the most important resource is often deemed to be additional staff and, in particular, staff that can be assigned to classroom teaching, and the reduction of class size. In the Teacher Questionnaire, 64% of teachers agreed that on balance, their school would be better off if the entitlement to extra staffing under DEIS was used to reduce class size. Indeed,

there is support for extending the class size reduction element of the SSP by, for example, applying the same maximum class size (20 pupils) to senior and junior classes or providing extra staff to larger rural schools.

From early on, the evaluation team was aware of some concerns about resources, how they were allocated and the risk that they might be withdrawn. For example, staff in some Band 2 schools argued that their level of disadvantage warranted inclusion in Band 1. More generally, at some of the 'focus group' sessions a few participants argued for a more refined way of linking resource allocation to levels of disadvantage (e.g., a sliding scale). One concern, which is, in fact, groundless, regularly emerged. This is based on a belief that improved performance on the tests being administered as part of the evaluation could lead to a withdrawal of resources. In almost all cases where this particular concern was expressed, members of the evaluation team felt that they were quite successful in allaying the concern. However, it continues to be raised occasionally.

Integration of approaches to tackling disadvantage

Large majorities of staff in participating schools believe that approaches to tackling disadvantage are well integrated in their schools (e.g., 94% in the case of classroom teachers in urban schools). There is a belief that the introduction of DEIS has helped in this regard in some cases (e.g., the development of the school plan was an opportunity for greater co-operation), although in other cases, staff felt that the approach to disadvantage was not particularly fragmented before DEIS. The extent to which schools are seen as being in effective collaboration with other agencies is quite variable but the predominant view is that progress has been made. At some of the focus groups, a minority view, which was occasionally expressed, was that in the context of DEIS 'too much time was spent liaising with other agencies'. In order to investigate this issue further, an item addressing the issue was included in the Teacher Questionnaire. However, only 20% of teachers agreed that too much time was spent liaising with other agencies.

The development of a plan for DEIS

There is widespread approval for the role of school development planning. The vast majority of principals and other staff report that the process of developing the DEIS

plan and its subsequent implementation had impacted positively on the work of the school. For example, in the Teacher Questionnaire, 91% of classroom teachers felt that implementation of the DEIS school plan had brought about significant positive change in their school and 75% indicated that the DEIS plan guided the day-to-day work in the school.

Professional support for teachers

In terms of professional support, it is clear that access to the PDST and its forerunners is seen as a very significant part of DEIS, especially in relation to the role of facilitators in the development of the school plan and of advisors in the introduction of literacy and numeracy initiatives. In the Teacher Questionnaire, 82% of classroom teachers indicated that their teaching had benefited from the contact with cuiditheoirí and advisors. Notwithstanding overall positive attitudes to professional support, it is worth noting that many classroom teachers (about two thirds in urban schools) see room for improvement in relation to professional development in the context of DEIS.

In almost all attempts to get participant feedback in the evaluation, an opportunity is given for participants to suggest improvements in provision for disadvantage. Apart from the suggestions noted earlier about resources, the area most often raised has been provision for students with emotional or behavioural difficulties. This issue was frequently raised during Focus Groups. In the Teacher Questionnaire, 50% of classroom teachers indicated that DEIS did not address the needs of pupils with emotional and behavioural difficulties.

An overview of this chapter

With some exceptions, all of the main elements of the DEIS Action Plan launched in 2005 have been put in place at national level, and there is no evidence of any serious implementation failures at school level. Indeed, the response of schools to the initiative has been overwhelmingly positive, both in the sense that what has happened at school level has been in line with what was envisaged in the Action Plan, and in the sense that participants value highly what has been put in place.

CHAPTER 7: DISCUSSION AND CONCLUSIONS

This report is the second in a series concerning the evaluation of the SSP[31]. The primary focus of this report is on describing the reading and mathematics achievements of pupils in the urban dimension of the programme, although achievement data from rural schools is described in brief. The interpretation of the findings draws, to a limited extent, on some other data gathered as part of the evaluation (e.g., data from teachers).

The measured achievements of pupils attending schools participating in the SSP are well below those of pupils on whom the tests were standardised. Furthermore, within the SSP, the average achievements of pupils in schools in Band 1 are consistently below those of pupils in schools in Band 2. While it arises indirectly from data gathered for the evaluation, this represents supportive evidence of the validity of the method used to assess disadvantage, and ultimately of the means of identifying schools for inclusion in the programme. Although it has been acknowledged that the assessment method used is unsatisfactory in several respects (see Weir & Archer, 2005), it appears, nevertheless, to predict accurately aggregated school achievement.

There is clear evidence that achievement in reading and mathematics in the sampled schools was higher in 2010 than in 2007. There is also evidence of improvements in the achievements of students tested on both occasions (those in 2nd class in 2007 and 5th in 2010, and those in 3rd class in 2007 and 6th in 2010). When aggregated school-level data were examined, improvements in average scores between 2007 and 2010 were observed more often than disimprovements. In 2nd class reading, for example, there were increases in 70% of schools and decreases in 30% of schools.

Progress appears most marked among pupils with lower levels of achievement, and positive change in achievement is most evident in junior grades. Within the cross-sectional comparisons (e.g., 3rd class in 2007 compared with 3rd class in 2010), the differences are statistically significant for both reading and mathematics, and are found at all grade levels. It is important to bear in mind that these differences occurred in an environment which might be expected to militate against improvement. First, it is likely

[31] The first report was concerned with reporting baseline data, and had a particular focus on rural schools (Weir, Archer, & Millar, 2009)

that poverty levels have increased in the sampled schools, and there is some evidence in the literature that poverty, even if it is short term, can have an impact on achievement (McLoyd, 1998). Second, teachers exempted smaller percentages of pupils in 2010 than was the case in 2007 (and the inclusion of greater numbers of weak pupils would be expected to have a negative impact on average scores). Third, data on the percentage of pupils absent on the days of testing in 2007 and 2010 suggests that attendance rates may have increased between 2007 and 2010. As poor attenders tend to have poorer achievements than good attenders, the presence of a greater percentage of the student cohort at each level in 2010 might be expected to have a negative, rather than a positive, impact on average test scores. Fourth, if the size of classes in the grade levels tested had increased between 2007 and 2010, one might have expected a decline in test scores as a result. However, the class level at which scores increased most was also the level in which class size increased most. Of course, there is the possibility that improvements in SSP schools took place in the context of national improvements, a possibility that cannot be ruled out at this point. Programmes of national assessments are in place to monitor standards over time. Unfortunately, because it was decided to change the grade levels that were the focus of national assessments, there is no information on change (or lack of it) since 2004 (Eivers, Shiel, Perkins & Cosgrove, 2005). (However, the results of national assessments of English Reading up to and including 2004 indicate that there had been no changes in reading levels since 1972).

In describing achievement outcomes, it is necessary to point out some limitations of the instruments used to assess achievement. Because, for example, one objective was to obtain a measure of literacy from a very large number of pupils, it was not necessary (or desirable, from a practical point of view) to use a long test with separate components covering a variety of skills. Instead, a short multiple-choice reading test was used, which had the advantage that it could be administered to groups in a relatively short period, and, due to its secure nature, was unfamiliar to pupils. The disadvantage of this approach is that, while there are an acceptable number of items, they are all of the same type, and we are not in a position to say that the programme impacted on one area of reading more than another. On the other hand, the mathematics test, while containing an adequate variety of items, lacked a sufficient number to allow anything beyond the conclusion to be drawn that an overall improvement had occurred. It is hoped that smaller-scale evaluations of components of the evaluation such as First Steps or Reading

Recovery will augment existing data and provide more detail on the nature of any improvements.

While the data do not exist to permit these observed changes to be attributed with certainty to the programme at this stage, some alternative reasons for the change have been ruled out. For example, the presence in the sample of greater percentages of pupils whose home language is neither English nor Irish does not account for the change, as significant improvements were observed among English/Irish speakers also. It is also impossible to say at this stage what distinguishes schools that improved from those that did not. Nevertheless, it is interesting to speculate about why changes are being observed in this programme and not in previous ones. While DEIS is a new programme, most, but by no means all, schools have participated in previous programmes aimed at addressing educational disadvantage. For a majority of participating schools, therefore, DEIS may be viewed as consolidating, as well as building on, existing provision. There is some very tentative evidence in the data that gains in schools that had participated in previous schemes were more widespread than in other schools. It may be that part of the success of DEIS is that it is building on previous schemes.

There are three main areas in which DEIS differs from, or goes beyond, pre-existing approaches. First, the focus on the development of a school action plan has been more intensive than in previous programmes. Planning for DEIS was supported by input from the PDST, and schools were encouraged to set clear targets, particularly in the areas of literacy and numeracy. Implementation data from the present evaluation indicates that most schools engaged fully with the process. Second, DEIS is the first programme of its kind to provide literacy and numeracy programmes to participants. Third, along with the establishment of the planning process and making literacy and numeracy programmes available to schools, a system of supports was put in place to assist schools with their planning and with their implementation of the programmes. Of the three main areas listed above, the only one common to schools participating in the urban and rural dimensions of the programme was the planning process. It is, perhaps, noteworthy that achievement gains were made in rural as well as in urban schools.

It was noted earlier that attendance levels had appeared higher in 2010 than in 2007. There are several possible reasons for the change. For example, attendance is a priority area in the

DEIS planning process, and, therefore, improvements in this area may be attributable to participation in the programme. Alternatively, schools may have made more of an effort to get pupils to attend on the day of testing in 2010 than was the case in 2007, or the difference could be due to chance factors. Independent data on attendance in 2010 in DEIS schools is forthcoming from the National Educational Welfare Board (NEWB), and will be used to shed more light on this issue.

It is hoped that the next phase of the evaluation will provide an opportunity to gain more insight into what is effective by identifying the factors underlying progress and lack of progress. Some data already exist that will help in that regard (e.g., responses to a teacher questionnaire from June 2010) and data from a follow-up questionnaire on planning in primary schools will be available later in 2011. However, these are self-report instruments, and experience from this evaluation and research elsewhere suggests that such data need to be complemented by more intensive data collection approaches such as observations in schools and classrooms. For several reasons, further monitoring of achievement levels in participating schools is indicated. First, as the impact of the programme on participants is likely to be more evident in the long-term than the short-term, it would seem essential to plan to continue to monitor outcomes. Second, it is important to establish whether or not gains are maintained. Third, given that the level of achievement in participating schools is still well below the national norm, there is the question of whether the gains already observed can be built on. In the meantime, the results of the evaluation indicate that schools are demonstrating gains and are making progress in the sense that they are engaging well with the programme.

APPENDIX 1

Test cohorts and achievement data collection points

	Junior Infants	Senior Infants	First Class	Second Class	Third Class	Fourth Class	Fifth Class	Sixth Class
2000	A							
2001	B	A						
2002	C	B	A					
2003	D	C	B	A				
2004	E	D	C	B	A			
2005	F	E	D	C	B	A		
2006	G	F	E	D	C	B	A	
2007	H	G	F	E	D	C	B	A
2008		H	G	F	E	D	C	B
2009			H	G	F	E	D	C
2010				H	G	F	E	D
2011					H	G	F	E
2012						H	G	F
2013							H	G
2014								H

Note: DEIS introduced September 2006 – As illustrated on the above chart, 2nd, 3rd & 6th Classes (E, D & A) were tested in May 2007 and 2nd, 3rd, 5th & 6th Classes (H, G, E & D) were tested in 2010. A-H indicate each pupil intake from 1999-2006. Also Senior Infants and 1st Class in school year 07/08 (H & G) took part in DTEL testing in 45 schools of the 120 schools in the urban sample. These pupils would have been in 2nd and 3rd Class in 2010 (H & G) respectively (See lighter arrows).

APPENDIX 2

Table A. Results of comparisons (independent *t*-tests) between subgroups (e.g., groups of pupils based on home language, gender, DEIS Band) in 2007 and 2010.

		Reading			Mathematics		
Group	**Level**	***t; df***	***p***	***Meaning***	***t; df***	***p***	***Meaning***
2007 vs 2010 (all)	2nd class	6.8; 6,470	<.001	Significantly higher in 2010	7.7; 6,708	<.001	Significantly higher in 2010
	3rd class	3.1; 8,377	<.01	Significantly higher in 2010	4.5; 8,372	<.001	Significantly higher in 2010
	6th class	2.3; 8,055	<.05	Significantly higher in 2010	3.5; 8,052	<.001	Significantly higher in 2010
English speakers vs others in 2007	2nd class	7.1; 3,234	<.001	English speakers higher in 2007	1.5; 3,232	*ns*	No difference
	3rd class	8.6; 4,061	<.001	English speakers higher in 2007	0.3; 3,054	*ns*	No difference
	6th class	7.9; 3,917	<.001	English speakers higher in 2007	1.8; 3,906	*ns*	No difference
English speakers vs others in 2010	2nd class	6.1; 3,465	<.001	English speakers higher in 2010	2.7; 3,474	<.01	English speakers lower in 2010
	3rd class	6.7; 4,314	<.001	English speakers higher in 2010	5.4; 4,316	<.001	English speakers lower in 2010
	6th class	6.1; 4,136	<.001	English speakers higher in 2010	4.6; 4,253	<.001	English speakers lower in 2010
English speakers only 2007 vs 2010	2nd class	6.9; 5,844	<.001	Significantly higher in 2010	6.0; 5,850	<.001	Significantly higher in 2010
	3rd class	3.4; 7,515	<.001	Significantly higher in 2010	2.9; 7,510	<.01	Significantly higher in 2010
	6th class	2.2; 7,489	<.05	Significantly higher in 2010	3.4; 7,484	<.001	Significantly higher in 2010
Non-English speakers only 2007 vs 2010	2nd class	5.3; 855	<.001	Significantly higher in 2010	5.3; 856	<.001	Significantly higher in 2010
	3rd class	4.6; 860	<.001	Significantly higher in 2010	4.7; 860	<.001	Significantly higher in 2010
	6th class	3.6; 564	<.01	Significantly higher in 2010	1.6; 566	*ns*	No difference
Travellers vs non-Travellers in 2007	2nd class	8.3; 3,234	<.001	Non-Travellers higher in 2007	6.1; 3,232	<.001	Non-Travellers higher in 2007
	3rd class	10.1; 4,061	<.001	Non-Travellers higher in 2007	8.9; 4,054	<.001	Non-Travellers higher in 2007
	6th class	9.1; 3,917	<.001	Non-Travellers higher in 2007	8.4; 3,906	<.001	Non-Travellers higher in 2007
Travellers vs non-Travellers in 2010	2nd class	9.3; 3,465	<.001	Non-Travellers higher in 2007	7.8; 3,474	<.001	Non-Travellers higher in 2007
	3rd class	11.3; 4,314	<.001	Non-Travellers higher in 2007	9.8; 4,316	<.001	Non-Travellers higher in 2007
	6th class	9.3; 4,136	<.001	Non-Travellers higher in 2007	9.0; 4,243	<.001	Non-Travellers higher in 2007

Appendix 2. Table A. (cont.)

		Reading			Mathematics		
Group	**Level**	***t; df***	***p***	***Meaning***	***t; df***	***p***	***Meaning***
Band 1 vs Band 2 in 2007	2nd class	8.6; 3,234	<.001	Band 2 higher in 2007	9.6; 3,232	<.001	Band 2 higher in 2007
	3rd class	12.0; 4,061	<.001	Band 2 higher in 2007	17.0; 4,054	<.001	Band 2 higher in 2007
	6th class	15.1; 3,917	<.001	Band 2 higher in 2007	16.9; 3,906	<.001	Band 2 higher in 2007
Band 1 vs Band 2 in 2010	2nd class	7.5; 3,465	<.001	Band 2 higher in 2007	8.8; 3,467	<.001	Band 2 higher in 2007
	3rd class	9.3; 4,314	<.001	Band 2 higher in 2007	9.4; 4,314	<.001	Band 2 higher in 2007
	6th class	13.5; 4,136	<.001	Band 2 higher in 2007	13.5; 4,136	<.001	Band 2 higher in 2007
Band 1 2007 vs 2010	2nd class	5.8; 3,615	<.001	Band 1 higher in 2010	5.8; 3,614	<.001	Band 1 higher in 2010
	3rd class	4.2; 4,423	<.001	Band 1 higher in 2010	6.0; 4,172	<.001	Band 1 higher in 2010
	6th class	3.0; 4,004	<.01	Band 1 higher in 2010	2.2; 4,007	<.05	Band 1 higher in 2010
Band 2 2007 vs 2010	2nd class	4.2; 3,685	<.001	Band 2 higher in 2010	4.6; 3,413	<.001	Band 2 higher in 2010
	3rd class	0.5; 3,952	*ns*	No difference	0.5; 3,938	*ns*	No difference
	6th class	0.8; 3,815	*ns*	No difference	3.4; 3,805	<.001	Band 2 higher in 2010
Boys vs girls in 2007	2nd class	3.8; 3,230	<.001	Girls higher in 2007	1.4; 3,228	*ns*	No difference
	3rd class	4.2; 4,058	<.001	Girls higher in 2007	2.7; 4,053	<.01	Boys higher in 2007
	6th class	0.8; 3,917	*ns*	No difference	4.9; 3,879	<.001	Boys higher in 2007
Boys vs girls in 2010	2nd class	3.1; 3,454	<.01	Girls higher in 2010	0.7; 3,469	*ns*	No difference
	3rd class	4.9; 4,313	<.001	Girls higher in 2010	1.1; 4,316	*ns*	No difference
	6th class	1.2; 4,136	*ns*	No difference	2.0; 4,144	<.05	Boys higher in 2010
Boys 2007 vs boys in 2010	2nd class	5.4; 3,326	<.001	Boys higher in 2010	4.6; 3,329	<.001	Boys higher in 2010
	3rd class	2.2; 4,214	<.05	Boys higher in 2010	2.6; 4,227	<.05	Boys higher in 2010
	6th class	2.0; 4,044	<.05	Boys higher in 2010	1.5; 4,054	*ns*	No difference

Appendix 2. Table A. (cont.)

		Reading			Mathematics		
Group	**Level**	***t; df***	***p***	***Meaning***	***t; df***	***p***	***Meaning***
Girls 2007 vs girls in 2010	2nd class	4.8; 3,358	<.001	Girls higher in 2010	5.7; 3,376	<.001	Girls higher in 2010
	3rd class	2.6; 4,157	<.01	Girls higher in 2010	4.4; 4,142	<.001	Girls higher in 2010
	6th class	6.2; 3,953	<.001	Girls higher in 2010	4.6; 4,120	<.001	Girls higher in 2010
Band 1 boys 2007 vs 2010	2nd class	3.3; 1,759	<.001	Band 1 boys higher in 2010	3.0; 1,765	<.01	Band 1 boys higher in 2010
	3rd class	3.3; 2,196	<.01	Band 1 boys higher in 2010	3.4; 2,207	<.001	Band 1 boys higher in 2010
	6th class	1.1; 2,114	*ns*	No difference	0; 2,124	*ns*	No difference
Band 1 girls 2007 vs 2010	2nd class	4.9; 1,848	<.001	Band 1 girls higher in 2010	4.9; 1,852	<.001	Band 1 girls higher in 2010
	3rd class	2.8; 2,224	<.01	Band 1 girls higher in 2010	5.5; 2,223	<.001	Band 1 girls higher in 2010
	6th class	3.1; 2,122	<.01	Band 1 girls higher in 2010	3.8; 2,119	<.001	Band 1 girls higher in 2010
Band 2 boys 2007 vs 2010	2nd class	3.7; 1,564	<.001	Band 2 boys higher in 2010	2.9; 1,526	<.01	Band 2 boys higher in 2010
	3rd class	0.5; 2,017	*ns*	No difference	0.1; 2,018	*ns*	No difference
	6th class	2.0; 1,928	<.05	Band 2 boys higher in 2010	2.7; 1,927	<.01	Band 2 boys higher in 2010
Band 2 girls 2007 vs 2010	2nd class	1.4; 1,511	*ns*	No difference	3.0; 1,514	<.01	Band 2 girls higher in 2010
	3rd class	1.4; 1,932	*ns*	No difference	0.7; 1,933	*ns*	No difference
	6th class	1.1; 1,858	*ns*	No difference	2.4; 1,848	<.05	Band 2 girls higher in 2010
In previous schemes vs not 2007	2nd class	1.8; 3,234	*ns*	No difference	4.4; 3,232	<.001	Not in previous schemes higher
	3rd class	6.3; 4,061	<.001	Not in previous schemes higher	8.5; 4,054	<.001	Not in previous schemes higher
	6th class	6.6; 3,917	<.001	Not in previous schemes higher	7.0; 3,917	<.001	Not in previous schemes higher
In previous schemes vs not 2010	2nd class	2.6; 3,465	<.01	Not in previous schemes higher	4.5; 3,478	<.001	Not in previous schemes higher
	3rd class	3.5; 4,314	<.001	Not in previous schemes higher	2.7; 4,317	<.01	Not in previous schemes higher
	6th class	6.4; 4,136	<.001	Not in previous schemes higher	7.2; 4,144	<.001	Not in previous schemes higher

Appendix 2. Table A. (cont.)

		Reading			Mathematics		
Group	**Level**	***t; df***	***p***	***Meaning***	***t; df***	***p***	***Meaning***
Not in previous schemes 2007 vs 2010	2nd class	3.5; 1,395	<.001	2010 cohort higher	3.3; 1,394	<.01	2010 cohort higher
	3rd class	0.5; 1,873	*ns*	No difference	1.2; 1,875	*ns*	No difference
	6th class	0.5; 1,768	*ns*	No difference	1.6; 1,769	*ns*	No difference
In previous schemes 2007 vs 2010	2nd class	6.0; 5,304	<.001	2010 cohort higher	6.3; 5,316	<.001	2010 cohort higher
	3rd class	4.1; 6,502	<.001	2010 cohort higher	6.3; 6,496	<.001	2010 cohort higher
	6th class	2.2; 6,285	<.05	2010 cohort higher	3.5; 6,281	<.001	2010 cohort higher

Appendix 2. Table B. Percentile range, raw score range and precise equivalences derived from the tables of norms for the reading and mathematics test standardisation samples.

Reading – Level 2

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	38 – 40	90th – 98th
76th – 89th	35 – 37	77th – 86th
51st – 75th	30 – 34	55th – 73rd
26th – 50th	22 – 29	27th – 50th
11th – 25th	15 – 21	12th – 25th
10th and lower	0 – 14	1st – 9th

Reading – Level 3

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	39 – 40	93rd – 98th
76th – 89th	36 – 38	79th – 89th
51st – 75th	30 – 35	55th – 75th
26th – 50th	23 – 29	30th – 50th
11th – 25th	16 – 22	12th – 25th
10th and lower	0 – 15	1st – 10th

Reading – Level 5

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	34 – 40	91st – 99th
76th – 89th	30 – 33	77th – 87th
51st – 75th	24 – 29	53rd – 73rd
26th – 50th	18 – 23	27th – 47th
11th – 25th	13 – 17	12th – 24th
10th and lower	0 – 12	1st – 9th

Reading – Level 6

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	35 – 40	91st – 99th
76th – 89th	31 – 34	79th – 89th
51st – 75th	25 – 30	55th – 75th
26th – 50th	18 – 24	27th – 50th
11th – 25th	13 – 17	13th – 24th
10th and lower	0 – 12	1st – 10th

Appendix 2. Table B. (Cont.)

Mathematics – Level 2

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	27 – 30	92nd – 99th
76th – 89th	24 – 26	79th – 88th
51st – 75th	19 – 23	54th – 73rd
26th – 50th	13 – 18	27th – 50th
11th – 25th	9 – 12	12th – 23rd
10th and lower	0 – 8	1st – 8th

Mathematics – Level 3

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	22 – 25	90th – 99th
76th – 89th	20 – 21	78th – 84th
51st – 75th	16 – 19	53rd – 71st
26th – 50th	12 – 15	29th – 46th
11th – 25th	7 – 11	12th – 25th
10th and lower	0 – 6	1st – 9th

Mathematics – Level 5

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	23 – 25	90th – 98th
76th – 89th	21 – 22	79th – 85th
51st – 75th	16 – 20	54th – 74th
26th – 50th	11 – 15	28th – 50th
11th – 25th	7 – 10	12th – 24th
10th and lower	0 – 6	1st – 9th

Mathematics – Level 6

Percentile range	Raw Score range	Actual percentile range from standardised norms table
90th and higher	23 – 25	91st – 98th
76th – 89th	21 – 22	80th – 86th
51st – 75th	16 – 20	51st – 74th
26th – 50th	11 – 15	27th – 47th
11th – 25th	7 – 10	13th – 23rd
10th and lower	0 – 6	1st – 10th

Appendix 2. Table C. Results of comparisons (Chi-squared tests) between the percentages of pupils overall, and according to DEIS Band, 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**	χ^2; *df*	*p*	**Meaning**	χ^2; *df*	*p*	**Meaning**
2007 vs 2010 (all) at/below 10th	2nd class	40.3; 1	<.001	Fewer in 2010	26.7; 1	<.001	Fewer in 2010
	3rd class	12.8; 1	<.001	Fewer in 2010	11.3; 1	<.001	Fewer in 2010
	6th class	5.8; 1	<.05	Fewer in 2010	7.4; 1	<.01	Fewer in 2010
2007 vs 2010 (all) at/above 90th	2nd class	0.0; 1	*ns*	No difference	13.2; 1	<.001	More in 2010
	3rd class	3.6; 1	*ns*	No difference	12.3; 1	<.001	More in 2010
	6th class	0.2; 1	*ns*	No difference	8.3; 1	<.01	More in 2010
Band 1 2007 vs 2010 at/below 10th	2nd class	28.2; 1	<.001	Fewer in 2010	26.7; 1	<.001	Fewer in 2010
	3rd class	13.2; 1	<.001	Fewer in 2010	16.8; 1	<.001	Fewer in 2010
	6th class	11.2; 1	<.001	Fewer in 2010	1.5; 1	*ns*	No difference
Band 1 2007 vs 2010 at/above 90th	2nd class	0.0; 1	*ns*	No difference	4.5; 1	<.05	More in 2010
	3rd class	0.0; 1	*ns*	No difference	21.2; 1	<.001	More in 2010
	6th class	0.0; 1	*ns*	No difference	7.1; 1	<.01	More in 2010
Band 2 2007 vs 2010 at/below 10th	2nd class	9.9; 1	<.01	Fewer in 2010	2.1; 1	*ns*	No difference
	3rd class	1.7; 1	*ns*	No difference	0.0; 1	*ns*	No difference
	6th class	0.0; 1	*ns*	No difference	9.2; 1	<.01	Fewer in 2010
Band 2 2007 vs 2010 at/above 90th	2nd class	0.0; 1	*ns*	No difference	9.2; 1	<.01	More in 2010
	3rd class	6.7; 1	<.01	Fewer in 2010	0.7; 1	*ns*	No difference
	6th class	0.7; 1	*ns*	No difference	2.6; 1	*ns*	No difference

Appendix 2. Table D. Numbers* of pupils, in both 2007 and 2010, who took the Drumcondra Sentence Reading Test (see Tables 29 to 32) by gender and DEIS status at each grade level.

	No. of Boys Reading/Maths (2007)	No. of Boys Reading/Maths (2010)	No. of Girls Reading/Maths (2007)	No. of Girls Reading/Maths (2010)
Level 2 Band 1	900/899	862/869	882/882	971/975
Level 2 Band 2	722/720	845/845	731/732	787/789
Level 3 Band 1	1065/1072	1133/1137	1073/1073	1153/1152
Level 3 Band 2	972/974	1047/1046	952/936	982/983
Level 5 Band 1	-/-	1223/1224	-/-	1120/1123
Level 5 Band 2	-/-	982/981	-/-	928/927
Level 6 Band 1	1028/1032	1088/1094	1026/1023	1098/1098
Level 6 Band 2	983/984	947/946	882/869	1005/1008

*The numbers for mathematics never differ by +/- 16 from the numbers for reading in each of the categories above.

APPENDIX 3

Regression towards the mean

Regression towards the mean is a statistical phenomenon in which extreme first measures on a given variable tend to be closer to the average on a second measurement. In the current context, the phenomenon may be illustrated using the following example. If a class of pupils takes a different form of the same test on two successive days, the poorest performers on the first day will tend to improve their scores on the second day, and the best performers on the first day will tend to do more poorly on the second day. The differences occur because pupils' scores are determined both by underlying ability and by chance. On the first occasion, some pupils will be lucky, and achieve higher scores than expected, while others will be unlucky and score less than expected based on ability. While some of the lucky pupils on the first occasion will be lucky again on the second, more of them will have average or below average scores. The result of this tendency for scores to regress towards the mean results in pupils such as those in the example with initial high scores being likely to have a worse score on the second test than a better score and vice versa. The regression towards the mean phenomenon should also be taken into account when changes in test scores are being assessed in larger samples such as the DEIS sample here.

Rocconi and Ethington (2009) in their discussion of the issue of regression towards the mean cited an adjustment proposed by Roberts (1980) which can be made to initial pre-test scores to compensate for the phenomenon. Firstly, it is necessary to examine whether or not there is a negative correlation between change and initial score.

In 2nd class in the DEIS sample, there are negative correlations between change scores arising between 2007 and 2010 in both reading and mathematics scores (reading 2010 and change reading 2007 to 2010: r=-.352, p<.01; mathematics 2010 and change mathematics 2007 to 2010: r=-.322, p<.01). It is, therefore, valid to employ Roberts' (1980) adjustment which is as follows: the initial score plus the product of one minus the test-retest reliability by the mean for the total sample minus initial score:

$$x^1=x+(1-r_{xx})(\mu-x) \qquad \text{(Eq 1)}$$

(where x^1=adjusted initial test score, x=initial test score, r_{xx}=test-retest reliability and μ =mean for total sample).

Rocconi and Ethington (2009) used the correlation between the pre-test and post-test scores as an estimate of test-retest reliability. For 2nd class reading, the following adjustments were applied to pupils' reading and mathematics scores, respectively:

$$x^1=x+(1-0.739)(93.14-x)$$

$$x^1=x+(1-0.677)(92.04-x).$$

In both reading and mathematics, differences between the adjusted mean and unadjusted mean are very small (Table 1).

Table 1. Average reading and mathematics scores, unadjusted and adjusted to take regression effects into account, of 2nd class pupils in urban SSP schools.

	Reading		Mathematics	
	Mean	***SD***	**Mean**	***SD***
Unadjusted	93.144	13.403	92.0417	13.426
Adjusted	93.141	9.905	92.0412	9.08918

Table 2 shows the numbers of pupils who scored 15 points higher in 2010 than in 2007, 15 points lower in 2010 than in 2007 and within 15 points in the two years. Shaded cells indicate the numbers of pupils who are in the same category regardless of whether adjusted or unadjusted initial scores are used. However, an examination of pupils who improved or disimproved between 2007 and 2010 in reading reveals some differences when adjusted and unadjusted scores are used (Table 2). The effect of using adjusted 2007 scores is to reduce the number of children in the extreme categories (i.e., 178 pupils are classified as 'improvers' based on adjusted scores compared to 221 based on unadjusted scores, and 92 children are classified as 'disimprovers' compared to 108 with unadjusted scores. A sizeable proportion (*N*=77) of pupils who would be regarded as improvers if unadjusted 2007 scores are used are not considered to be improvers if adjusted 2007 scores are used. Similarly, 29 pupils are considered to disimprove by a standard deviation or more based on unadjusted 2007 scores; these pupils are not considered 'disimprovers' if adjusted 2007 scores are used. Conversely, 34 pupils are considered improvers when adjusted scores are used; these pupils are not considered improvers based on unadjusted 2007 scores. A small number of pupils (*N*=13) are considered 'disimprovers' based on adjusted scores whereas these pupils recorded a smaller change using unadjusted 2007 scores.

Table 2. Numbers of pupils considered 'improvers'(2010 reading scale score 15 points* or more higher than 2007), 'unchanged' (2010 score within 15 points of 2007) and 'disimprovers' (2010 reading 15 points or more lower than 2007) in reading, based on adjusted and unadjusted 2007 scale scores.

		Change in reading (adjusted) 2007 to 2010			
		2010 reading 15 points* or more higher than 2007	2010 within 15 points of 2007	2010 reading 15 points or more lower than 2007	Total
Change in reading 2010-2007	2010 reading 15 points or more higher than 2007	144	77	0	221
	2010 within 15 points of 2007	34	2118	13	2165
	2010 reading 15 points or more lower than 2007	0	29	79	108
Total		178	2224	92	2494

*A difference of 15 scale score points is equivalent to a difference of one standard deviation

To summarise, using the procedure described above to adjust for regression towards the mean results in fewer pupils in the extreme categories than when unadjusted scores are used. However, there is no significant (or practical) difference between adjusted and unadjusted average scores.

APPENDIX 4

Table A. Results of comparisons (independent *t*-tests) between pupils in rural schools in 2007 and 2010 and between boys and girls 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	3.8; 4,320	<.001	Significantly higher in 2010	3.3; 4,299	<.01	Significantly higher in 2010
	6th class	5.8; 4,234	<.001	Significantly higher in 2010	6.2; 4,234	<.001	Significantly higher in 2010
Boys vs girls in 2007	3rd class	4.7; 2,204	<.001	Girls higher in 2007	2.0; 2,209	*ns*	No difference
	6th class	2.9; 2,095	<.01	Girls higher in 2007	1.5; 2,095	*ns*	No difference
Boys vs girls in 2010	3rd class	4.0; 2,114	<.001	Girls higher in 2010	2.8; 2,088	<.01	Boys higher in 2010
	6th class	0.3; 2,136	*ns*	No difference	1.85; 2,136	*ns*	No difference
Boys 2007 vs boys in 2010	3rd class	3.1; 2,194	<.01	Boys higher in 2010	2.4; 2,182	<.05	Boys higher in 2010
	6th class	5.6; 2,083	<.001	Boys higher in 2010	4.8; 2,083	<.001	Boys higher in 2010
Girls 2007 vs girls in 2010	3rd class	2.5; 2,124	<.05	Girls higher in 2010	1.6; 2,115	*ns*	No difference
	6th class	2.8; 2,148	<.01	Girls higher in 2010	4.3; 2,148	<.001	Girls higher in 2010

Appendix 4. Table B. Results of comparisons (Chi-squared tests) between the percentages of rural pupils overall, and according to gender, 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**	***χ^2; df***	***p***	***Meaning***	***χ^2; df***	***p***	***Meaning***
2007 vs 2010 (all) at/below 10th	3rd class	12.6; 1	<.001	Fewer in 2010	5.5; 1	<.05	Fewer in 2010
	6th class	15.9; 1	<.001	Fewer in 2010	16.3; 1	<.001	Fewer in 2010
2007 vs 2010 (all) at/above 90th	3rd class	2.7; 1	*ns*	No difference	0.4; 1	*ns*	No difference
	6th class	7.1; 1	<.01	More in 2010	18.7; 1	<.001	More in 2010
Boys - 2007 vs 2010 at/below 10th	3rd class	7.2; 1	<.01	Fewer in 2010	3.6; 1	*ns*	No difference
	6th class	8.6; 1	<.01	Fewer in 2010	3.7; 1	*ns*	No difference
Boys - 2007 vs 2010 at/above 90th	3rd class	0.6; 1	*ns*	No difference	0.6; 1	*ns*	No difference
	6th class	5.7; 1	<.05	More in 2010	16.6; 1	<.001	More in 2010
Girls - 2007 vs 2010 at/below 10th	3rd class	4.3; 1	<.05	Fewer in 2010	0.4; 1	*ns*	No difference
	6th class	7.7; 1	<.01	Fewer in 2010	9.1; 1	<.01	Fewer in 2010
Girls - 2007 vs 2010 at/above 90th	3rd class	1.7; 1	*ns*	No difference	0.0; 1	*ns*	No difference
	6th class	1.0; 1	*ns*	No difference	3.3; 1	*ns*	No difference
2010 Girls vs Boys at/below 10th	3rd class	14.0; 1	<.001	Lower % of girls	0.1; 1	*ns*	No difference
	6th class	5.9; 1	<.05	Lower % of girls	0.6; 1	*ns*	No difference
2010 Girls vs Boys at/above 90th	3rd class	0.0; 1	*ns*	No difference	6.4; 1	<.05	Higher % of boys
	6th class	4.4; 1	*ns*	Higher % of boys	10.0; 1	<.01	Higher % of boys
2007 Girls vs Boys at/below 10th	3rd class	20.2; 1	<.001	Lower % of girls	2.6; 1	*ns*	No difference
	6th class	6.8; 1	<.01	Lower % of girls	16.6; 1	<.001	Lower % of boys
2007 Girls vs Boys at/above 90th	3rd class	0.2; 1	*ns*	No difference	4.1; 1	<.05	Higher % of boys
	6th class	0.5; 1	*ns*	No difference	0.7; 1	*ns*	No difference

REFERENCES

Archer, P., & Shortt, F. (2003). *Review of the Home-School-Community Liaison scheme.* Dublin: Educational Research Centre.

Archer, P., & Weir, S. (2005). *Addressing disadvantage: A review of the international literature and of strategy in Ireland.* Report to the Educational Disadvantage Committee. Dublin: Department of Education and Science/Educational Disadvantage Committee.

Borman, G.D., Hewes, G.M., Overman, L.T., & Brown, S. (2003). Comprehensive school reform and achievement: A meta-analysis. *Review of Educational Research, 73(2)*, 125-230.

Conaty, C. (1999). *Partnership in education through whole school development with parent and community involvement: A study of a national initiative to combat educational disadvantage – the Home-School-Community Liaison Scheme.* Unpublished doctoral dissertation, National University of Ireland: Maynooth.

Conaty, C. (2002). *Including all: Home, school and community united in education.* Dublin: Veritas.

Department of Education and Science (2005). *DEIS (Delivering equality of opportunity in schools): An action plan for educational inclusion.* Dublin: Author.

Educational Research Centre (1998). *Early Start preschool programme: Final evaluation report.* Report to the Department of Education and Science. Dublin: Author.

Eivers, E., Shiel, G., Perkins, R., & Cosgrove, J. (2005). *The 2004 National Assessment of English Reading*. Dublin: Educational Research Centre.

Eivers, E., Shiel, G., & Shortt, F. (2004). *Reading literacy in disadvantaged primary schools*. Dublin: Educational Research Centre.

Kellaghan, T., Weir, S., Ó hUallacháin, S., & Morgan, M. (1995)**.** *Educational disadvantage in Ireland.* Dublin: Department of Education / Combat Poverty Agency/Educational Research Centre.

Kelly, D., & Kellaghan, T. (1999). *The literacy and numeracy achievements of the first cohort of Early Start children (1994/95) when they were in second class (1998/99).* Dublin: Educational Research Centre.

Lewis, M., & Archer, P. (2002). *Further evaluation of Early Start: Progress report.* Dublin: Educational Research Centre.

Lewis, M., & Archer, P. (2003). *Early Start evaluation: Report on observation visits in schools.* Dublin: Educational Research Centre.

McLoyd, V.C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53(2)*, 185-204.

Rocconi, L. & Ethington, C. (2009). Assessing longitudinal change: adjustment for regression to the mean effects. *Research in Higher Education*, *50*, 368-376.

Ryan, S. (1994). *The Home-School-Community Liaison Scheme. Final evaluation report.* Dublin: Educational Research Centre.

Ryan, S. (1999). *The Home-School-Community Liaison Scheme. Summary evaluation report.* (Revised edition). Dublin: Educational Research Centre.

Sofroniou, N., Archer, P., & Weir, S. (2004). An analysis of the association between socioeconomic context, gender and achievement. *Irish Journal of Education, 35,* 58-72.

Weir, S. (2003). *The evaluation of Breaking the Cycle: A follow-up of the achievements of 6th class pupils in urban schools in 2003.* Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., & Archer, P. (2005). *A review of school-based measures aimed at addressing educational disadvantage in Ireland.* Report to the Educational Disadvantage Committee. Dublin: Educational Research Centre.

Weir, S., Archer, P., & McAvinue, L. (2010). Class size and pupil-teacher ratio: Policy and progress. *Irish Journal of Education, 38,* 3-24.

Weir, S., Archer, P., & Millar, D. (2009). *Analysis of English reading and mathematics achievements in schools in the rural dimension of the School Support Programme.* Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., Archer, P., Pembroke, L., & McAvinue, L (2007). *Report on the evaluation of some aspects of Giving Children an Even Break*. Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., & Eivers, E. (1998). *The Breaking the Cycle scheme in urban schools: A report for 1996/97.* Report to the Department of Education and Science. Dublin: Educational Research Centre.

Weir, S., Milis, L., & Ryan, C. (2002). *The Breaking the Cycle scheme in urban schools: Final evaluation report.* Report to the Department of Education and Science. Dublin: Educational Research Centre .

Weir, S., & Ryan, C. (2000). *Interim report on the evaluation of the Breaking the Cycle scheme in urban schools.* Report to the Department of Education and Science. Dublin: Educational Research Centre.

www.education.ie

Educational Research Centre, Dublin 9

http://www.erc.ie

ISBN: 978 0 900440 35 9